About this Catalog
Published by the Office of
Student Affairs Marketing and Communications

Department Director
Patricia Daly

Catalog Editor
Patricia Daly

Courses
Melinda Miller
Margaret Stewart

Cover / Graphic Design
Victor Perry

Cover Design
Melissa Cordoba

Photographers

How to Obtain the Catalog

The 2017-2018 University of California, Riverside General Catalog are available online at catalog.ucr.edu.

Please note
Every effort has been made to ensure the accuracy of the information presented in the University of California, Riverside General Catalog. However, all courses, course descriptions, instructor designations, curricular degree requirements, and fees described herein are subject to change or elimination without notice. Students should consult the appropriate department, school, college, or graduate division for current information, as well as for any special rules or requirements imposed by the department, school, college, or graduate division.

Students can browse latest Schedule of Classes and the Course Catalog by logging into their R’Web account and clicking on the Registration Icon.

Faculty and staff can browse latest Schedule of Classes by visiting the Registrar’s site http://www.registrar.ucr.edu.

The 2017-2018 University of California, Riverside General Catalog and prior issues are available online at catalog.ucr.edu. Other campus Web sites providing similar information may not reflect current approved curricula or course information.
An invitation to academic exploration

We invite you to think of this catalog as your guide to a year of adventure and exploration at the University of California, Riverside, part of the world’s most prestigious public research university.

In these pages you will find information that will help you plot the course of your academic journey at UCR, where you will meet and work with outstanding faculty, dedicated staff and engaging students.

Many of the scientific and artistic accomplishments that are making news today are built on the research and creative endeavors of University of California faculty and students, past and present. UCR faculty are conducting research that holds promise for improving human eyesight, protecting California's citrus industry and halting the spread of deadly diseases. The achievements of these UCR faculty members and the recognition they receive reflects on the quality of the degree you will earn at our campus. Our history of providing a quality education to our diverse student body helps ensure that you will succeed during the time you spend with us.

Your education is important to you. It is to us, too. Even as our campus has grown in recent years, our faculty has remained highly accessible. UCR faculty involve you in their work, allowing you to contribute to advances in research and innovative forms of expression.

UCR offers opportunities to help you reach your own academic aspirations, whether those involve undergraduate research, specialized study or mentorships.

Our standards are high, as are our expectations. We hope that during your time here, you will grow intellectually, socially and personally, becoming well-rounded citizens of the world.

With your help, UCR will also continue to build its relationships with the off-campus community, both down the street and across the globe. UCR students have long been recognized for their contributions to community service. You can be part of that, too.

So, please join us on this journey of adventure and exploration. We look forward to seeing the contributions each of you will make to UCR, and to the greater good.

Kim A. Wilcox
Chancellor
Table of Contents

Degrees ................................................................................................................. 5
Introducing UC Riverside ..................................................................................7
Resources for Learning .................................................................................. 9
Educational Opportunities ...........................................................................10
Research Opportunities ..............................................................................14
Services for Students ..................................................................................19
Prospective Undergraduates ....................................................................28
Undergraduate Admission .........................................................................29
Application for Admission ........................................................................29
UC Admission Requirements ..................................................................29
Nontraditional Student Admission .........................................................31
International Admission ..........................................................................31
Transfer Student Admission .....................................................................31
International Baccalaureate .....................................................................33
Advanced Placement ..................................................................................35
Finances and Registration .........................................................................38
Fees and Expenses ......................................................................................38
Financial Support .......................................................................................39
Registration and Enrollment ..................................................................41
Policies and Regulations ..........................................................................46
Academic Policies .........................................................................................46
Campus Policies and Regulations ..............................................................55
Campus Policies and Regulations Applying to Students .........................56
Undergraduate Studies .............................................................................58
Goals of an Undergraduate Education .......................................................58
College Breadth Requirements ..................................................................59
Graduate Studies .........................................................................................61
Application and Admission ......................................................................61
Fees and Financial Support .......................................................................64
Colleges and Academic Programs .............................................................67
College of Humanities, Arts, and Social Sciences ..................................67
College of Natural and Agricultural Sciences ........................................74
The Marlan and Rosemary Bourns College of Engineering ....................81
School of Business Administration ..........................................................85
Graduate School of Education ..................................................................89
School of Medicine .....................................................................................92
School of Public Policy ........................................................................... 93

Programs and Courses ............................................................................94
Anthropology .................................................................................................95
Art ...............................................................................................................103
Art History ................................................................................................106
Asian Studies .............................................................................................112
Biochemistry ...............................................................................................116
Bioengineering ............................................................................................121
Bioengineering Interdepartmental Graduate Program ..........................124
Biological Sciences .....................................................................................126
Biology .......................................................................................................126
Biomedical Sciences ..................................................................................133
Biomedical Sciences Graduate Program .............................................135
Book, Archive, and Manuscript Studies Designated Emphasis ............137
Botany and Plant Sciences ......................................................................137
Business Administration ..........................................................................142
Cell Biology and Neuroscience .............................................................147
Cell, Molecular and Behavioral Neuroscience Designated Emphasis ....149
Cell, Molecular, and Developmental Biology .........................................149
CHASS FIRST ...........................................................................................154
Chemical and Environmental Engineering ............................................154
Chemistry ..................................................................................................162
The Chicano Bilingual-Bicultural Studies Minor ....................................171
Comparative Literature and Foreign Languages ...................................171
Computer Engineering ............................................................................199
Computer Science and Engineering .......................................................201
Conservation Biology ..............................................................................209
Creative Writing .........................................................................................209
Creative Writing and Writing for the Performing Arts .......................212
Dance .........................................................................................................213
Earth Sciences ...........................................................................................219
Economics .................................................................................................226
Education Minor .........................................................................................235
Education Graduate and Credential Programs ....................................235
Education Abroad Program ....................................................................250
Electrical and Computer Engineering ....................................................252

Table of Contents Continued on Following Page

Top Four Ways to Finish in Four!

Way #1: Take 15 units every quarter

15 credit hours per quarter = full time.
Taking and passing 45 credit hours per year means you’ll graduate in 4 years.

Undergraduate degree programs at UC Riverside are designed to be completed in four years.

For more reasons to Finish in Four visit finishinfour.ucr.edu

Make an appointment with your academic advisor today and stay on track to Finish in Four!
<table>
<thead>
<tr>
<th>Subject</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Engineering</td>
<td>274</td>
</tr>
<tr>
<td>Environmental Sciences Graduate Program</td>
<td>276</td>
</tr>
<tr>
<td>Environmental Toxicology</td>
<td>280</td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td>283</td>
</tr>
<tr>
<td>Evolution, Ecology, and Organismal Biology</td>
<td>293</td>
</tr>
<tr>
<td>Gender and Sexuality Studies</td>
<td>293</td>
</tr>
<tr>
<td>Genetics, Genomics, and Bioinformatics</td>
<td>299</td>
</tr>
<tr>
<td>Global Studies</td>
<td>301</td>
</tr>
<tr>
<td>Hispanic Studies</td>
<td>303</td>
</tr>
<tr>
<td>History</td>
<td>308</td>
</tr>
<tr>
<td>Humanities, Arts, and Social Sciences</td>
<td>321</td>
</tr>
<tr>
<td>Inflammation and Infectious Disease Designated Emphasis</td>
<td>323</td>
</tr>
<tr>
<td>Interdisciplinary Studies</td>
<td>323</td>
</tr>
<tr>
<td>International Relations Minor</td>
<td>323</td>
</tr>
<tr>
<td>Journalism Minor</td>
<td>323</td>
</tr>
<tr>
<td>Labor Studies Minor</td>
<td>324</td>
</tr>
<tr>
<td>Latin American and Latino Studies Designated Emphasis</td>
<td>324</td>
</tr>
<tr>
<td>Latin American Studies</td>
<td>325</td>
</tr>
<tr>
<td>Law and Society</td>
<td>328</td>
</tr>
<tr>
<td>Lesbian, Gay, Bisexual, Intersex, and Transgender Studies Minor</td>
<td>329</td>
</tr>
<tr>
<td>Liberal Studies</td>
<td>330</td>
</tr>
<tr>
<td>Management</td>
<td>331</td>
</tr>
<tr>
<td>Marxist Studies Minor</td>
<td>338</td>
</tr>
<tr>
<td>Materials Science and Engineering</td>
<td>339</td>
</tr>
<tr>
<td>Mathematics</td>
<td>343</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>350</td>
</tr>
<tr>
<td>Mechanisms of Gene Expression and Regulation Studies</td>
<td>356</td>
</tr>
<tr>
<td>Designated Emphasis</td>
<td>356</td>
</tr>
<tr>
<td>Media and Cultural Studies</td>
<td>356</td>
</tr>
<tr>
<td>Medical and Health Humanities Designated Emphasis</td>
<td>362</td>
</tr>
<tr>
<td>Medicine</td>
<td>362</td>
</tr>
<tr>
<td>Microbiology</td>
<td>369</td>
</tr>
<tr>
<td>Middle East and Islamic Studies</td>
<td>372</td>
</tr>
<tr>
<td>Middle East and Islamic Studies Designated Emphasis</td>
<td>374</td>
</tr>
<tr>
<td>Music</td>
<td>374</td>
</tr>
<tr>
<td>Natural and Agricultural Sciences</td>
<td>382</td>
</tr>
<tr>
<td>Nematology</td>
<td>383</td>
</tr>
<tr>
<td>Neuroscience Undergraduate Major</td>
<td>383</td>
</tr>
<tr>
<td>Neuroscience Graduate Program</td>
<td>385</td>
</tr>
<tr>
<td>Peace and Conflict Studies Minor</td>
<td>387</td>
</tr>
<tr>
<td>Pest Management</td>
<td>388</td>
</tr>
<tr>
<td>Philosophy</td>
<td>388</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>394</td>
</tr>
<tr>
<td>Physics and Astronomy</td>
<td>394</td>
</tr>
<tr>
<td>Plant Biology</td>
<td>403</td>
</tr>
<tr>
<td>Plant Pathology and Microbiology</td>
<td>403</td>
</tr>
<tr>
<td>Political Science</td>
<td>405</td>
</tr>
<tr>
<td>Population Biology</td>
<td>417</td>
</tr>
<tr>
<td>Psychology</td>
<td>416</td>
</tr>
<tr>
<td>Public Policy</td>
<td>424</td>
</tr>
<tr>
<td>Public Policy Designated Emphasis</td>
<td>428</td>
</tr>
<tr>
<td>Religious Studies</td>
<td>428</td>
</tr>
<tr>
<td>Science Fiction and Technoculture Studies Minor</td>
<td>437</td>
</tr>
<tr>
<td>Sociology</td>
<td>437</td>
</tr>
<tr>
<td>Soil and Water Sciences</td>
<td>447</td>
</tr>
<tr>
<td>Southeast Asian Studies (Minor, Graduate Program)</td>
<td>449</td>
</tr>
<tr>
<td>Speculative Fictions and Cultures of Science Designated Emphasis</td>
<td>452</td>
</tr>
<tr>
<td>Statistics</td>
<td>453</td>
</tr>
<tr>
<td>Theatre, Film and Digital Production</td>
<td>458</td>
</tr>
<tr>
<td>UC Riverside Washington Academic Program (UCDC)</td>
<td>462</td>
</tr>
<tr>
<td>University Honors</td>
<td>463</td>
</tr>
<tr>
<td>Urban Studies Minor</td>
<td>465</td>
</tr>
<tr>
<td>Visual Arts</td>
<td>465</td>
</tr>
<tr>
<td>Western American Studies Minor</td>
<td>465</td>
</tr>
<tr>
<td>Faculty</td>
<td>467</td>
</tr>
<tr>
<td>Regents and Officers</td>
<td>487</td>
</tr>
<tr>
<td>Campus Map</td>
<td>489</td>
</tr>
<tr>
<td>How to Get to UC Riverside</td>
<td>491</td>
</tr>
<tr>
<td>Two-Year Academic Calendar</td>
<td>492</td>
</tr>
<tr>
<td>Directory</td>
<td>493</td>
</tr>
</tbody>
</table>
## Degrees

<table>
<thead>
<tr>
<th>Discipline</th>
<th>B.A.</th>
<th>B.S.</th>
<th>M.A.</th>
<th>M.S.</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting, Auditing and Assurance</td>
<td></td>
<td></td>
<td>M.P.Ac.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Studies</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthropology</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Anthropology/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art (Studio)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art History</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art History/Administrative Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art History/Religious Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian American Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemistry</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemistry and Molecular Biology</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological Sciences</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomedical Sciences</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomedical Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Administration (see also Management)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Economics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell, Molecular, and Developmental Biology</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Chicano Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparative Literature</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science with Business Applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing and Writing for the Performing Arts</td>
<td></td>
<td></td>
<td>M.F.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Dance Studies</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Dance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earth Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Economics/Administrative Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education, Society, and Human Development</td>
<td></td>
<td></td>
<td>M.Ed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioengineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical and Environmental</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Science and Engineering</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Entomology</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Joint degree program with CSU Fresno)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Interdepartmental Graduate Program)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Toxicology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evolution, Ecology, and Organismal Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Choreography</td>
<td></td>
<td></td>
<td>M.F.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td></td>
<td></td>
<td></td>
<td>M.Fin.</td>
<td></td>
</tr>
</tbody>
</table>

1 Administrative Studies, and Law and Society are only offered as a major combined with other programs.
2 New student registration in this program is not open at present.
3 Students who, in truly exceptional cases, matriculate into the Thomas Haider Program without a UCR baccalaureate degree are eligible to receive a B.S. degree in Biomedical Sciences upon satisfactory completion of the first year of the curriculum leading to the M.D. degree.
4 Applications are not accepted from students wishing to work toward the master’s degree only.
5 A combined B.S.+M.S. program is offered in this discipline (designed to lead to a B.S. degree as well as an M.S. degree in five years).
Degrees

<table>
<thead>
<tr>
<th>Discipline</th>
<th>B.A.</th>
<th>B.S.</th>
<th>M.A.</th>
<th>M.S.</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geophysics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History/Administrative Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts, and Social Sciences Interdisciplinary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interdisciplinary Studies²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Languages and Literatures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classical Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparative Ancient Civilizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparative Literature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germanic Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Languages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russian Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin American Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law and Society¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberal Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linguistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>Flex M.B.A., M.A.¹, M.A., M.P.Ac., M.Fin.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics, Applied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics for Secondary School Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media and Cultural Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M.D.</td>
</tr>
<tr>
<td>Microbiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle East and Islamic Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music and Culture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native American Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroscience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pest Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philosophy/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Sciences²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Biology (Plant Genetics)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Pathology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science/Administrative Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science/International Affairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science/Public Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociology/Administrative Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociology/Law and Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil and Water Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southeast Asian Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics, Applied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6 See Graduate School of Education section for credential program information.
7 The Bourns College of Engineering offers an online Master of Science (M.S.) degree in Engineering. See Engineering section for more details.
8 New student registration in this program is not open at present. For further information, contact the Graduate Division.
9 Doctoral studies are available through the Ph.D. program in Comparative Literature.

Undergraduate Minors

African American Studies
Anthropology
Art History
Asian American Studies
Asian Studies
Business Administration
Chemistry
Chicano Bilingual-Bicultural Studies
Chicano Studies
Computer Science
Creative Writing
Dance
Economics
Education
English
Entomology
Environmental Sciences
Ethnic Studies
Gender and Sexuality Studies
Geology
Global Climate Change
Global Studies
History
International Relations
Journalism
Labor Studies
Languages and Literatures/
Arabic
Chinese
Classical Studies
French
Germanic Studies
Italian Studies
Japanese
Korean
Russian Studies
Southeast Asian
Law and Society
Lesbian, Gay, Bisexual, Intersex,
and Transgender Studies
Manuscript Studies
Mathematics
Media and Cultural Studies
Middle East and Islamic Studies
Music
Native American Studies
Neuroscience
Peace and Conflict Studies
Philosophy
Physics
Plant Biology
Political Science
Political Science/Administrative Studies
Political Science/International Affairs
Political Science/Law and Society
Political Science/Public Service
Population Biology
Psychology
Psychology/Law and Society
Public Policy
Religious Studies
Science Fiction and Technoculture Studies
Sociology
Southeast Asian Studies
Spanish
Statistics (Applied)
Theatre, Film and Digital Production
Urban Studies
Western American Studies

Designated Emphases

Book, Archive, and Manuscript Studies
Cell, Molecular, and Behavioral Neuroscience
Inflammation and Infectious Disease
Latin American and Latino Studies
Mechanisms of Gene Expression and
Regulation Studies
Medical and Health Humanities
Middle East and Islamic Studies
Public Policy
Southeast Asian Studies
Speculative Fictions and Cultures of Studies
Introducing UC Riverside

UC Riverside is a major research university and one of the 10 University of California campuses. A national center for the humanities, it offers students a supportive, collegial learning environment with nationally and internationally recognized faculty dedicated to the highest standards in research, teaching, and public service.

Located on nearly 1,200 acres near the Box Springs Mountains in Southern California, the park-like campus provides convenient access to the vibrant and growing Inland region and to local mountains — home to some of the best skiing and snowboarding in the region — beautiful beaches, amusement parks, golf courses, and outstanding shopping and entertainment.

The University is in the city of Riverside, a community of approximately 300,000 people. Located east of Los Angeles and north of San Diego, the area enjoys a year-round temperate climate and an exceptional quality of life with its architectural beauty, cultural art museums, quality housing, and wide variety of recreational opportunities. UCR is an integral part of the Riverside community through its partnership programs and the involvement of both employees and students in community activities and programs.

The nearby Ontario International Airport has daily flights to most of the nation’s major cities and connecting commuter flights to Los Angeles International Airport. Metrolink train service is available to Los Angeles.

History The roots of the campus date back to 1907, when the California State Legislature established the Citrus Experiment Station to conduct research on the agricultural problems of Southern California. In 1948, the University of California Regents approved the establishment of the College of Letters and Science, and the college opened for classes in February 1954. The University’s Graduate Division was established in 1960.

Since then, the University’s growth has mirrored the growth of Southern California. Once a small university in a small town, UC Riverside is now the premier research and educational institution in thriving Inland Southern California.

The UCR Palm Desert campus provides educational programs, research, and outreach to meet the higher education needs of the greater Coachella Valley region.

Academic Distinctions

College of Humanities, Arts, and Social Sciences Home to the Gluck Fellows program, which sends talented student musicians, dancers, and actors into the community for arts outreach. The program is one of three arts outreach programs funded by the Gluck Foundation; the other two are at Julliard and UCLA. The college has the only UC undergraduate major in Creative Writing and a unique Critical Dance Studies graduate program. Visit chass.ucr.edu.

College of Natural and Agricultural Sciences is a leader in the biological, physical, and agricultural sciences. The UCR Institute for Integrative Genome Biology, one of the leading institutes of genomics research in the world, brings together faculty from a variety of academic units to participate in genomics-based discovery, providing researchers and students with access to state-of-the-art tools for advanced studies in genomics, gene expression, proteomics, microscopy, and bioinformatics. Visit cnas.ucr.edu.

The Martan and Rosemary Bourns College of Engineering Researchers excel in study of alternative-fueled engines and vehicles, conversion of biomass to vehicle fuel, and air pollution. Majors include bioengineering; computer science and engineering; computer science with business applications; chemical, computer, electrical, environmental, and mechanical engineering; as well as materials science and engineering. Visit engr.ucr.edu.

The School of Business Administration offers the UC’s oldest and most comprehensive undergraduate Business Administration major in Southern California. The School of Business Administration houses The A. Gary Anderson Graduate School of Management, which offers the Master of Business Administration program (M.B.A.), the FLEX M.B.A. program, the Master of Professional Accountancy (M.P.Ac.) program, the Master of Finance (M.Fin.) program, and the Ph.D. program in Management. SoBA is accredited by AACSB International – The Association to Advance Collegiate Schools of Business. Visit soba.ucr.edu.

The School of Medicine builds on UCR’s long-standing medical education partnership with the UCLA medical school. The Thomas Haider Program at the UCR School of Medicine continues the tradition of providing a unique pathway into medical school for UCR students, with up to 24 of the available medical school seats filled by students who attend UCR for at least six consecutive quarters and complete their bachelor's degree at UCR. The School also offers a Ph.D. degree in Biomedical Sciences. Visit medschool.ucr.edu.

Graduate School of Education The breadth and depth of the programs offered at the GSOE is extraordinary, reflecting faculty expertise and research in such areas as autism; culture and language; higher education; issues of diversity; intervention for children with reading difficulties; policy, and qualitative and quantitative methods. The school offers an undergraduate major in Education, Society, and Human Development, a minor in Education, research-focused M.A. and Ph.D. programs, M.Ed. professional programs, and teacher credential programs. Visit education.ucr.edu.

School of Public Policy The mission of the UCR School of Public Policy is to train a new generation of forward-thinking public policy leaders equipped to address the complex, interrelated challenges of poverty, disease, illiteracy, climate change, energy security, pollution and more. Their training will be informed by (i) a diverse, interdisciplinary curriculum that emphasizes evidence-based policy research as well as cross-learning from both international and domestic problem-solving experiences, and (ii) a rich internship program that emphasizes experiential learning. The mainstay of the school is the Master of Public Policy (MPP) program, which will equip students with the analytical and management tools needed for formulating, implementing and evaluating public policies. Visit spp.ucr.edu.
**Principles of Community**

The University of California, Riverside is committed to equitable treatment of all students, faculty, and staff. UCR’s faculty, staff, and students are committed to creating an environment in which each person has the opportunity to grow and develop, and is recognized for his or her contribution.

There are three objectives that our campus must strive toward to achieve these goals.

First, we must ensure that we have an environment that nurtures the intellectual and personal growth of our students, faculty, and staff.

Second, we must ensure that our campus sets an example of respect for all people.

Third, we must ensure that our campus is a safe and welcoming environment for everyone.

We take pride in the diversity of the campus community and in ourselves by using the campus environment as a place, committed to academic integrity, where all members are encouraged to use their unique talents to enrich the daily life of the community in which they live, work, teach, and learn. Respect for differences and civil discourse must become the hallmark of how we live and work together to build our community of learners at UCR.

We as members of the University of California, Riverside affirm our responsibility and commitment to creating and fostering a respectful, cooperative, professional and courteous campus environment. Implicit in this mutual respect is the right of each of us to live, study, teach, and work free from harassment or denigration on the basis of race/ethnicity, age, religious or political preference, gender, transgender, sexual orientation, nation of origin, or physical abilities. Any violation of this right by verbal or written abuse, threats, harassment, intimidation, or violence against person or property will be considered a violation of the principles of community that are an integral part of the University of California’s focus, goals, and mission (and subject to sanction according to University policies and procedures).

We recognize that we will all need to continually work together to make our campus community a place where reason and mutual respect among individuals and groups prevail in all forms of expression and interaction.

---

**Accreditations**

**UCR** is a member of the Western Association of Schools and Colleges (WASC). The campus is fully accredited by the Senior Commission of WASC. This accreditation requires periodic review in accord with WASC policies and standards. WASC is located at 985 Atlantic Avenue, Alameda, CA 94501, (510) 748-9001.

- The B.S. degree (or equivalent program) in Chemistry is certified by the American Chemical Society as meeting its standards.
- The credential programs in the Graduate School of Education are approved by the Commission on Teacher Credentialing.
- The Graduate School of Education School Psychology program is approved by the National Association of School Psychologists and the American Psychological Association.
- The B.S. degree programs in Chemical Engineering, Computer Engineering, Electrical Engineering, Environmental, Engineering, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, [abet.org](http://abet.org).
- The B.S. degree program in Computer Science and Engineering is accredited by the Computing Accreditation Commission of ABET, [abet.org](http://abet.org).
- The School of Business Administration and The A. Gary Anderson Graduate School of Management are accredited by AACSB International – The Association to Advance Collegiate Schools of Business.
Resources for Learning

ARTSblock

Executive Director: Sheila Bergman
Deputy Director: Emily Papavero
3824 & 3834 Main Street
Riverside, CA 92501
(951) 827-3755
artsbloc@ucr.edu

UCR ARTSblock opened to the public in 2010, bringing together the California Museum of Photography (founded in 1973), the Jack and Marilyn Sweeney Art Gallery (1963), and the Barbara and Art Culver Center of the Arts (2010). Located three miles from UCR's main campus, ARTSblock is located on a single block in adjacent historical buildings along the pedestrian mall in downtown Riverside. Housed in two renovated department stores from the late 19th and early 20th centuries, ARTSblock's adaptive reuse enlivens the city's downtown core.

By merging the already established photographic museum and university art gallery with the new, multi-disciplinary Culver Center, ARTSblock serves as a cultural anchor for both the University and the broader Inland Empire communities. ARTSblock organizes provocative and timely art exhibitions, performances, screenings, and other programs with the aim of invigorating the cultural life of artists and residents of Southern California, nurturing creative and critical thinking on campus and in the community, and promoting the importance of the arts for a healthy society. ARTSblock offers innovative programs that engage diverse audiences, nourish the imagination, and challenge assumptions.

The extensive art, photography, and research collections of the CMP and Sweeney Art Gallery make ARTSblock an important destination for audiences as well as researchers working in a wide range of fields. ARTSblock's activities embody UCR's commitment to broadly-based public education and cutting-edge research. As a university museum and art gallery, ARTSblock is committed to offering students opportunities for professional museum work. Students from UCR and elsewhere are involved under the aegis of independent course status, internships, work-study, and as volunteers.

California Museum of Photography

The California Museum of Photography at UCR ARTSblock is devoted to showing the work of contemporary artists who use photography, collaborating with UCR faculty and students to bring their varied expertise to the public in exhibitionary form, and to preserving and making accessible its vast holdings of photography and related apparatus.

Jack and Marilyn Sweeney Art Gallery

The Sweeney Art Gallery presents significant regional, national, and international art, and hosts annual MFA and Senior Show exhibitions for students in UCR’s Department of Art. As an artistic laboratory, the gallery engages diverse audiences with exhibitions committed to experimentation, innovation, and the exploration of art in our time. Since 2010, the Sweeney Art Gallery is located in the Culver Center, and exhibitions frequently expand into the Culver Atrium.

The Sweeney’s permanent collection focuses on work produced since 1990.

Barbara and Art Culver Center of the Arts

The Barbara and Art Culver Center of the Arts hosts art installations, a weekly film program, and musical, dance, and theatrical performances in a dynamic setting. Recognizing that artists play a crucial role in society, the Culver Center also hosts a robust program of lectures, symposia, and community forums with artists, filmmakers, playwrights, dancers, and musicians. The main level is home to an expansive atrium gallery beneath a 40’ high skylight, the Sweeney Art Gallery, a 72-seat screening room, and a forthcoming café. On the second level, the Culver Center houses a Media Lab, two dance studios with sprung wood floors, a black box equipped with green screen, and a sound recording studio. In the lower level, the California Museum of Photography’s important Keystone-Mast Collection of stereographs is preserved in state-of-the-art seismically isolated cabinets.

Information Technology Solutions

Associate Vice Chancellor and CIO: Danna Gianforte.
Computing and Communications Building (subject to name change) (951) 827-4741; ccc. ucr.edu

Information Technology Solutions provides technology services and support to faculty, staff, and students.

Application and Multimedia Development (951) 827-6424; amd. ucr.edu

AMD provides custom web application development that will help departments improve their business processes. AMD applications are secure, robust, and take advantage of campus infrastructure. Applications can be accessed online via most browsers using UCR’s Central Authentication System. AMD also brings cutting-edge graphic design, concept development and visualization services to the academic and administrative community through various multimedia distribution channels (e.g. 3D animations, videos, illustrations, print posters & brochures.) AMD also produces custom graphics and illustrations for grant proposals, and research publications.

Communications Services (951) 827-4624; dial@ucr.edu This division provides data and voice communication needs for the campus.

Computer Support Group (CSG), helpdesk (951) 827-3555; helpdesk@ucr.edu This division provides desktop computing support to faculty and staff, including installations, troubleshooting, consulting, and assistance with acquiring and using stand-alone or networked desktop and laptop computers.

Technology Group (951) 827-3555; helpdesk@ucr.edu This unit is responsible for the iLearn Learning Management System (Blackboard) and provides training via workshops and support to faculty and instructors in its use. Departmental and individual consultation is available to faculty in curricular redesign and the pedagogical use of instructional technology in the classroom.

Multimedia and Classroom Technology (951) 827-3041; multimedia. ucr.edu

This division provides support in distance learning, classroom technology and multimedia systems to support faculty, staff, and students with their academic and nonacademic events.

Student Technology Support (951) 827-6495; helpdesk@student.ucr.edu; sscs. ucr.edu Supports campus computer labs, student e-mail, iLearn, wireless network, and VPN. Computers are available in Watkins Hall, Sproul Hall, Olmsted Hall, and the Arts Building. Webprinting and Bear Help student technology support available at the HUB Information Desk.

University Library

University Librarian: Steven Mandeville-Gamble, M.L.I.S. (951) 827-3221; stevenmg@ucr.edu; library. ucr.edu

The UCR Library serves as an information commons and intellectual center for the campus and is the focal point for research and study at UCR. The collections include nearly 4 million print volumes, 500,000 e-books, 143,000 serials, and thousands of multimedia materials. The library also provides access to hundreds of databases and state-of-the-art information technology. The library has three facilities: the Tomás Rivera Library, the Raymond L. Orbach Science Library, and the Music Library.

Wireless network access is provided throughout all library buildings, and the vast majority of electronic databases and other resources can be accessed remotely by UCR students, staff, and faculty. The UCR Library ranks among the 120 largest research libraries in the U.S. and Canada and is a member of the Association of Research Libraries, the Coalition for Networked Information, the Digital Library Federation, and the Center for Research Libraries.

The UCR Library provides a variety of user services designed to enhance the academic experience. Library facilities have many comfortable spaces for study, intellectual exploration, and relaxation including study carrels, tables, and comfortable chairs and couches. The Rivera Library and Orbach Science Library provide technology-enhanced group study rooms, some of which can be reserved online, and lend laptops, headphones, and other items. Computers, printers, copiers, and scanners are available in all three library facilities. During the academic year, the Rivera and Orbach Libraries are open until midnight Sunday through Thursday, and the Orbach Library is open 24 hours during finals week. Hours vary during intersession and summer quarter. The library also provides off-campus access to electronic resources and mobile services.
Tomás Rivera Library
(951) 827-3220, rivref@ucr.edu

The Rivera Library provides access to materials in the humanities, social sciences, and arts, housing more than 2,000,000 volumes. It is also home to spaces where faculty, researchers, and students across disciplines collaborate on innovative digital research and teaching projects.

Raymond L. Orbach Science Library
(951) 827-2821, sciref@ucr.edu

Materials in the Orbach Science Library support life and physical sciences including engineering, agriculture, and medicine. The ground floor Map Room contains physical maps and atlases as well as access to GIS systems and data. The Orbach Library is also home to the Creat'R Lab and the Patent and Trademark Resource Center.

Music Library
054 Arts Building
(951) 827-3137, muslib@ucr.edu

The Music Library provides music scores, music sound recordings and a small number of current journals and reference books to support teaching and research. Equipment is available for listening to CDs, DVDs, and LPs.

Research and Instructional Services
Rivera Library Reference Desk: (951) 827-4392
Orbach Science Library Reference Desk: (951) 827-3316
Music Library: (951) 827-3137
Ask A Librarian (available 24/7): library.ucr.edu

Creat'R Lab
Main floor, Orbach Science Library
library.ucr.edu/creatr-lab

The Creat'R Lab is an innovation space for learning, experimenting, designing, and creating; this is where new technologies, scientific curiosity, and entrepreneurship come together. Equipment includes 3D printers, 3D scanners and associated software, basic hand tools, electronics for prototyping, tools for working with textiles, paper, and more. Experts provide individual consultations as well as workshops on tools, conceptual skills and entrepreneurship.

Interlibrary Loan Services (ILL) and Document Delivery Services
ILL (951) 827-3234

UCR students and faculty may use ILL to borrow materials from other libraries.

Document Delivery Services offers paging of books and journal articles located at the UCR Library. This service is provided for UCR faculty, graduate students, and staff, as well as undergraduates with disabilities.

Distinctive Collections

K-12 Curriculum Materials
Second floor, Rivera Library

This circulating collection of K-12 curriculum materials offers a variety of formats, textbooks used in local schools, and award-winning children’s literature to support the work of students in the Graduate School of Education’s Teacher Education programs.

Government Documents
Main floor, Rivera Library
(951) 827-4392

The UCR Library serves as a selective depository for U.S. federal and California state government publications.

Patent & Trademark Resource Center (PTRC)
Main floor, Orbach Science Library
(951) 827-3316

The PTRC houses U.S. utility and design patents, and offers online assistance in searching the USPTO patent and trademark databases to both the general public and the UCR community.

Water Resources Collections and Archives (WRCA)

Circulating Collection
Main floor, Orbach Science Library
(951) 827-3316

The WRCA is the premier collection devoted to water resources in California and the West. The WRCA is comprised of over 200 archival collections, 180,000 technical reports, 6,000 archival maps, and 45,000 historic photographs pertaining to water development from the 1900’s to the present.

Special Collections & University Archives
Fourth floor, Rivera Library
(951) 827-3233

Special Collections contains an extensive collection of rare books, manuscripts, archives, and other unique or fragile materials in subject areas including agricultural, botanical, and natural sciences; ethnic studies; history of the arts; history of California and Riverside; and literary and cultural studies. In addition to the collections described below, notable collections include the Citrus Experiment Station records, the Sadakichi Hartmann Papers, the Oswald Jonas archive, the Tomás Rivera Archive Memorial Collection, the Avery E. Field photograph collection and the Sabino Osuna papers. University Archives houses the official historical records of the University of California, Riverside.

Eaton Collection of Science Fiction and Fantasy

The Eaton Collection is the world’s largest collection of science fiction and fantasy, containing more than 100,000 hardback and paperback books, full runs of most pulp magazines, approximately 100,000 fanzines, film and visual material including 500 shooting scripts from science fiction films, writers’ archives (including Robert Forward, David Brin, and Anne McCaffrey), collectibles, ephemera, and realia as well almost 100,000 comic books, anime, and manga.

Tuskegee Airmen Collections

The Tuskegee Airmen Collections are part of a national effort to collect and preserve the history of the first African Americans to serve as pilots in the U.S. Army Air Force in World War II. The collections contain personal letters, diaries, photographs, memorabilia, posters, oral history interviews, documentation of military service as well as pre- and post-service careers, books by and about the Tuskegee Airmen, and African American military history.

Rupert Castro Library of the American Indian

The Castro Library contains about 7,000 volumes and more than 9,000 documents, pamphlets, tape recordings, slides, and artwork relating to Native Americans in the United States and the world.

Educational Opportunities

California Teach-Science/Mathematics Initiative (CaTEACH-SMI)

Leslie Bushong, Director
Resource Center, 1315 Pierce Hall
(951) 827-4970, sml.ucr.edu
facebook.com/ScienceMathInitiativeAtUcr

California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare
for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources to promote planning and professional development towards a science/mathematics education career.

**Honorary Societies**

To learn more about these organizations: [honors.ucr.edu/opportunities/honors_societies.html](http://honors.ucr.edu/opportunities/honors_societies.html) or [studentlife.ucr.edu](http://studentlife.ucr.edu)

**Alpha Lambda Delta** is a national society that honors academic excellence during a student’s first year in college. It encourages superior academic achievement among students in their first year, promotes intelligent living and a continued high standard of learning, and assists women and men in recognizing and developing meaningful goals for their roles in society. First year students with a first-year minimum 3.50 GPA are invited to join.

**Delta Epsilon Iota** Our mission at the University of California, Riverside is to build a bridge between students and the Career Center, in which members are empowered to become ambassadors for the Career Center and help to spread opportunities to fellow students. Our mission is also to promote the ideals of dedication, enthusiasm, and initiative at the University of California, Riverside through student leadership, special programs coordinated with the career center, campus and community service projects, and regular networking opportunities for members

**Golden Key International Honour Society** The top 15 percent of undergraduate sophomores, juniors and seniors (part-time and full-time) as well as all graduate students from all academic disciplines are invited to join Golden Key. The one-time membership fee is for life. Each year, Golden Key headquarters awards both chapter and national scholarships.

**Mu Sigma Rho** is a national statistics honor society seeking to promote and encourage scholarly activity in statistics as well as recognizing outstanding achievements among students and faculty. Students must have a 3.25 GPA and have a certain amount of statistics courses and class standing to be eligible.

**National Residence Hall Honorary** aids the development and maintenance of a strong, diverse and academically successful residential community within the UCR Residence Halls. Students must be in the top one percent of the residence hall population.

**National Society of Collegiate Scholars** recognizes and celebrates high achievement among first and second year students in all academic disciplines. NSCS students rank among the top 20 percent of their freshman or sophomore class.

**Omicron Delta Kappa**, the National Leadership Honor Society, was founded to recognize leadership of exceptional quality and versatility in college, including representatives in all phases of college life; that those representatives should cooperate in a worthwhile endeavor; and that outstanding students, faculty, and administrators should meet on a basis of mutual interest, understanding and helpfulness. ODK students rank in the top 35 percent of their class.

**Order of Omega** is a national honor society to recognize junior and senior members of social Greek letter organizations with a minimum 3.0 cumulative GPA for their service to the Greek system and the university. It honors the top 3 percent of the university Greek population for excellence in academics, leadership and campus or community service.

**Phi Beta Kappa**, founded in 1776, is the oldest and most distinguished academic honor society in the United States. Approximately 10 percent of seniors majoring in liberal subject areas of the arts and sciences are eligible for membership. UCR’s IOTA chapter reviews the records of eligible students and elects members on the basis of scholarly achievement, character, and broad cultural interests. All prospective members must have the equivalent of level four (intermediate skill level) of a foreign language and some significant evidence of breadth through courses beyond those required for the major or by the student’s college or other demonstration of academic excellence across a diversity of fields. Students are nominated for induction each spring quarter.

**Pi Sigma Alpha** is the only National Political Science Honor Society for college students of political science and government in the United States. In order to be eligible, students must be a junior, senior or graduate student and be ranked in the top 1/3 of their entire class.

**Psi Chi National Honor Society in Psychology** was founded in 1929 for the purposes of encouraging, stimulating, and maintaining excellence in scholarship and advancing the science of psychology. Society members must rank in the top 35 percent of their class with a minimum 3.0 cumulative GPA.

**Sigma Alpha Lambda** promotes, recognizes, and rewards academic achievement and provides members with opportunities for community service, personal development, and lifelong professional fulfillment. Sigma Alpha Lambda is open to sophomore students (and above) with a minimum 3.0 GPA.

**Tau Beta Pi (National Engineering Honor Society)** marks those who have conferred honor upon their alma mater by distinguished scholarship and exemplary character as students, or by their attainments as alumni. Students rank in the top 1/8 of the junior class or top 1/5 of the senior class.

**Tau Sigma National Honor Society** recognizes the academic achievement of students transferring to an institution of higher learning from another academic institution, and encourages and promotes the students’ involvement in the institution to which they have transferred. Tau Sigma students rank in the top 20 percent of their class with a 3.5 GPA.

**Theta Tau** was founded in 1929 for the purposes of encouraging, stimulating, and maintaining excellence in scholarship and advancing the science of psychology. Society members must rank in the top 35 percent of their class with a minimum 3.0 cumulative GPA.

**Education Abroad**

Surge 321
(951) 827-4113
ea.ucr.edu

**WHY** study abroad?

Choose to challenge yourself, by complementing your studies at UCR with studies abroad. By venturing outside your comfort zone into the unfamiliar, you invest in an opportunity to learn more about yourself, about others, and about the world. Education Abroad provides a gateway to high-quality international opportunities which help you cultivate intercultural understanding, collaboration, and other key skills needed to work in today’s global marketplace.

**WHO** can study abroad?

Anyone who meets the program requirements, which vary – for more details, see ea.ucr.edu

**WHERE** can you study abroad?

Anywhere in the world where we offer a program – see ea.ucr.edu for more details.

**WHEN** can you study abroad?

You can go abroad for a full year, a single term, or in the summer. Since it can take up to a year to prepare for a program, most go as sophomores, juniors, seniors and even graduate students.

**WHAT** can you study abroad?

You can take courses that meet the UC breadth/general education and major requirements (subject to approval), and our programs cover a wide range of disciplines – see ea.ucr.edu for additional information.

**HOW** can you study abroad?

Visit the Education Abroad website – ea.ucr.edu – for details on the three
types of programs we provide – UCEAP, UCRSSA, and OAP – which include internships, field trips, field study, research, language learning, service learning, volunteer and work opportunities. Support services include advising, resource library on international opportunities, travel planning, and scholarships.

**UC Education Abroad Program (UCEAP)** – the University of California’s official study abroad program provider offers all the benefits of home: UC credit, grades, and financial aid.

When you study abroad through UCEAP, you:
- Remain enrolled at UCR, earning UC credits;
- Use eligible federal, state, UC financial aid and grants;
- Access UCEAP scholarships and awards;
- Enjoy internationally recognized health and safety support;
- Can choose from over 40 country destinations worldwide;
- Take courses at a highly ranked host university abroad.

**UCR Summer Study Abroad (UCRSSA)** – take UC courses in an international setting with UC professors, in which you could conduct research, collaborate with students from other countries, and experience another culture.

When you study abroad through UCRSSA, you:
- Remain enrolled at UCR, earning UC credits;
- Use eligible federal, state, and UC financial aid;
- Apply for scholarships and grants;
- Enjoy small classes and close interaction with your UCR faculty.

**Opportunity Abroad Programs (OAP)** – any type of abroad experience offered by other UC campuses and non-UC study abroad programs which are governed by UCR’s Planned Opportunities Abroad Agreements (POAA; see Withdrawals and Leaves of Absence section about POAA).

When you study abroad through OAP, you:
- Are on a leave of absence through POAA and earn transfer credit;
- Use eligible federal and state aid;
- Apply for scholarships and grants;
- Enjoy many options with the flexibility to study abroad with other abroad programs.

**International Education Programs**

**International Education Programs**

**UCR Extension Center**
1200 University Avenue; Riverside, CA; 92507-4596
(951) 827-4346; fax (951) 827-1074
ucrREP@UCR.EDU; IEP.UCR.EDU

Offers a wide variety of English language, Certificate and Diploma programs for international students and professionals on a year-round basis. Also offers academic pathways for students wishing to study at UCR and other U.S. colleges and universities, and opportunities for visiting international students to take UCR credit courses, on a space available basis. Provides support services such as program orientation, housing assistance, immigration advising, social activities, and college counseling.

Offers the following programs:
- Intensive English
- Improving Oral Fluency
- Conversation and American Culture
- English for International Business
- English for Academic Purposes
- University Credit Program
- UCR Admission Preparation Program
- UCR International Transfer Track Program
- Teaching English to Speakers of Other Languages (TESOL)
- Several intensive professional programs including postgraduate diplomas in management, hospitality, engineering, entertainment & media, sports management and public policy.

**Reserve Officer’s Training Corps**

Students may with the permission of the dean of their college enroll in ROTC courses at another institution while completing their degree programs at UCR. Students interested in Air Force ROTC should contact the Office of Undergraduate Admissions at (951) 827-3411 regarding concurrent enrollment procedures. Those interested in Army ROTC should contact the Office of the Registrar at (951) 827-3409 for information on cross-registration. Descriptive pamphlets summarizing the programs are available at the UCR Career Center.

**Air Force Reserve Officer Training Corps (AFROTC)** is a nationwide program that allows students to pursue commissions (become officers) in the United States Air Force (USAF) while simultaneously attending college. AFROTC consists of four years of Aerospace Studies classes (Foundations of the USAF, Evolution of USAF and Space Power, Air Force Leadership Studies, and National Security Affairs/Preparation for Active Duty), and a corresponding Leadership Laboratory for each year (where students apply leadership skills, demonstrate command and effective communication, develop physical fitness, and practice military customs and courtesies). College students enrolled in the AFROTC program (known as “cadets”) who successfully complete both AFROTC training and college degree requirements will graduate and simultaneously commission as Second Lieutenants in the Active Duty Air Force.

Classes are offered at California State University, San Bernardino; however, UCR students may enroll using our cross-town agreement. For more information on AFROTC course descriptions, please review catalog.csusb.edu. For more information on the AFROTC program, please call (909) 537-5440 or visit afrotc.csusb.edu.

**Army ROTC** Through arrangements with Claremont McKenna College and the Department of Military Science at California State University, San Bernardino, two- and four-year Army ROTC (AROTC) programs are available. Academic units earned in the program may be counted as elective units toward fulfillment of UCR graduation requirements. Successful completion of the AROTC program leads to a commission as a Second Lieutenant with subsequent service on active duty or assignment to an Army Reserve or National Guard unit. For more information call Claremont McKenna College, (909) 537-5533 or 537-5534 or visit cmcmckernyrotc.com.

**Summer Sessions and Special Programs**

Director of Administration Leonard Taylor 361 Surge Building (951) 827-3044; summer.ucr.edu

Summer Sessions offers over 600 regular UCR courses in multiple, abbreviated summer sessions, giving students the opportunity to expedite time to graduation, take hard-to-get classes, improve their GPA, get back on academic track, perform research with faculty, and seek professional development or enrichment courses. On campus housing options are available during the summer for both UCR and visiting students. UCR students are eligible for Financial Aid and should talk to their Financial Aid counselor for more information.

**Who May Attend?** Summer term is open to all UC and non-UC students with a high school degree, or to those who are at least 18 years of age. Students do not have to be admitted to the university to attend Summer Sessions. Please visit summer.ucr.edu for the visiting student application form and for more information. Admission to Summer Sessions does not constitute admission as a regular student of the University.

High-achieving high school students interested in taking summer classes at UCR may do so through the Summer Academy for Advanced High School Students. The program gives eligible high school students an opportunity to get a head start on their undergraduate degree by earning lower division course credit on an official UC transcript. Please visit summeracademy.ucr.edu for the application and more details.

**Credits, Grades, and Units** UCR courses are normally transferable to other institutions and applicable degree programs. For UCR students, summer quarter credits and grades are automatically placed on their official UC transcript. UC continuing students wishing to take courses in excess of 12 units for the entire summer must have the approval of their advisor or their college’s Associate Dean; all other students must have the permission of the Summer Sessions Director of Administration. UCR students in dismissed status must seek approval from their advisor or the Associate Dean from the college they wish to readmit to before registering for Summer Sessions.
University of California Center Sacramento Program

Associate Director: Cindy Simmons
1130 K Street, Suite L222
Sacramento, CA 95814
(916) 445-7300 or (951) 827-2634
uccs.ucdavis.edu

The UCCS program provides students with an opportunity to gain first-hand knowledge of California’s public policy challenges and processes. The program includes coursework as well as professional experience while living, interning, and attending classes in Sacramento. Participants will:

- Work as an intern supporting the policy making process in a legislator’s office, an executive branch agency, or another setting in the Sacramento policy community. (10 credit hours)
- Learn about the state’s political processes, institutions, and policy challenges in the California Policy Seminar taught by members of the UC Davis faculty and featuring guest lectures given by a wide array of participants in and observers of California politics and government. (4 credit hours)
- Take courses on the UC Davis campus as appropriate to individual needs and interests. (optional)

Housing is available for students 10 minutes from the Capitol building and internships range from 24 to 33 hours per week. Application requirements include a 3.0 recommended GPA and junior, senior, or graduate standing during the participating quarter. Financial aid is available for the quarter in Sacramento.

UC Riverside Extension

register@ucx.ucr.edu; extension.ucr.edu

UCR Extension is the continuing education branch of the university. Extension programs are open to anyone seeking higher education. University Extension offers degree credit, postgraduate continuing education credit, and noncredit programs for pursuit of intellectual and cultural interests, professional and career advancement, and examination of topical thinking on public affairs and urban problems. Current and former undergraduate students can enhance their degrees through one of the specialized Professional Certificate Programs. Many courses are offered weekends and evenings for students’ convenience.

UCR Extension provides a range of educational opportunities and formats, including concurrent enrollment in UCR campus courses, weekend and one-day conferences, intensive and online Certificate Programs. Intensive English and other programs for non-matriculated international students and international groups are available throughout the year. Students do not need to be admitted to a degree program at UCR to enroll in Extension’s courses or programs.

Degree Credit Credit earned in certain Extension courses may be applicable to degree requirements at the time of admission to the university. (See University of California Extension Courses in the Programs and Courses section.) Students should check with the Office of Undergraduate Admissions about the applicability of such credit. Resident students in the university wishing to apply Extension credit to degree requirements must have advance approval from the dean of their college or division before enrolling in Extension courses.

Degree Credit

UC Riverside Washington Academic Internship Program (UCDC)

1100 Hinderaker Hall
951-827-2634
ucrcdc.ucr.edu; ucdc.ucr.edu

This program provides undergraduate students with a multi-dimensional education experience in Washington, DC. Students undertake academic pursuits as well as cultural and social activities. The program combines course work with field research and internship experience. Students also have the opportunity to tour local sites and dialogue with distinguished professionals in the Speaker Series.

Students from all majors can benefit from the program. Visit ucdc.ucr.edu for information about internships and links to other job search sites. The UC Washington Center is located in downtown Washington, DC, six blocks from the White House. The UC Washington Center is an innovative teaching and research facility shared by all of the UC campuses that has classrooms, faculty and staff offices, a modern computer lab, and a student lounge, as well as living facilities for all participants in the program.

Academic Program Students may enroll in 12 to 16 units of course credit for the quarter.

Internship (4-8 units) The focal point of the academic program is the internship, which is based on the students’ interests and major, and is arranged before the student leaves for Washington, D.C. May be letter graded or S/NC depending on discipline. Visit ucdc.ucr.edu for sample internships.

Seminar in Washington D.C. (4 units) UCR students meet once per week with a faculty member in residence at the UCDC Center. Academic assignments focus on understanding the city of Washington, D.C., its history, politics and culture. Offered for a letter grade.

Interdisciplinary Elective (4 units) Serves as a weekly forum for students to share and enhance their knowledge of living and working in Washington, D.C. Students will read about, experience and analyze key sites in a multidisciplinary context. May be letter graded or S/NC.

Academic Planning/How to Apply Interested students should consult well in advance with their academic advisors and the UCDC program staff to determine how participation in the program will affect their degree progress. Consult ucdc.ucr.edu for application deadlines and information on how to apply.

Eligibility and Selection Minimum requirements are a 3.0 cumulative GPA and junior or senior standing during the participating quarter. In addition to academic criteria, the selection committee considers the student’s seriousness of purpose, maturity and the capacity to adapt to a study-quarter away.

Financial Matters Program participants pay the same UC and campus fees as a quarter at UCR and are responsible for room and board, books, and personal expenses. The only additional cost directly related to the program is round-trip transportation.

Many forms of financial assistance are available to participants. Students who receive state and federal financial aid may use their scholarships, grants and loans to finance their quarter at UCDC. Students who receive financial aid may also be eligible for funds from the President’s Washington Scholarship. Other support may also be available; students should consult with the UCDC program staff or the financial aid office for more information.

University Honors

381 Surge Building
(951) 827-5320; fax (951) 827-5320
honors@ucr.edu; honors.ucr.edu

University Honors emphasizes scholarship, engagement, and student success and is designed for high-achieving, undergraduate students from all academic disciplines, who value intellectual challenges; a curriculum characterized by depth and complexity; and an innovative, diverse, and stimulating learning community comprised of like-minded scholars and based on the three pillars of: Creativity and Innovation, Culture of Contribution, and Diversity and Global Citizenship. University Honors seeks to supplement, enhance, and maximize a student’s experience at UCR by
providing opportunities and resources for students to pursue and achieve their academic, co-curricular, and professional goals. All University Honors students are required to participate in faculty-mentored, undergraduate research, which culminates in a capstone project.

- Incoming freshmen will be invited to apply for admission to University Honors on the basis of their high school grade point average.
- First-year and second-year UCR students will be invited to apply for admission to the second year or third year of University Honors if their cumulative grade point average is 3.50 or above.
- Incoming transfer students will be invited to apply for admission to the third year of University Honors if their transfer grade point average is 3.50 or above.

University Honors provides students with high-impact educational opportunities, experiential-learning opportunities, co-curricular opportunities, and leadership opportunities. Those opportunities, along with small class settings, close interaction with Honors faculty, counseling from professional staff, peer mentoring, and an interdisciplinary curriculum maximize the educational experience of University Honors students.

Research Opportunities

Students at UC Riverside have a distinct advantage in the multitude of opportunities available for participating in faculty research programs. Independent participation in such research helps students develop technical skills, explore areas of modern research, and learn how the world of research operates. In addition, working with faculty members gives students the opportunity to interact closely with professors, who, in turn, get to know the students.

To participate in undergraduate research opportunities on campus, students can:

- Check out the college and multicampus research opportunities listed below and visit ucr.edu/research.html for other opportunities.
- Explore the undergraduate research opportunities portal at ssp.ucr.edu.
- Examine research-specific Web sites posted by colleges and departments.
- Contact departmental advisors directly.
- See the Internship Program under Career Center in the Services for Students section in this catalog.

College of Humanities, Arts, and Social Sciences

California Center for Native Nations

Director: Michelle Raheja, Ph.D.
2006 Humanities and Social Sciences Building
(951) 827-1799
michelle.raheja@ucr.edu; cccn.ucr.edu

Provides opportunities for research collaborations with California’s native peoples and other Indian tribes that benefit tribal communities and expand scholarly knowledge. As UCR is a neighbor to more than 30 tribes in the surrounding area, the center particularly supports interdisciplinary and culturally sensitive research in collaboration with these communities.

Center for Bibliographical Studies and Research

Director: Brian Geiger, Ph.D., MLS
INTN M1006
(951) 827-5841; fax (951) 827-4120
cbsr.ucr.edu

Supports research and publication in bibliography and the history of the book. It manages five internationally renowned programs.

- The English Short Title Catalog (ESTC) records every item published in Great Britain and any British governed territories from the beginning of printing (1473) through the end of the eighteenth century. The catalog is searchable free of cost via the British Library at estc.bl.uk.
- The California Newspaper Project (CNP) records surviving issues of all newspapers published in California, freely available for searching at the cnp.ucr.edu.
- The California Newspaper Microfilm Archive (CNMA) preserves and stores approximately 100,000 reels of California newspaper microfilm from 1846 to the present. Accessible at cnma.ucr.edu.
- The California Digital Newspaper Collection (CDNC) is a text-searchable collection of more than 550,000 pages of digitized California newspapers from 1848 to the present. Accessible at cdnc.ucr.edu.
- Un Catálogo Colectivo de Impresos Latinoamericanos hasta 1900 (CCILA) is a comprehensive union catalog of Latin American imprints through 1900. Searchable at ccila.ucr.edu.

Center for Family Studies

Director: Nancy Guerra, Ph.D.
Olmsted Hall, Third Floor
951 827-6421;
Nancy.guerra@ucr.edu; ccss.ucr.edu/centers/cfs

Focuses on significant advances in family theory, research, and application requiring an interdisciplinary perspective and intra- and cross-cultural approaches to family issues. Represents anthropology, education, history, sociology, and psychology.

Center for Ideas and Society

Director: Georgia Warnke, Ph.D., Distinguished Professor of Political Science
College Building South
(951) 827-1555; fax (951) 827-6377;
ideasandsociety.ucr.edu

The Center for Ideas and Society is an interdisciplinary research center dedicated to advancing humanistic studies and creativity at UC Riverside. The Center’s fellowships, research workshops, and public events strengthen the intellectual and creative life of the university. The center is committed to disseminating the results of its programs to the Riverside community and beyond.

The center also houses the Institute for the Study of Immigrant Religions and the Mellon Mays Undergraduate Fellowship Program.

Institute for Research on World-Systems

Director: Christopher Chase-Dunn, Ph.D.
4111 Interdisciplinary Building South
(951) 827-2062;
chriscd@ucr.edu; irows.ucr.edu

Organizes collaborative research among social, biological, and physical scientists on long-term, large-scale social change and its ecological, geographical and climatological causes and effects. Research foci include globalization; global inequalities; transnational social movements; urbanization and settlement systems; biotechnology and hegemony; the rise and fall of cities, states, and empires; and climate change.

College of Natural and Agricultural Sciences

Botanic Gardens

Director: Jodie S. Holt, Ph.D.
(951) 784-6962;
bgdirector@ucr.edu

Consists of more than 40 acres of gardens along the eastern boundary of the campus. The landscaped areas around campus buildings demonstrate the use of a wide assortment of plants that grow well in the inland area of Southern California. Established for teaching purposes, the Botanic Gardens provide plant materials for anthropology, art, biology, botany, conservation, ecology, entomology, morphology, ornamental horticulture, plant pathology, photography, and taxonomy. They also provide plant materials for research projects and for the testing and exhibition of plant species introduced from all parts of the world.

Center for Conservation Biology
Director: Michael Allen, Ph.D.
michael.allen@ucr.edu; ccb.ucr.edu

Supports the conservation and restoration of species and ecosystems by facilitating the collection, evaluation, and dissemination of scientific information. The center identifies new and existing research priorities in conservation biology and inaugurates new research programs. Many activities of the center are regional, centered on the diverse species and habitats that form the natural heritage of Southern California.

Center of Nano-Scale Electronics, Phenomena, and Technology

Director: Chun Ning (Jeanie) Lau, Ph.D.
jeanie.lau@ucr.edu

The Center of Nano-Scale Electronics, Phenomena, and Technology (CONSEPT) focuses on exploring novel electronic, optical, thermal, and mechanical phenomena that emerge in nanoscale systems, and exploiting these phenomena for next-generation devices and systems. Researchers explore novel materials such as graphene, carbon nanotubes, magnetic systems, and topological insulators as well as nanomechanical systems and chemical and biological sensing.

Center for Invasive Species Research

Director: Mark Hoddle, Ph.D.
(951) 827-4714; mark.hoddle@ucr.edu; cistr.ucr.edu

Entomologists, botanists, biologists, nematologists, and plant pathologists from UCR head collaborative efforts with other UC scientists as well as with state and federal government researchers to define and implement critical research on pests introduced into California that present risks to public health, urban environmental quality, natural resources, managed and unmanaged ecosystems, and economically important plants.

Institute for Integrative Genome Biology

Director: Natasha Raikhel, Ph.D.
genomics.ucr.edu

Supports faculty in diverse disciplines participating in genomics-related research, which has enormous potential for applications to improve human health, agricultural sustainability, and the environment. Contains advanced technology in DNA sequencing, microarray construction and analysis, visual microscopy, bioinformatics, and proteomics. Encompasses the following two centers.

Center for Infectious Disease and Vector Research

Director: Karine Le Roch, Ph.D.
karine@ucr.edu; cdrv.ucr.edu

The mission of the Center for Infectious Disease and Vector Research is to develop and implement technologies that will alleviate the medical and economic burden exacted by infectious diseases and vector-borne diseases in human and plants. The Center achieves this through cross-disciplinary research by combining expertise in molecular biology, nanotechnology, gene silencing and genomics-based sciences. Our goal is to provide practical solutions within therapeutic and economic time frames.

Center for Plant Cell Biology

Director: Julia Bailey-Serres, Ph.D.
cepbce.ucr.edu

An interdisciplinary research center uniting plant cell and molecular biologists with computational scientists, engineers, bioengineers, chemists, and nanoscientists in cutting-edge plant systems-based research aimed at understanding and manipulating complex processes at the molecular and cellular levels in the context of the whole organism. A hub for research on plant stress responses, developmental biology, and epigenetic mechanisms and the application of chemical and synthetic biology. Projects range from basic discoveries to the translation of knowledge to agriculture and human biology.

Center for Integrative Biological Collections

Director: Christiane Weirauch, Ph.D.
cibc.ucr.edu

The mission of the Center for Integrative Biological Collections is to advance research and teaching in biodiversity and to provide support for the management of natural resources by fostering an interdepartmental alliance among UCR’s world-class natural history collections. This is accomplished through integrated and transformative approaches across UCR collections that leverage novel systems in communication, relational databases, data mining, geo-referencing, outreach, and advocacy.

Statistical Consulting Collaboratory

Director: Zhwei Zhang Ph.D.
1337 Olmsted Hall
(951) 827-6002
collaboratory.ucr.edu, zhwei.zhang@ucr.edu

Provides statistical consulting services in areas including bioinformatics, agricultural field trials, health studies, ecological studies, entomological studies, sociological studies, marketing studies, industrial experiments, quality and reliability studies, and product and process development studies. Clients include the campus research community and off-campus agencies from all disciplines who use statistics. The collaboratory develops collaborative research relationships as well as research publications. It also provides financial support and consulting experiences to UCR undergraduate and graduate students.

Stem Cell Center

Director: Prudence Talbot, Ph.D.
(951) 827-5689;
stemcells@ucr.edu; stemcells.ucr.edu

Focuses on understanding the basic mechanisms that control stem cell function and deciphering how the tremendous potential of stem cells can be used to improve human health. Researchers at the center have expertise in many different fields including developmental biology, cancer biology, endocrinology, biomaterials for tissue regeneration, micro/nanotechnologies to control differentiation, neuroscience, toxicology, skeletal tissue repair, endothelial cell differentiation, osteogenesis, differentiation of microglia, brain development, neural crest cell differentiation, and bioengineering.

USDA-ARS U.S. Salinity Laboratory

Director: Donald Suarez, Ph.D.
450 West Big Springs Road
Riverside, CA 92507
(951) 369-4815;
ars.usda.gov/main/site_main.htm?modecode=53102000

The only research facility in the nation devoted to the study and amelioration of salinity-related agricultural and environmental problems.

The Marlan and Rosemary Bourns College of Engineering

Center for Bioengineering Research

Director: Jerome S. Schultz, Ph.D.
A220 Bourns Hall
(951) 827-2111; fax (951) 827-6416;
engr.ucr.edu/CBR.html

The Center for Bioengineering Research partners the Department of Bioengineering faculty with other UC Riverside engineering and science departments. Focal areas include cellular control and regulation, biophotonics and medical laser applications, in-silico biosystems and biomolecular modeling, bio-nanotechnology, microfluidics for bioanalyses, rational drug design and high throughput screening.
College of Engineering–Center for Environmental Research and Technology (CE-CERT)

Director: Matthew Barth, Ph.D.
1084 Columbia Avenue
Riverside, CA 92507
(951) 871-5791; fax (951) 871-5790
info@cert.ucr.edu; cert.ucr.edu

A model for partnerships among industry, government, and the academic community, CE-CERT is one of California’s premier facilities for research into air quality, transportation, and energy efficiency. The research mission includes transportation systems, emissions and fuels, renewable energy, environmental modeling and policy, and atmospheric processes.

Center for Nanoscale Science and Engineering (CNSE)

Interim Director, Dr. Alexander Balandin
balandinece.ucr.edu; www.cnse.ucr.edu

Engineers, physicists, computer scientists, neuroscientists, biologists, chemists, and biomedical scientists explore nanoscale materials, such as organic compounds, carbon nanotubes, and magnetic materials, for use in nanoelectronics, spintronics, sensors, and biomedical devices to develop new or improved technologies. The center is jointly funded and administered by the Bourns College of Engineering and the College of Natural and Agricultural Sciences.

Center for Research in Intelligent Systems (CRIS)

Director: Bir Bhanu, Ph.D.
Engineering II, Room 216
(951) 827-3954; fax (951) 827-2425;
cris.ucr.edu

Promotes interdisciplinary research for developing computer systems that are flexible, adaptive, and intelligent. Involves an interdisciplinary team of faculty from Electrical and Computer Engineering, Computer Science and Engineering, Psychology, Economics, Statistics, Mathematics, and Management. The goal is the research and development of autonomous/semiautonomous systems with sensing capabilities that can communicate and interact with other intelligent (biological and artificial) systems.

Winston Chung Global Energy Center

Co-Director: Nosang Myung, Ph.D.
Co-Director: Sadrul Ula, Ph.D.
Main Campus: Materials Science & Engineering Building, Room 204
Off Campus: 1084 Columbia Ave, Riverside, CA 92507
(951) 781-5676

The Winston Chung Global Energy Center (WCGEC) will advance solutions for today’s energy storage demands, while developing far-sighted energy storage research and energy-use strategies for tomorrow’s applications. Bridging the gap between industry and academia, the center will contribute to the economic, social and environmental health of communities around the world. This innovative center will:

- Foster a premier academic environment of research and discovery in sustainable energy, with a focus on storage issues;
- Educate a diverse and distinguished engineering workforce that is dedicated to addressing global energy needs;
- Offer tools and training that will increase the capacity of public and private planners, architects, engineers, utilities and developers to design and build energy-efficient community projects;
- Reach out to global organizations and businesses as a partner in fostering clean energy storage solutions; and
- Inspire leadership and community action to address energy storage issues in California and the world.

School of Medicine

BREATHE - A Multidisciplinary Collaborative on Air Quality & Health Research

Director: David Lo M.D., Ph.D.
david.lo@medsch.ucr.edu;
breathe.ucr.edu

The BREATHE Center at the University of California, Riverside School of Medicine is a multidisciplinary collaborative for studies Bridging Regional Ecology, Aerosolized Toxins, and Health Effects. Research efforts among the collaborative include regional climate modeling, culture and policy studies on air quality and health, environmental justice and health disparities, and the health impacts of aerosolized particles including dusts, soil microbes, allergic pollens from invasive species, and pollutants.

The main partners in this work include faculty in the Center for Conservation Biology (CCB), the College of Engineering Center for Environmental Research and Technology (CE-CERT), and Biomedical Sciences in the School of Medicine. Affiliated faculty include researchers in the Bourns College of Engineering (BCOE), the College of Natural and Agricultural Sciences (CNAS), the College of Humanities, Arts, and Social Sciences (CHASS), the School of Public Policy (SPP), and the School of Medicine (SOM). There are also affiliations with the Science and Technology Studies group in the UCR Center for Ideas and Society, and Health Assessment and Research for Communities (HARC).

Center for Glial-Neuronal Interactions: Innovative Collaborations Applied to Problems of Brain Health and Disease

Director: Monica J. Carson, Ph.D.
Associate Director: Iryna M. Ethell, Ph.D.
1274 Webber Hall
(951) 827-6089
monica.carson@ucr.edu; cgni.ucr.edu

The Center for Glial-Neuronal Interactions (CGNI) in UCR’s School of Medicine is dedicated to facilitating innovative collaborations between neuro- and glial-centric researchers as well as with researchers from outside the field of neuroscience. The ultimate goal is to understand central nervous system function at a molecular level with the goal of identifying risk factors and therapeutic targets of intervention for cognitive, neurodevelopmental and neurodegenerative central nervous system diseases. Ongoing research includes programs on Alzheimer’s disease, autism spectrum disorders, cognitive disorders, epilepsy, glioblastoma, infections of the brain, multiple sclerosis, neuroinflammatory disorders, phantom limb syndrome, stroke, substance abuse and traumatic brain injury.

Center for Healthy Communities

Director: Greer Sullivan, M.D.
greer.sullivan@medsch.ucr.edu;
healthycommunities.ucr.edu

The Center for Healthy Communities (CHC) works with community partners to employ innovative community-based research that promotes the health of communities in Inland Southern California. CHC is building bridges with community groups and interdisciplinary health field-faculty to improve the health of the culturally and economically diverse population surrounding UCR, particularly the medically underserved. The center fosters collaborations between UCR faculty, community-based organizations, grass-roots community leaders, and investigators at RAND and UCLA. Although the center is housed in the UCR School of Medicine, the intention is for it to be of benefit to all UCR faculty and programs and to community-based partners.

Center for Molecular and Translational Medicine

Director: Maurizio Pellecchia, Ph.D.
maurizio.pellecchia@ucr.edu; molmed.ucr.edu
This campus-wide initiative provides a forum to accelerate and enhance collaboration among faculty whose research is devoted to the translation of basic sciences into potential therapeutics, medical devices or diagnostics. With this initiative, UC Riverside and the School of Medicine commit to devote resources to assist in the development of novel treatments. The translation of basic laboratory discoveries into potential therapies, however, requires a multitude of efforts and expertise that no individual laboratory or funding source can, in isolation, fulfill. Potentially effective therapeutic strategies often never reach the patients due to the lack proper support necessary to channel basic laboratory pre-clinical studies through the complex and rigorous testing of experimental therapeutics. It is envisioned that the Center would either directly support or catalyze funding initiatives to advance the most promising innovative targeting approaches and agents into early stage clinical experimental therapeutics, therefore actively assisting in the first steps toward their development.

**School of Public Policy**

**Blum Initiative on Global and Regional Poverty**

Director: David Brady, Ph.D

blum.ucr.edu

The UCR Blum Initiative on Global and Regional Poverty is dedicated to addressing poverty in the Inland Southern California region through research by world-class faculty, courses and internships related to poverty for students, a yearly forum on poverty policy, and a monthly seminar series.

**Center for Social Innovation**

Director: TBA

Website to follow

The School of Public Policy is building a Center for Social Innovation that is designed to connect with local communities and provide a credible research voice that can shift away from a “problem and deficit” narrative to an “opportunity and asset” narrative, one that will help unlock the region’s potential in the eyes of government agencies and foundations, as well as the corporate sector and elected officials.

**Center for Sustainable Suburban Development**

Director: Ronald Loveridge, Ph.D.

(951) 827-7830
cssd.ucr.edu

Explores the social, economic, political and ecological questions posed by population growth and movement, using neighboring communities as a laboratory while recognizing these are global issues. Involves interdisciplinary collaborations in the community and among faculty and researchers.

**Center for Technology, Society, and Policy**

Director: TBA

Website to follow

The Center will examine issues such as the role of public policy in expanding broadband access and digital literacy, including ways that science and technology policy can improve civic participation, combat poverty, and bring about social change in the underserved regions of the state and nation. It will also explore topics relating to how broadband access and digital technologies can improve student learning outcomes, narrow the achievement gap in education, and foster equality of opportunity for students across the grade-level spectrum—from kindergarten through college.

**One Health Center**

Director: Mary Gauvain, Ph.D.

(951) 827-7830;
cgauvain@ucr.edu

ucr.edu/coes/one-health

Focuses on reducing the rate of disease and death resulting from malnutrition, unsafe water, and animal-and vector-borne diseases. In partnership with UC Davis, UCR established the center as part of the University of California Global Health Institute (UCGHI), a groundbreaking, multi-campus program for global health education, research and partnerships.

**Robert Presley Center of Crime and Justice Studies**

Director: Steven Clark, Ph.D.

(951) 827-4604; presleycenter.ucr.edu

Generates knowledge to form and implement effective crime prevention and control policies. The center encourages and facilitates research in the social sciences on basic and policy-related questions regarding justice, legal concepts and processes, social deviance and control, and research strategies for addressing such questions.

**Multicampus Research**

**Agricultural Experiment Station - Citrus Research Center**

http://cnas.ucr.edu/about/aes/aes.html

A branch of the University of California’s statewide Agricultural Experiment Station, the nation’s largest land-grant experiment station and the research arm of the University of California’s Division of Agricultural and Natural Resources headquartered in Davis. Conducts research in plants, pests and disease, and natural resource sciences; through Cooperative Extension, provides leadership in the dissemination and application of research-based knowledge in agricultural and environmental science to the people of California. Through educational programs and research opportunities, prepares tomorrow’s leaders in agricultural and environmental science.

**Center for Ubiquitous Communication by Light (UC-Light)**

Director: Albert Wang, Ph.D.

UC Riverside, Winston Chung Hall, Room 417

http://www.uclight.ucr.edu/

The Center for Ubiquitous Communication by Light (UC-Light) is an University of California system wide research center established under the University of California Multi-campus Research Program and Initiatives (MRPI). UC-Light program brings together faculty researchers from five University of California campus (Riverside, Berkeley, Davis, Santa Barbara and Merced) and the Lawrence Berkeley National Lab, as well as affiliated researchers from Technion in Israel and Hong Kong University of Science and Technology, to conduct interdisciplinary research to develop LED-based visible light communications (VLC) and positioning (VLP) technologies for next-generation ultra-high-throughput wireless streaming and indoor/outdoor visible light navigation. UC-Light Center maintains active research collaboration with the industry. UC-Light Center provides research and training opportunities for both graduate and undergraduate students.

**Cooperative Extension**

http://cnas.ucr.edu/about/aes/ces.html

Cooperative Extension specialists headquartered at UCR oversee research programs that provide technologies and scientific information to aid the region’s residents and help coordinate the activities of farm, family and consumer services advisors based in more than 50 county offices. Programs include sustainable agriculture, pest and disease management, irrigation, water quality, urban horticulture, and natural resources management.

**Natural Reserve System**

Director: Kimberly Hammond, Ph.D.

Assistant Director: Richard Redak

kimberly.hammond@ucr.edu; richard.redak@ucr.edu

http://www.ucr.edu/about/us/hr.html

The University of California Natural Reserve System maintains for teaching and research a system of reserves encompassing the diversity of California’s natural terrain. Any qualified individual or institution may use the reserves under the direction and with the approval of the university. UCR administers 8 of the approximately 35 reserves systemwide.
Philip L. Boyd Deep Canyon Desert Research Center encompasses 6,122 acres of desert habitat around Deep Canyon, near Palm Desert. An air-conditioned field station with living quarters and laboratories is located near the mouth of Deep Canyon. A primitive campground and 2-square-mile teaching area is available for class use.

James San Jacinto Mountains Reserve near Idyllwild is approximately 30 acres, surrounded on all sides by relatively undisturbed national forest land. Nearby there are 60 miles of hiking trails with access to thousands of acres of mid- and high-elevation wilderness, from nearby Lake Fulmor to the summit of Black Mountain, at 7,800 feet. The reserve is equipped for over seventy researchers and classes of student in four fully-equipped cabins. The reserve can also accommodate visitors in a stand-alone classroom.

Oasis de los Osos Reserve is located near Snow Creek at the northern base of Mount San Jacinto. This property consists of 160 acres of rocky desert slopes and a dry alluvial fan. It also contains a perennial stream (Lamb Creek) with some waterfalls. A riparian woodland grows along this stream. A semi-desert scrub plant community occurs on the dry slopes and alluvial fan and along the washes. No facilities are available at this site.

Box Springs Reserve consists of 160 acres near the top of Box Springs Mountains and includes a coastal sage scrub. No laboratory facilities are present on the property, because of the proximity of such facilities on the UCR campus. This reserve has been used for field class laboratories and student research projects, but other research projects can be conducted at this site.

Sacramento Mountains Reserve contains approximately 590 acres of desert habitat in the Mojave Desert. It is located about 18 miles west of Needles along Interstate Highway 40. This property contains at least seven species of cacti, including one of the best displays of Bigelow Cholla (Opuntia bigelovii) in California. No laboratory facilities or living quarters are on this site, but a campsite is available for anyone wishing to use the reserve overnight for teaching or research.

Motte Rimrock Reserve consists of approximately 715 acres at the northwestern corner of Perris, about 15 miles from campus. The vegetation is principally coastal sage scrub and grassland with riparian corridors in the canyons. This land is of particular biological interest for this region because it contains several species of conservation interest. Indian pictographs and a former Indian village site also are on this reserve. A headquarters building contains sleeping facilities for reserve users.

Emerson Oaks Reserve is located 5 miles east of Temecula and 1 mile south of Highway 79. This 255-acre site contains coastal sage scrub on the lower hills, and oak woodland (primarily coastal oak) in the valley portion. A small laboratory is available.

Jack and Marilyn Sweeney Granite Mountains Desert Research Center contains approximately 9,000 acres embedded in the 1.6 million-acre Mojave Desert National Preserve in eastern San Bernardino County. This rugged and scenic site offers exceptional local and regional biotic diversity, ranging from low Mojave Desert flora and fauna to remnant Colorado Plateau biota on the highest peaks. A campground and a small building at Norris Camp are available for class use, and the Allanson complex includes a state-of-the-art research laboratory, conference room, and lodging for up to 15 researchers.

UC Institute for Mexico and the United States (UC MEXUS)

Director: Exequiel Ezcurra, Ph.D.
3324 Olmsted Hall
(951) 827-3519; fax (951) 827-3856;
ucmexus@ucr.edu; ucmexus.ucr.edu
Since its establishment in 1980, the University of California Institute for Mexico and the United States (UC MEXUS) has maintained the primary mission of developing and sustaining a coordinated, university-wide approach to Mexico-related studies. The institute’s broad objectives are:
  • to increase the quantity, visibility, and effectiveness of Mexico-United States projects in the university;
  • to strengthen and develop research, exchange programs, and teaching;
  • to support and coordinate interdisciplinary and inter-campus projects;
  • to encourage and enable collaborative approaches by UC and Mexican scholars to the issues which affect both nations;
  • to act as a source of information about university-sponsored United States-Mexico activities;
  • to develop new sources for support of research and instructional programs;
  • and to promote a better understanding between the two countries.
Within this broad definition, UC MEXUS seeks to identify, encourage, secure financial support for, and publicize programs which promise to contribute substantially to scholarship, to enhance university instruction—particularly in graduate and professional areas—to improve binational understanding, and to make positive contributions to society in both Mexico and the United States. The Institute has been located at the UC Riverside campus since 1984.

Graduate School of Education

SEARCH Family Autism Resource Center
SEARCH is the acronym for Support, Education, Advocacy, Resources, Community, and Hope. The center is the University of California’s first family autism resource center focused exclusively on family needs, such as educational access. Housed in the UCR Graduate School of Education, the mission of SEARCH is to reduce the amount of stress they experience in attempting to learn about autism and access appropriate programs and treatments. While simultaneously training the next generation of autism researchers and educators, SEARCH provides assessments in both Spanish and English, and students learn procedures used both in clinic and schools.
Phone: (951) 827-3849
Email: searchcenter@ucr.edu | Website: searchcenter.ucr.edu

Vocabulary CHAAOS
Many students gain most of their advanced vocabulary through the wide reading they do in and out of school. Students who have disabilities that affect reading (for example, students with learning disabilities or mild cognitive impairments), students who are learning English as well as learning to read, and other students who read below grade level may not read enough text and text at a sufficiently high level to learn the academic language needed to succeed in their course work in middle and high school. With financial backing from the Institute of Education Sciences procedures will be developed for teaching academic words to students who read well below grade level in 6th, 7th, and 8th grades.
Phone: (951) 827-6052
Email: rollanda.oconnor@ucr.edu

Civic Engagement Research Group (CERG)
CERG’s mission is to provide an evidence base that informs the design of policies and programs that promote the development of citizens for an effective, just, and humane democratic society. We conduct quantitative and qualitative research focused on understanding:
  • The nature of youth civic engagement
  • The impact of civic learning opportunities and digital media participation on young people’s civic capacities and commitments
  • The quantity, quality, and equality of civic opportunities and outcomes in public schools and other contexts
The goal is to monitor trends, frame priorities, and develop an evidence base regarding effective civic education practices and policies.
Email: Joseph.Kahne@ucr.edu
Website: www.civicsurvey.org
Services for Students

Academic Resource Center

Director: Rena M. Burton, M.Ed.
156 Surge Building, First Floor
(951) 827-3721; arc.ucr.edu

The Academic Resource Center (ARC) provides academic support to all enrolled undergraduate and graduate students at UCR with the goal to help students succeed and excel academically. Programs and services are free unless otherwise noted. See the ARC website for hours of operation and service locations.

In addition to the programs and services listed below, the ARC offers student employment and leadership development opportunities for undergraduate students as peer educators: SI leaders, ARC 35 lab leaders, tutors, peer counselors, math advisory exam proctors, administrative support assistants, and computer lab monitors. Highlander Early Start Academy (HESA) also offers TA positions for graduate students. ARC programs and services include the following:

Assistance, Coaching & Encouragement (ACE) Provides individualized support to students who are encountering academic difficulty, helping them to meet satisfactory academic progress requirements. The ACE coaching team is made up of full-time professional staff and peer mentors who are trained and experienced at sorting out the factors that can adversely affect academic performance.

Computer Lab Open to all enrolled UCR students, offering 27 state-of-the-art computers for academic purposes and ideal for online research, accessing UCR’s Learn portal, and typing papers.

Early Assist Is currently working with freshmen in the College of Natural and Agricultural Science (CNAS) and the Bourns College of Engineering (BCoE) who place into the Intermediate Algebra Workshop (ARC 35). The program supports students throughout the academic year to assist them in successfully completing required math course work in their first year so that they may begin calculus and core STEM classes as soon as possible. Participants meet regularly with a Peer Educator to discuss math concepts, study skills, campus resources and more. Participants also attend workshops hosted by relevant campus partners.

Graduate and Professional Exam Preparation Seminars Each Fall, Winter, and Spring quarter, the ARC offers low-cost exam prep seminars for students seeking admission to graduate and professional degree programs:
- GMAT (Graduate Management Admission Test for graduate-level business programs), GRE (General Record Examination for master’s, PhD, and some professional degree programs), and LSAT (Law School Admission Test for law schools). Summer GMAT, GRE, and LSAT prep seminars are offered during Summer Session A and span four weeks. The ARC also offers a 6-week summer MCAT (Medical College Admission Test for medical schools) prep seminar spanning Summer Session A and the first two weeks of Summer Session B. Online registration only at the ARC website. Priority is given to full-time UCR students. Seminars may be cancelled due to low enrollment.

Highlander Early Start Academy (HESA) Offers incoming first-year students an opportunity to prepare for the academic rigors and challenges of UCR. Students must have placed into English 4 or 1A through the Analytical Writing Placement Exam (AWPE), OR Math 5, 6A or 9A through the Mathematics Advisory Exam (MAE) to be eligible. Students also enroll in a secondary course (History 20 for example) and complete the Early Start Seminar. The goal of this program is to support incoming freshmen during the transition from high school to university, linking them to campus resources for academic and personal success, and helping to build a community with fellow HESA peers.

Intermediate Algebra Workshop—ARC 35 Developed in collaboration with the Math Department, ARC 35 offers a refresher math workshop for admitted UCR students who have placed into Community College Math but nevertheless need to qualify to take more advanced math classes to complete their academic degree objectives. ARC 35 helps students develop better grounding in the fundamentals needed to be successful in university-level math courses. There is a fee associated with this workshop.

Placement and Advisory Examinations Used by UCR to assess student readiness for University-level coursework and to determine the appropriate course placement in English, Mathematics, Chemistry, and Foreign Languages. UCR students must satisfy placement requirements before registering for these subjects. Exam results are used for advising and placement purposes only; unit credit cannot be earned with these exams. There are four placement and advisory exams:
- Analytical Writing Placement Exam (AWPE) Used to satisfy the University of California Entry Level Writing Requirement (ELWR) and to place first-year students into an appropriate English composition course.
- Mathematics Advisory Exam (MAE) Used to place first-year students into an appropriate Mathematics course.
- California Chemistry Diagnostic Test (CCDT) Optional placement exam that may be used for placement into the Freshman Chemistry series.
- Foreign Language Placement Exams Used to determine the appropriate level of Foreign Language entry.

Study & Life Skills Workshops Aimed at enhancing study and life skills to improve success overall utilizing a holistic approach to academics. Popular workshop topics include: Public Speaking; You Can Do It!, The Art of Small Talk and Building Relationships, Time management, Giving and Receiving Feedback, Critical Reading, Note-Taking, Conflict Management, Exam Preparation, and Test-Taking Strategies as well as a variety of other topics. Trained professional staff offer one-hour workshops at scheduled times throughout the quarter; workshops are also available by request for courses, campus departments, and/or student organizations.

Supplemental Instruction (SI) Peer-led group study to help students succeed in targeted high-priority courses. SI consists of regularly scheduled study sessions, giving students an opportunity to practice and develop academic skills necessary for success. Marketed as “guaranteed study time,” SI helps students develop study strategies specific to the course. The goal of SI is to improve academic performance in traditionally difficult courses offered in both lower and upper divisions.

Tutorial Assistance Program (TAP) Tutors provide broad-based study skill strategies and techniques to promote critical thinking and time management. Our trained tutors are multi-talented and multi-disciplined students who come to the ARC recommended by academic departments across campus, and offer tutoring services on a first-come, first-served basis (walk-in and group sessions) as well as individual appointments for a variety of subjects and disciplines. Students should view the online tutor schedule prior to visiting the ARC for subject availability.

Undergraduate Writing Center The Undergraduate Writing Center provides writing support to all UCR undergraduate students through writing consultations and workshops. We provide writing assistance in any academic discipline during any stage of the writing process. The professional staff also provides targeted support to students applying for prestigious scholarships/fellowships, Undergraduate Research Journal submissions, and Honors theses.

Associated Students (ASUCR)
(Undergraduate Student Government)

202 Highlander Union Building (HUB)
(951) 827-3621; asucr.ucr.edu

ASUCR is the undergraduate student government consisting of 16 elected senators representing all three colleges: Engineering, 2; Natural and Agricultural Sciences, 4; and Humanities, Arts, and Social Sciences, 10. Also elected by the undergraduate students are a President, an Executive Vice President, a Vice President of External Affairs, a Vice President of Finance and a Vice President of Campus Internal Affairs. Additionally, there are 6 director positions elected: a Green Campus Action Plan (GCAP) Director, a Personnel Director, an Outreach Director, an Elections Director, a Marketing and Promotions Director and a Transfer/Nontraditional Student Director. Together, these 11 officers make up the cabinet, which is the decision-making body when senate is not in session.

ASUCR is supported by the ASUCR fee, $12.50 per quarter; $2.00 funds clubs and organizations; and $10.50 funds student programs and advocacy efforts, and the operating costs of ASUCR. ASUCR is a member of the UC Student Association (UCSA) for system-wide and statewide representation. It appoints undergraduates to several important offices throughout the academic year.
committees that play a role in campus governance, including the Highlander Union Board of Governors, the Recreation Facility Governing Board, the Student Services Fee Advisory Committee, Student Conduct, and the Academic Senate.

**Associated Students Program Board**

111 Highlander Union Building (HUB)
(951) 827-ASPB (2772); fax (951) 827-2144
aspb.ucr.edu: aspb@ucr.edu

The Associated Student Programming Board is student-run and plays a critical role in providing student programming and entertainment for UCR’s campus community. From annual events such as Highlander Welcome, Block Party, the Wednesday Nooner Series, Homecoming, and Spring Splash, to special programs such as comedy shows, spoken word, concerts, and the latest movie releases.

**Athletics and Recreation**

**Highlander Athletics**

Director: Tamica Smith Jones
120 Physical Education Building
(951) 827-5432; gohighlanders.com

A member of the National Collegiate Athletics Association (NCAA) Division I and the Big West Conference, UCR competes in 17 sports: eight for men — baseball, basketball, cross country, golf, soccer, tennis, and indoor and outdoor track and field — and nine for women — basketball, cross country, golf, soccer, softball, tennis, indoor and outdoor track and field, and volleyball. All UCR undergraduate students are admitted free to any regular season, home athletics event by presenting their UCR ID card at the Athletics Ticket Booth. For sport schedules and other information regarding Highlander Athletics, gohighlanders.com.

**Recreation**

Director: Lindy Fenex, Ph.D.
Student Recreation Center
Linden Street (northwest side of campus)
(951) 827-5738; recreation.ucr.edu

All UCR students are automatically members of the Student Recreation Center (SRC), a 155,000 square foot state-of-the-art facility for exercise, sports activities, and general recreational use. The SRC includes a large swimming pool and spa, tennis courts, an indoor running track, a gym with multiple courts, classroom kitchen, outdoor gear rental shop, triple the cardio and weight space, an indoor climbing wall and boulder.

**Activity Classes/Open Recreation** include a weight room, cardio area, basketball, racquetball, volleyball, badminton, squash courts. We also offer fee based activity classes such as a variety of dance and martial arts classes. As well as tennis and CPR instruction.

**Aquatics** offers a large swimming pool, with lap/recreational swimming, lessons, workouts, scuba training, and events such as Dive-in-Movie and quarterly free events.

**Competitive Sports** include Intramural Sports consisting of men’s, women’s and coed intramural leagues in basketball, volleyball, flag football, soccer, racquetball, dodgeball, and softball. Also, the Club Sports program offers men’s and women’s rugby, soccer, volleyball, and dance sport competition clubs.

**Cooking Well** offers UCR Students the ability to learn new skills and gain confidence in the kitchen by exposing them to fresh ingredients with fun, affordable, simple recipes/techniques.

**FitWell** is the SRC fitness program. Access group fitness classes, such as Zumba, yoga, cardio kickboxing, cycling, as well as state-of-the-art cardio machines and a 21,000-square-foot weight room at no additional cost. Challenge yourself with 110 Bootcamp, learn from our certified personal trainers and make fit happen at the SRC.

**Outdoor Excursions (OE)** offers hiking, rock climbing, scuba, snowboarding, kayaking, and many other activities. The OE rental shop offers tents, sleeping bags, snowboards and so much more for a discounted fee.

**Ropes** can challenge you with climbing activities! Experience the Challenge Course, our outdoor ropes and team building course located behind the SRC. Also take part in competitions, clinics and open climbing at The Rock (our indoor rock wall and boulder).

**Campus Media**

**The Highlander (Student Newspaper)**

101 Highlander Union Building (HUB)
Newsroom (951) 827-3617; Business/Advertising (951) 827-5039
highlandernews.org

The Highlander provides quality reporting and insightful editorials on campus-related issues, Riverside community-based issues, and coverage of UCR cultural and sports events. The paper is published every Tuesday during the academic year. It receives funding from advertising and a student fee. Students with a desire to write and a passion for journalism or graphic design as well as advertising can work for The Highlander. The Highlander Newspaper office is located in HUB101 at UC Riverside.

You can contact the front desk at (951) 827-3617 from 9 a.m. to 5 p.m., Monday to Friday.

**KUCR (88.3 FM in the Riverside area, kucr.org online)**

Director: Louis Vandenberg
691 Linden Street
(951) 827-3737
kucr.org (info, show schedules, and live on-line web-streaming)

KUCR, the radio station of UC Riverside, has been a vital and active element of the campus (and Inland Empire) since 1965. KUCR is real college radio in the classic mode, licensed by the FCC and broadcasting to the campus and greater Riverside community on air and on-line. KUCR music programs are deep and diverse, presenting a wide variety of genres, from the most current indie rock, electronic and hip-hop, to world, classical music, and jazz. The station, which is nationally recognized, features an excellent award-winning set of public affairs, news, and sports programs. KUCR also presents live concerts, public affairs lectures, debates, a long-running comedy series and panel discussions. In addition, the station does numerous in-person dj events on campus and in the community throughout the year. The station has developed a burgeoning community throughout the year. The station has developed a burgeoning student following and an active listener base. The station has a strong online presence, with numerous YouTube interview and community throughout the year. The station has a strong online presence, with numerous YouTube interview and performance videos, Facebook, Instagram, Twitter, et al. KUCR has a small core professional staff, with faculty participation, but features students at all levels, in management, programming, on-air dj’s, sportscasters, producers, staffers and more. KUCR embodies the university’s respect for diverse points of view, ethnic backgrounds, political beliefs, attitudes, and sexual orientations. KUCR doesn’t duplicate the mainstream, but provides “alternative” programming not normally heard on commercial radio. The station broadcasts 24 hours a day, 365 days a year, on the air, on-line, and via a free KUCR iPhone app (Android via the TuneIn app) for mobile devices.

**Card Services**

Open Monday through Friday, 9am-4pm
Bannockburn Village, Suite 1-101
(951) UCR-CARD (827-2273); ucrcard.ucr.edu

Your UCR ID, known as the R’Card, is the most important piece of identification that you will carry while on campus. As the official campus ID, you’ll use it for verification for class attendance, gain access to UCR home games, student performances and attend campus-wide social events like Spring Splash and Block Party. The R’Card is a multi-functional campus ID which provides access to library services, residence-hall living spaces, labs and dining meal plans. Money can be added to the card’s Bear Bucks account to simplify purchasing by using one card at all registers across campus. Bear Bucks is also accepted at participating merchants’ off-campus. You can even use your UCR ID to ride the RTA for free throughout the county. Check out our website at ucrdep.ucr.edu for more information regarding your R’Card.
Career Center
Director: Sean H. Gil, M.P.A.
Career Center Plaza (in front of the University Lecture Hall and Surge Building)(951) 827-3631; careers.ucr.edu

The Career Center has twenty professional and administrative staff members available to assist students with their career planning, major choice, internship search, graduate and professional school preparation, and the job search process. Open year-round, the Center offers a career resource library, special events and workshops, individual counseling, career assessments, and a comprehensive virtual resource website available 24 hours a day.

Student Employment. The Career Center provides thousands of full-time, part-time, temporary, and summer jobs posted on our online job board, SCOTLink, at careers.ucr.edu. These include both on-campus and off-campus jobs.

Job Search Assistance. Students can use in-person and web-based resources to practice interviews and get assistance with resume writing and job search strategies. Companies visiting campus in 2016-2017 for recruitment and engagement efforts have included: Amgen; California State Auditor; City Year; Edwards Lifesciences; Enterprise Holdings; Esri; Facebook; FBI; GEICO; Goldman Sachs; Google; Kelly Bluebook; Kohl’s Department Stores; Microsoft; Peace Corps; PepsiCo; Southern California Edison; Target Corp; Travelers; and Vanguard to name a few. Other companies that have engaged UCR students via telepresence engagement include: Dolby; HBO; IBM; Microsoft; Pandora; Riot Games; The National Institute of Allergy and Infectious Diseases and more.

Internship Program. Internships may be part-time volunteer experiences or may offer a salary or stipend. Academic credit for an internship is available if approved by the academic unit. Coursework will be assigned that runs parallel with the internship in order to provide an effective learning outcome.

Events. The Career Center hosts a number of annual job fairs: Finance, Accounting and Business Job Fair; STEM Job Fair; Career Expo; The Diversity Job Fair; Graduate & Professional School Information Day; Law School Information Day; Engineering and Technology Job Fair; Internship & Non-Profit Job Fair; Education & Teacher Job Fair; Health Professions School Information Day Fair; Spring Job Fair: Career Night and the Last Chance Job Fair. The Career Center also offers various skill building workshops, job discovery panels, information sessions, and on-campus interviews for career positions and internships.

Early Childhood Services
3333 Watkins Drive
Riverside, CA 92507
(951) 827-7455; www.ecs.ucr.edu

Early care and education services are available on campus for infants, toddlers, preschool and kindergarten children (from two months through 5 years). The centers are open to children of students, faculty, staff of UCR, and the community, and is nationally accredited.

We provide an exciting and engaging learning environment, opportunities for individual creativity and development, cooperative social interactions, and affirmation of one’s culture and experiences. The needs of each child are met in a supportive and nurturing way. The curriculum at the UCR Early Childhood Services follows guidelines set by the California Department of Education and the National Association for the Education of Young Children. Teachers provide developmentally appropriate experiences in math, science, language, art, music, motor skills and social/emotional skills. They use a range of learning materials including books, puzzles, computers and art materials with regular access to outdoor play equipment. Teachers follow a daily schedule, prepare weekly lesson plans and conduct two parent-teacher conferences each year. Parents receive a written progress report at the end of each year.

We provide breakfast, lunch and a morning and/or afternoon snack. Our active parent association meets regularly to plan family-oriented events and fundraisers. Students and researchers are welcome at ECS, which features observation rooms that are available to parents as well.

Tuition assistance is available when income limits are met.

Counseling and Psychological Services
Director: Elizabeth Mondragon, Psy.D.
Veitch Student Center North Wing
(951) 827-5531; counseling.ucr.edu

UCR Counseling and Psychological Services offers a wide range of confidential services aimed at helping UCR’s diverse student population with their developmental, emotional, relational, multicultural and psychological difficulties that might interfere with their academic study or personal well-being. All registered UCR students are eligible to be seen, free of charge.

Clinical Services
UCR Counseling and Psychological Services strives to be warm and welcoming. We provide a range of programs to promote mental health, emotional resilience, and wellness throughout the campus community. Our clinical services include individual counseling, couples counseling, and group therapy, as well as psychiatric services. All of our clinical services are provided by diverse and multiculturally competent licensed professional clinicians and licensed supervised interns.

UCR Counseling and Psychological Services provides walk-in crisis services (weekdays from 8:30 am-4:30 pm), that includes consultation with students, staff, faculty, and parents. The office is open Monday-Friday, 8 am - 5 pm. Counselors are also available 24 hours by phone at 951-UCR-TALK or (951) 827-5531.

Stress Management
Our stress management programs include a six-session Biofeedback training program, StressBusters Peer Educators program, and a library of meditation and relaxation exercises for streaming and downloading from our website, counseling.ucr.edu. Programs are aimed at assisting students in managing various stressors associated with university life, relationships, and work-life balance.

Outreach
Our professional clinicians offer outreach and consultation to faculty, staff and students across campus. We provide training and education on a variety of mental health and wellness topics, specifically focusing our efforts on working with distressed, suicidal, and disruptive students on campus.

Our clinicians work with students, parents, staff and faculty during orientation programs, in classes, at health and wellness fairs, in residence halls, at fraternities and sororities, in crisis situations, and, as a collaborative member of the Student Health and Wellness Services.

Cultural Student Programs

African Student Programs
Director: Kenneth Simons, B.A.
133 Costo Hall
(951) 827-4576; asp.ucr.edu

African Student Programs (ASP) is structured to augment and complement the University’s mission as articulated in its Academic Plan and faculty goals. We seek to enliven the university, as well as, students of African descent about the African diaspora, the African American experience and the critical issues students face as they endeavor to become role models, mentors, leaders, professionals and scholars. It is the point of pride that UC Riverside is a standout college choice for Black students, and their success doesn’t stop at enrollment. Our students are recognized nationally for exceptional graduation rates.

Asian Pacific Student Programs
Director: William Caganap, M.A.
244 Costo Hall
(951) 827-7272; apsp.ucr.edu

Asian Pacific Student Programs (APSP) coordinates projects and services to meet the needs of students of Asian Pacific Islander descent. APSP promotes a diverse learning environment, providing UCR with opportunities to learn from and about the Asian and Pacific Islander student population. Various social and cultural activities such as the Asian Pacific Islander
Heritage Month, the Peer Mentor Program, leadership training, and API Women’s Conference are designed to assist students in their personal, academic, cultural, and social development.

**Chicano Student Programs**

**Director:** Estella Acuña, B.A.
145 Costo Hall; (951) 827-3821
FAX: (951) 827-2189, csp.ucr.edu

Established in 1972, Chicano Student Programs (CSP) offers projects and services responding to the needs of Chicano/Latino students on campus. Support services include advising, individual counseling, referral information, and the coordination of special programs and activities such as the Raza Graduation Banquet, Semana de la Mujer, Día de los Muertos, Poesía Peligrosa, leadership training, new student/parent orientation, speaker series, community projects, and advisement of clubs and organizations.

**Middle Eastern Student Center**

**Director:** Tina Aoun
Highlander Union Building (HUB) 377
(951) 827-7233, mesc.ucr.edu

The first of its kind in the UC system, MESC is a central place of community, cultural expression, and celebration of Middle Eastern culture. Through dynamic educational and cultural programming and support services, MESC fosters relationships to build inclusion, acceptance, and earnest communication with an emphasis on cultural diversity. To meet the needs of the Middle Eastern student population at UCR, we advise MESC affiliated student organizations, provide mentorship and internships for students, host leadership trainings, and create a home away from home for all that come to MESC.

**Native American Student Programs**

**Director:** Joshua Gonzales, M.B.A.
229 Costo Hall; (951) 827-3850
FAX: (951) 827-4145, nasp.ucr.edu

Provides educational, cultural, and social support for Native American students and all students on the UCR campus and surrounding communities through Native American events such as the American Indian speaker/film series, the annual Spirit of the Tribes 5K Run/Walk, the annual Medicine Ways Conference, the annual UCR Pow Wow, “Indian Time” radio program on KUCR (88.3 FM or kucr.org), community outreach, cultural workshops, and much more.

**Undocumented Student Programs**

**Program Coordinator:** Ana Coria
224 Costo Hall; (951) 827-2193
FAX: (951) 827-2194
ana.coria@ucr.edu, usp.ucr.edu

Undocumented Student Programs welcomes all DREAMers and Allies. No matter what your immigration status or cultural background, you have an equal opportunity here to get a quality education in a safe and friendly environment. Undocumented Student Programs provides access to advice, services, and support including legal assistance, community references, opportunities for leadership development, financial aid resources, and a sense of community. You will have the opportunity to assist the Undocumented Student Taskforce in identifying and addressing issues, educate others about the experience of undocumented students, and facilitate Undocu Ally Training.

**Graduate Student Association**

Highlander Union Building (HUB)
(951) 827-3740
gsau@ucr.edu; gsa.ucr.edu

GSA represents all campus graduate students, including credential and medical students. Governed by the Graduate Student Council, which comprises representatives from each of UCR’s graduate programs. Officers, elected at large, are the president, executive vice president, vice president of academic affairs, health insurance chair, and public relations officer.

It is supported by a $24 per quarter fee for services such as the minigrant program that provides travel grants to graduate students who attend or present research at professional conferences, Grad Bash parties, and beverage mixers.

A member of the UC Student Association, which represents all UC students and has a lobby program in Sacramento, GSA is heavily involved in campus governance and appoints students to serve on various committees.

**Health Professions Advising Center**

**Director:** Charles P. Scroggs, M.A.
Rivera Library Ground Floor B03
(951) 827-6233; hpac.ucr.edu; hpac.ucr.edu

The Health Professions Advising Center (HPAC) provides information, advising and support for students planning to pursue a graduate/professional degree in the health professions. Services include individualized advising, peer mentoring, workshop series, speakers, special events and other activities for students who wish to enhance their academic and co-curricular preparation for all health professions programs.

There is no application process to utilize HPAC and all services are free and available to all UCR students and alumni.

**Housing Services**

Senior Director: Robert Brumbaugh, M.S.
3595 Canyon Crest Drive
Riverside, CA 92507
(951) 827-6350; housinginfo@ucr.edu
housing.ucr.edu

UCR student housing provides a variety of on-campus living environments designed to encourage both academic achievement and personal growth. Our 10 varied housing communities are designed to fit the needs of students at all levels, from anxious first-year admits, to those approaching their degrees, and students with families of their own.

Living on campus — as opposed to commuting or living in off-campus apartment complexes — ensures that students are truly part of the college community, with easy access to valuable resources and opportunities to participate in activities that complement the classroom educational experience.

Studies have shown that living on-campus, especially during the critical first year, increases student engagement and satisfaction, and the likelihood of an incoming student receiving their degree.

Three Residence Halls are home to more than 3,000 first-year Freshman students living in double- and triple-occupancy rooms on co-educational halls. All Residence Hall rooms are furnished and air-conditioned, with high speed data connectivity, telephone, and cable television service included. A Residence Hall contract includes a selection of Dining Plans, as well.

Some halls are intentionally arranged for students who share a common academic or social interest. These include:

- **CHASS** First-year students in the College of Humanities, Arts, and Social Sciences
- **Enginuity** First-year students in the Bourns College of Engineering
- **Honors Hall** Students admitted to University Honors at UCR
- **Pre-Business** Students in the College of Humanities, Arts, and Social Sciences Pre-Business Program
- **PATH** (Pan African Theme Hall) Students interested in expanding an interest in Pan African culture
- **Unete a Mundo** Latino/chicano cultural-interest hall
- **Gender-Inclusive Housing** Students with diverse gender identities, expressions, and orientations
- **Stonewall Hall** Students of diverse gender identities and sexual orientations, and gender-diversity allies
- **SiMS** (Students in Math & Science) First-year students in the College of Natural & Agricultural Sciences
Professional and student staff work together to plan activities and programs that develop a sense of community and encourage social interaction.

Educational support consists of academic study groups, tutorial assistance programs, seminars, computer labs, study rooms and scheduled study hours. Social activities include weekly hall competitions, off-campus trips, theme dances, special dinners, mock game shows, cultural events and intramural sports. Residence Halls also feature television lounges, pool and ping-pong tables, video games, fitness rooms, piano rooms and social lounges. On-site convenience stores provide snacks, school supplies and toiletries. Residential restaurants provide access to a high-quality, all-you-care-to-eat culinary program.

UCR Campus Apartments offer more than 3000 transfer, continuing and graduate students the enhanced privacy of traditional apartment-style communities while retaining the advantages of living on campus. Apartments range from economical, fully-furnished suites to furnished and unfurnished multi-bedroom, multi-bath apartment homes. All UCR Campus Apartments include refrigerators, carpeting, window coverings, heating, air-conditioning and cable television service. Most include full kitchens and private baths. Communities may also feature a swimming pool and spa, picnic areas with barbecue grills, recreational and study rooms, computer lab, television lounge, vending machines, bike storage, secure laundry rooms and a sport court/recreational space.

Professional and student Staff plan social and educational activities appropriate for upperclassmen and graduate-level students. On-site staff are also trained and available to assist residents with questions, concerns, or advice regarding personal and faculty needs and peer conflicts, 24 hours a day.

Family Housing is available to all students with families. The community is comprised of moderately-priced, unfurnished one- and two-bedroom apartment homes directly adjacent to the UCR campus. Interiors include fully-equipped kitchens, central heating/cooling, as well as complimentary Wi-Fi, Basic cable television, and utilities. Family-friendly community amenities also include a playground, covered picnic area, perimeter security fence and a secure central laundry room. Residential Life staff offer an extensive, family-oriented activities calendar throughout the year, as well. The Family Housing Eligibility & Assignment Policy can be viewed on the Housing website.

The Off-Campus Housing Program is an online service designed to assist students with searches for housing opportunities in the community adjacent to UCR when on-campus housing is unavailable. This service includes information about links to private apartment communities and homes for rent.

UCR Dining Services prepares diverse, healthy cuisine and friendly service to the UCR campus community. Residential Restaurants are located at both Aberdeen-Inverness and Lothian Residence Halls. Entrees, grilled specialties, homemade pizza, international cuisine, salad, fruit, and desserts are served in an “all-you-care-to-eat” format. The all-new Market @Glen Mor offers fresh home-style meals for take-out, a grill with gourmet soup and salad options, a convenience store, and Starbucks’ coffee venue.

Citrus Grove Catering is the official catering service for the campus. Catering can provide creative theme meals, banquets, picnics, barbecues, formal dinners, international menus, elegant lunches, and refreshment breaks to complement campus meetings and events.

The Highlander Union Building (HUB) offers a food court with a diverse range of culinary choices, including Italian cuisine at La Fiamma; healthy Mexican at Habanero’s; and Asian dishes at Panda Express and Sushi by Panda Express. Also in The HUB complex are The Grill at Latitude 55; Scotty’s, the campus’ own convenience stores, and such familiar favorites as Subway and Coffee Bean & Tea Leaf.

Other campus retail dining options include: The Barn, UCR’s legendary social hub offering salads, burgers, pizza and grilled sandwiches; our coffee and beverage outlet Ivan’s@Hinderaker; Bytes cafe as well as a variety of meals on wheels being served from our very own food trucks, including mexican fare from the Culinary Chameleon; premium ice cream treats from the Moo Moo; fine coffee, espresso and iced beverages from Bear Tracks; and grilled favorites from our Highlander truck.

Highlander Union Building (HUB)
Highlander Union, HUB 353

(951) 827-3610; hub.ucr.edu

The Highlander Union Building (HUB) is a gathering place where students, faculty, and staff meet, eat, relax, and study. Featuring dining and retail facilities, lounges, meeting and event spaces, an information desk, and lost and found. It also provides offices for student government, cultural programs, and various student affairs departments.

The Highlander Union offers:

- Assistance in reserving meeting space and event planning in any of the HUB conference rooms or surrounding outdoor locations through Highlander Event Scheduling.
- An information and technology support center located on the first floor. The Highlander Union’s Information Desk associates are prepared to provide students and guests with directions and information about campus and local community services. Specialized BearHelp associates are ready to answer any technology related questions, and offer students free printing. Current students can also check out laptops for a two hour loan period.

- A wide range of food fare from burgers, pasta, pizza, and tacos to Coffee Bean & Tea Leaf, Subway, Panda Express, and Sushi by Panda Express. For those on the go, the Scotty’s Convenience Store is a quick stop to pick up a snack.

- Latitude 55 is equipped with pool tables, TVs, and Xbox units. Hosting many events presented by the Highlander Union Programs team, Latitude 55 is one of the few campus locations open late nights and some weekend hours. “The Grill at Latitude 55” offers a tasty menu of burgers, chicken strips, sandwiches, snacks, drinks and monthly specials.

- Multiple lounge areas throughout the building provide comfortable places to relax and study, refill your water bottle, or heat up a meal. The outdoor Highlander Plaza and upper mall also have ATMs and provide shady sitting areas as well as tables with solar powered outlets to recharge your electronics.

International Students and Scholars (ISS)
Interim Director: Kimberly Gentile
Surge Building, Third Floor, Suite 321
(951) 827-4113; internationalstudents@ucr.edu
internationalcenter.ucr.edu

UC Riverside has a vibrant international community representing over 60 countries worldwide. As a core function of International Affairs at UCR, International Students and Scholars (ISS) helps students get answers, find support, and connect to community seamlessly with key programs and services. ISS staff conduct pre-arrival and orientation sessions; offer cultural and adjustment advising; organize community building and support programs; coordinate workshops about employment and benefits; facilitate referrals to appropriate campus and community resources; and provide advice and guidance on all immigration issues related to student status. We are dedicated to the success and wellness of our international students, and to creating a welcoming and safe environment that respects people from all backgrounds.

All UCR students can benefit from the wide range of international programs and activities designed to develop intercultural skills and global awareness. Students can request to be paired for weekly conversation and cultural exchange through our Global Connections Partner program, and techniques to facilitate marriages and intercultural skills by becoming an International Peer Advisor. During International Education Week in November, students are encouraged to learn and experience traditions from around the world through planned activities and events.

Lesbian Gay Bisexual Transgender Resource Center
Director: Nancy Jean Tubbs, M.S.
245 Costco Hall
(951) 827-2267; out@ucr.edu; out.ucr.edu

Download the UCR Guide mobile app

The LGBT Resource Center provides support, education, and advocacy regarding sexual orientation and gender identity for the UCR campus community. The center is open until 8pm most evenings and offers a David Bohnett CyberCenter; a Resource Library of books, films and magazines; “drop-in” staff and peer support; and referrals to on- and off-campus services.
Office of the Ombuds

University Ombuds: Andrew Larratt-Smith, JD, MDR
Intake and Outreach Coordinator: John Medinilla, MDR
388-390 Surge Building
(951) 827-3213
ombuds@ucr.edu; ombuds.ucr.edu

Anyone who has a university-related problem, or is in conflict with someone on campus, or thinks they have been treated unfairly may consult the Ombuds. The Ombuds will discuss a situation with the visitor privately and confidentially, explain what policies may apply, and generate options and strategies for resolving the issue(s). He may also help in gaining a better understanding of personal conflict approaches and styles, or may serve as an impartial facilitator or mediator to resolve disputes and conflict situations.

Some examples of issues that students have brought to the Ombuds are:
- Academic, pedagogic or research issues;
- Disciplinary matters;
- Roommate or housing conflicts;
- Unfair treatment, harassment, bullying, or discrimination;
- Clarification on university policies or procedures;
- Ethics issues or violations of policy.

In all cases, the Ombuds is confidential*, independent, impartial and informal. The Ombuds does not create files or maintain records on cases and people. The Ombuds will not take sides or provide legal advice, but does advocate for fairness and equity. The Ombuds is an informal resource for the UCR campus community, and does not participate in formal processes. If appropriate, however, the Ombuds can aid in identifying formal options and other resources that may be available.

Please remember that email is not a secure method for relaying personal or confidential information to the Ombuds. Phone and in-person contact are encouraged.

*An exception to confidentiality exists when the Ombuds perceives there may be an imminent threat of serious physical harm to self or others.

Police and Safety

Chief of Police: Michael Lane, B.A.
3500 Canyon Crest Drive
(951) 827-5222; police.ucr.edu

The UC Police Department (UCPD) operates 24 hours per day, 365 days a year. UCR Police officers have full police powers and are responsible for all law enforcement activities and criminal investigations on the UCR campus. Police officers work in uniform or plain clothes patrolling the campus in marked and unmarked vehicles, on bicycles, and by foot.

Incident Reporting: The university strongly encourages victims to report all criminal incidents, regardless of their nature, to the police immediately to ensure that appropriate action can be taken. Emergencies are best reported using the 9-1-1 system and nonemergencies using routine channels.

Emergencies Any police, fire, or medical emergency on campus can be reported by the 9-1-1 emergency reporting system, campus Emergency Call Boxes, campus emergency phones located in all campus building elevators and various campus buildings, or by walk-in reporting to the Police Department. Call boxes are located in or adjacent to most campus parking lots and are indicated on campus maps.

Publication of Incidents: To increase awareness of campus safety at UCR, incidents of criminal activity within the campus community are publicized via the UCPD Annual Report and Crime Statistics online; an ongoing “press log” of Community Crime Alert Bulletins (posters); the above Web site; “Crime Watch” columns in campus housing newsletters; regular police activity reports to campus housing administrators; Crime Alert e-mails to the campus community in compliance with the “Timely Notice” provisions of the federal Jeanne Clery Disclosure of Campus Security and Campus Crime Statistics Act of 1998; and crime prevention programs. Details can be found at police.ucr.edu.

The Campus Safety Escort Service is free to students, staff, faculty, and anyone else who needs an escort. This service is available Sunday-Thursday from dark to 11:30pm.

- Pick up any red phone on campus that says Campus Safety Escort Service, which will automatically connect to the Dispatcher Desk
- Request an escort from the 1st floor HUB Information Desk or the Dispatcher Desk located inside Rivera Library
- Call the Dispatcher Desk at (951) 827-3772 and ask for an escort

R’Pantry

R’Pantry at the WELL
(951) 827-9355
rpantry@ucr.edu
go.ucr.edu/rpantry

R’Pantry, UC Riverside’s campus food pantry, was established in 2015 as a direct response to the need among students for resources to fight food insecurity—the limited or uncertain availability of nutritionally adequate and safe foods, or the ability to acquire such foods in a socially acceptable manner. Juggling the rising costs of higher education can be stressful, but food should not be something that students have to worry about. In order to support student success, R’Pantry works to:

- Provide emergency nonperishable and ready to eat food
- Provide personal care items including hygiene and household items
- Provide child care items to student parents
- Connect students to on- and off-campus food resources including CalFresh benefits
- Improve the health and well-being of students long term through workshops and education

R’Pantry hosts regular walk-in food distribution hours every quarter, as well as individual or group appointments for students interested in discussing additional support. This program also offers volunteer opportunities for the UCR community.

Student Affairs Case Managers

Interim Director of Case Management: Penny Key, M.A.
Laurie Lee, M.S.
Valoria Jones, M.A.
(951) 827-5000
casemanager@ucr.edu; casemangers.ucr.edu

After Hours contact through (951) UCR-TALK or 951-827-8255.
The Student Affairs Case Managers are available to students in navigating issues that interfere with their academic and personal success and to provide support to students directly and through referrals, linkage, advocacy, problem-solving, and campus and community resources.

Student Alumni Association

Alumni and Visitor’s Center
(951) 827-2566; saa.ucr.edu
Affiliated with the UCR Alumni Association, a network of over 100,000 alumni, the Student Alumni Association prepares students for life after college through mentorships with successful alumni in the working world; nationally recognized career conferences; dinners with alumni; Highlander Day of Service, and other leadership-building activities. More information is available at the above website.

**Student Conduct and Academic Integrity Programs**

**Director:** Tasha Yules, M.S.
(951) 827-4208; conduct@ucr.edu; conduct.ucr.edu

Student Conduct & Academic Integrity Programs strives to maintain a campus environment in which the Tartan Soul principles of Accountability, Integrity, Excellence and Respect are fostered. SCAIUp upholds campus standards for student conduct and academic integrity by resolving alleged violations of university policies or campus regulations. We train and educate staff, faculty, and students about the student conduct process and student rights and responsibilities. Visit SCAI online at conduct.ucr.edu to learn more or report student behavior of concern.

**Student Health and Wellness Services**

**Senior Director Student Wellness Programs and Services:** Karen T. McComb, M.S. (951) 827-6145

**Interim Senior Director Health, Counseling, & Case Management:** Elizabeth Mondragon, Psy.D. (951) 827-5531

Student Health and Wellness Services is a team of departments within Student Affairs dedicated to leading the university in creating a strong and active wellness culture at UC Riverside. The team includes Counseling and Psychological Services, Case Management, Student Health Services, Student Disability Resource Center Services, Recreation, and The WELL. Together they are accountable for administering, developing, assessing and improving comprehensive student health and wellness services and educational programs designed to empower all enrolled students to take charge of their health and develop life-long wellness practices. Read the description for each department to learn more about the depth and breadth of health and wellness services available to UCR students.

**Student Health Services**

**Interim Director:** Kenneth Han, D.O.
Veitch Student Center
(951) 827-3031

Health insurance, including waivers:
(951) 827-5683; fax (951) 827-7171
studenthealth.ucr.edu

The Student Health Services provides high quality, confidential medical care to students, with a focus on convenient, affordable, and accessible services. All registered students are eligible to use the center, which contains a comprehensive primary care clinic, supported by an in-house medical laboratory, pharmacy, and x-ray services. Specialty clinics include the Walk-in Clinic for urgent illness or injury that cannot wait for an appointment, Women’s Health Clinic, Travel Clinic, Dental Clinic, and psychiatric services. In addition, the Preventive Care Clinic, through individual consultation and assessment, offers students the opportunity to explore a wide array of healthy lifestyle topics including weight management, optimal fitness, nutrition, smoking cessation, disease management, and stress reduction.

**Insurance** Student health insurance is a nonacademic condition of enrollment. All students are automatically enrolled in a health plan. The premium is billed on the student account. The Student Health Services is the primary care facility for students in the mandatory insurance plans. Students who can demonstrate comparable insurance coverage from another source may apply to be waived from automatic enrollment in the mandatory plan. Visit the above Web site for deadlines to file a waiver request.

**Student Life**

**Director:** Ellen Whitehead, M.Ed.
229 Highlander Union Building (HUB)
studentlife.ucr.edu

Students can contact the office or go to the website to find ways to get involved on campus and find resources available to support student organizations and fraternity and sorority life. Student Life coordinates programs to assist students with their personal and academic success through Highlander Orientation, New Student Programs, and Leadership Development resources and Community Service programs. Student Life provides a variety of campus activities and events throughout the year. Visit the Student Life website for more information about services and resources provided by the office.

**Student Org Team** provides comprehensive support and assistance to student organizations, including assistance with university recognition, recruitment, program and event planning, major event management, accessing university resources, understanding and negotiating university policies and procedures, organizational development and enhancement, fundraising, promotion and marketing, and communication.

**Fraternity and Sorority Involvement Center** is a resource center for students involved in fraternity and sorority life, as well as for students who want to learn more about what fraternity and sorority life has to offer. The FSIC provides assistance with recruitment, event planning, scholarship, philanthropy, and community service for fraternity and sorority life on campus.

**Campus Activities** provides a variety of campus entertainment, activities, and opportunities for students, staff, and faculty to show their Highlander pride and spirit.

**Highlander Orientation** helps new first year students get to know the university and become acclimated to UCR. Highlander Orientation provides opportunities to meet other first year students, receive academic advising, enroll in classes, and learn about campus resources to help students be successful.

**New Student Programs** assist new students, both first-year and transfer, in starting off on the right track in their college experiences through mentorship programs, workshops and leadership opportunities. New Student programs serves all students, including specific resources and activities for commuter students to stay connected to UCR.

**Community Service** Community Service Programs provides resources to students and student organizations to track their service hours and to find service opportunities. communityservice.ucr.edu

**Student Disability Resource Center**

**Director:** Laura Riley, M.S.Ed.
125 Costo Hall
(951) 827-3861
sdr@ucr.edu; sdr@ucr.edu

The Student Disability Resource Center offers information to prospective students about available services, financial aid, housing, mobility, or other concerns related to attending UCR. Prospective students are invited to contact the office early in their planning to attend UCR. For specific information about admission requirements, contact the Office of Undergraduate Admissions, the Graduate Division or the School of Medicine.

Services are available to regularly enrolled UCR students may include information on and referral to on- and off-campus services, mobility assistance, and academic support services. Students wishing to receive disability accommodations should contact SDRC to request services. Accommodations are individually designed to meet the documented disability-related needs of each student.

**Transportation and Parking Services**

**Interim Director:** Irma Henderson
683 Linden Street
Riverside, CA 92507
(951) 827-TAPS (8277); parking.ucr.edu

All vehicles parking on the UCR campus must display a valid student, faculty/staff or visitor UCR parking permit at all times. Visitor parking is available at the Pay-By-Space dispensers, located in the following lots: Lots 6, 10, 14 and after 4:00 p.m. in lot 4. Additional Hourly and Daily permit dispensers are located in lots 6, 13, 23, 24, 26 and 30 and after 4:00 p.m. at the University Kiosk. See the above web site for other services.
UCR Campus Store
Northeast of the Highlander Union Building (HUB)
(951) 827-BOOK (2665)
ucrcampusstore.com

The UCRiverside Campus Store provides textbooks and supplies for the courses offered. General supplies, convenience, snack items, clothing and gift items are also available. Students are urged to use their class schedules when buying textbooks. All textbook information is now available online at ucrcampusstore.com.

RENT Your Textbooks At the UCR Campus Store, 90% of titles are rental options for each quarter. You can rent and save up to 80% on textbooks. You can write and highlight in the rental books. They just need to be returned on your last day of class. Learn more at bnctextbookrental.com. Make renting, buying and returning textbooks easy, download the Bookstore Mobile App to begin. Search My College Bookstore.

Rental Due Date Reminders: We'll notify you when your textbooks are due back.

Textbook Refund Policy A full refund will be given the first week of class with receipt and books in original condition. After the first week of class, a full refund will be given with receipt, proof of schedule change, and books in original condition during the first 30 days of class. Refunds for summer and special course sections will be accepted for one week only after the start of class.

General Return Policy All merchandise other than textbooks may be refunded (to the original form of payment) within 14 days with a valid receipt.

Book Buy-Back The UCR Campus Store buys students' used books back every day. This is called "buy back." The best time to sell your used books is during finals week. The bookstore will pay 50 percent of the book's selling price if it is requested by a professor for required use next term and the bookstore is not overstocked. If the book does not meet this criteria, the price paid is based on the current national demand.

Please remember: For the protection of the students on campus, the bookstore always requires students selling books to show current student identification.

Undergraduate Research, Scholarship, and Creative Activity

Undergraduate Education
1100 Hinderaker Hall
(951) 827-2612; ssp.ucr.edu

Students can take advantage of attending a leading research university by participating in faculty mentored research, scholarship, or creative activities. Undergraduate Education provides opportunities via the Undergraduate Research opportunities portal, student research minors, Chancellor's Research Fellowship, and undergraduate research journal.

University Advancement

Vice-Chancellor for University Advancement: Peter Hayashida, M.S.
4128 Hinderaker Hall
(951) UCR-NEWS (827-6397); ucr.edu

Headed by the Vice Chancellor for University Advancement, this division has primary responsibility for generating external support for the campus, through fund-raising, strategic media relations, marketing, campus publications such as the campus magazine, video production services, the UCR home page, event planning, and alumni services, including a Student Alumni Association.

Vocational Rehabilitation Services

State Department of Rehabilitation
2010 Iowa Ave, Suite 100
Riverside, CA 92507
(951) 782-6650 (Voice) or (844) 729-2800 (TTY); rehab.cahwnet.gov

Students who have a disability that handicaps them vocationally may be eligible for services from a state department of rehabilitation office, including vocational counseling and guidance, training (with payment of costs such as books, fees, and tuition), and job placement.

Voter Registration

Students who need to register to vote for the first time, or re-register because they have moved, or want to switch their party affiliation, can obtain forms from the Student Special Services Office in 125 Costo Hall or visit specialservices.ucr.edu/vote.

You must be registered at least 15 days prior to an election in order to be eligible to vote in that election.

The WELL
(Well-being, Empowerment, Life, Learning)
Director: Devon Sakamoto, MPH, MCHES
Highlander Union Building 248
(951) UCR-WELL (827-9355)
well.ucr.edu; thewell@ucr.edu

The WELL is UCR's health education, promotion, and programming department. It strives to create a safe, supportive, and connected campus environment and to promote healthy minds, bodies, and communities through student-centered health education, peer engagement, and campus collaboration.

The WELL's health education programs aim to inform about health topics important to UCR students, and to provide opportunities to practice healthy behaviors and activities to develop lifelong wellness habits.

Visit The WELL to get free health information, safer sex supplies, nap kits, and pedometers, or just to hang out. Attend our events to learn ways to be the healthiest you possible, through programming focused on being active, nourished, mentally well, less stressed, party smart, safe, and sexually healthy.

The WELL's peer programs raise awareness and educate UCR students about a variety of health topics, provide opportunities for professional development, and foster connections between students on campus. Find us online or come in to learn how to join any of our health-related peer groups.

Women's Resource Center

260 Costo Hall
(951) 827-3337; wrc.ucr.edu

The Women's Resource Center (WRC) provides advocacy, educational programs, informal counseling, enrichment activities, support groups, and referrals for the entire UCR student community. Its goals are equity, access, outreach, retention, knowledge and skill development, safety, and a general sense of well-being. Core services include the Campus Safety Escort Service, self-defense classes, The Leadership Community for Women and other groups, initiatives, events, drop-in hours, and volunteer opportunities throughout the year.

The Campus Safety Escort Service provides safety escorts that will walk or drive you to and from your car or a nearby destination. This service, comprised of trained student volunteers, is available Sunday-Thursday from dark to 11:30pm by calling (951) 827-3772, using the red direct dial telephone located on the first floor of most campus buildings, or by dropping by the HUB or Rivera Library lobbies. To volunteer, just complete an application online at wrc.ucr.edu/escort services or stop by the Women's Resource Center, 260 Costo Hall.

Introducing UC Riverside / 26
Prospective Undergraduates

Campus Tours

Campus Tours Office
1137 Student Services Building
(951) 827-TOUR (8687)
tour@ucr.edu; visit.ucr.edu;

Visitors can learn more about UCR’s history, academic programs, research and other interesting facts from a current undergraduate student. One-hour long campus, residence hall, engineering lab and student recreation center tours are offered weekdays and select Saturdays. Prospective students and guests can also participate in an admissions information session led by an admissions counselor. Reserve a tour online, at visit.ucr.edu.

Early Academic Outreach Program (EAOP)

1228 Student Services Building
(951) 827-4695; fax (951) 827-4762
eao.ucr.edu; facebook.com/UCREAOP

The mission of EAOP is to increase the number of students who have the opportunity to achieve a postsecondary education. Areas served include select schools in Riverside and San Bernardino Counties and local community based organizations. Services focus on College Knowledge, Academic Enrichment, Advising, Campus Tours, and information on college entrance exams.

Student Disability Resource Center

125 Costo Hall
(951) 827-3861
sdrc@ucr.edu; sdrc.ucr.edu

Offers information to prospective students about available services, financial aid, housing, mobility, or other concerns related to attending UCR. Prospective students are invited to contact the office early in their planning to attend UCR. Services may include information and referral to on- and off-campus services, mobility assistance, and academic support services.

TRIO Programs

1228 Student Services Building
(951) 827-4685, fax (951) 827-4762
trio.ucr.edu

TRIO Pre-College Programs (Educational Talent Search, Upward Bound Program Classic, Upward Bound Program Oasis) help high school students from Riverside and San Bernardino counties who have disadvantaged backgrounds complete high school and enroll in college. Academic advising, information about college, mentoring, summer residential programs, college preparation workshops, college application support, financial aid application support, Financial Literacy workshops, major and career exploration and cultural and educational field trips are all provided.

University Eastside Community Collaborative (UECC)

1228 Student Services Building
(951) 827-2514
uecc@ucr.edu; uecc.ucr.edu

The UECC provides an opportunity for UCR students to become engaged in their community through tutoring and mentoring in local schools and community centers. UECC members partner with local schools to provide tutoring to lower performing students in literacy and mathematics while working with the City of Riverside to develop and participate in meaningful projects that leave a lasting impact on Riverside’s Eastside neighborhood.

Visit My.UCR.edu
Undergraduate Admission

Application for Admission

Serving high school and community college students, their parents, and counselors, Undergraduate Admissions provides information about college preparation and admission of new undergraduate freshman and transfer students. Counselors visit high schools and community colleges to provide individual preadmission advising to students. Staff members are also available by appointment and on a walk-in basis for preadmission advising. The office hosts various events throughout the year which give prospective students and their families the opportunity to visit the campus; meet faculty, staff, and students; and learn more about UCR and its programs and opportunities for undergraduates. The office is also responsible for the posting of transfer units to the UCR records of continuing and readmitted students. Inquiries may be addressed to:

Undergraduate Admissions
3106 Student Services Building
University of California, Riverside
Riverside, CA 92521
(951) 827-3411

Prospective freshman students may email: admissions@ucr.edu
Prospective transfer students may email: transfer@ucr.edu
Prospective international students may email: internationalinfo@ucr.edu

When to Apply

UCR accepts applications for admission to all undergraduate majors for Fall 2018 during the priority filing period, November 1-30, 2017.

How to Apply

Prospective applicants may apply online: universityofcalifornia.edu/apply.

Freshman Student Admission

UCR seeks to recruit and retain an academically strong student body that has demonstrated the rigorous preparation needed for admission to a major research institution and reflects the diversity of our state and region.

This section describes the two-phase undergraduate admission and selection process at UCR:

1. Satisfying the University of California minimum admission requirements
2. Selection by UCR according to the principles of Comprehensive Review, as determined by the UCR faculty

Meeting UC minimum admission requirements will not guarantee admission to UCR. Applicants who seek to increase their likelihood for admission should strive for achievement well beyond UC minimum requirements.

Final determination of admission will be made within the context of campus enrollment goals.

UC Admission Requirements

Freshmen Students interested in entering the University as freshmen need to satisfy the following requirements:

1. Complete a minimum of 15 college-preparatory courses (a-g courses) with at least 11 finished prior to the senior year. The a-g course requirements are shown in the box on this page. More information about the a-g course requirements can be found at universityofcalifornia.edu/admissions/freshman/requirements/a-g-requirements/index.html.

The university will accept only those “a-g” courses that appear on the official UC-Certified Course List for the California high school the student attended. The UC-Certified course list is available at ucop.edu/agguide. Students who have attended high school outside the state of California will have their high school coursework evaluated in the context of the general A-G requirements noted on this page.

2. Earn a grade point average (GPA) of 3.0 or better (3.4 for non-residents) in these courses with no grade lower than a C.

a. Honors Courses The university assigns extra points for up to four year-long university-certified honors level, Advanced Placement, and/or UC-designated International Baccalaureate courses taken in grades 10, 11, and 12: A=5 points, B=4 points, C=3 points. College-level courses in the a-g college preparatory courses that are transferable to the university are also assigned honors grade points. A maximum of two yearlong courses taken in grade 10 are assigned honors points. Grades of D are not assigned extra honors points. (Extra points will be awarded to 10th graders only when they take honors courses that have been certified by the university as honors-level courses.) Acceptable honors-level courses include Advanced Placement courses, specific Standard Level and all Higher Level

“a-g” Subject Requirement

a. History/Social Science (2 years required)
Two years of history/social science, including one year of U.S. history or one-half year of U.S. history and one-half year of civics or American government; and one year of world history, cultures, and geography.

b. English (4 years required)
Four years of college preparatory English that include frequent and regular writing, and reading of classic and modern literature. Not more than two semesters of ninth-grade English or no more than one year of approved ESL-type courses can be used to meet this requirement.

c. Mathematics (3 years required, 4 years recommended)
Three years of college preparatory mathematics that include the topics covered in elementary and advanced algebra and two- and three-dimensional geometry. Approved integrated math courses may be used to fulfill part or this entire requirement, as may math courses taken in the seventh and eighth grades that the student’s high school accepts as equivalent to its own math courses.

d. Laboratory Science (2 years required, 3 recommended)
Two years of laboratory science providing fundamental knowledge in two of these three core disciplines: biology (which includes anatomy, physiology, marine biology, aquatic biology, etc.), chemistry, and physics. The final two years of an approved three-year integrated science program may be used to fulfill this requirement.

e. Language Other Than English (2 years required, 3 years recommended)
Two years of the same language other than English. Courses should emphasize speaking and understanding, and include instruction in grammar, vocabulary, reading, composition, and culture. Courses in language other than English taken in the seventh and eighth grade may be used to fulfill part of this requirement if the student’s high school accepts them as equivalent to its own courses.

f. Visual and Performing Arts (1 year required)
A single yearlong approved arts course from a single visual and performing arts discipline: dance, drama or theater, music, or visual art.

g. College Preparatory Electives (1 year required)
One year (two semesters) in addition to those required in “a-f” above, chosen from visual and performing arts (nonintroductory-level courses), history, social science, English, advanced mathematics, laboratory science, and language other than English (a third year in the language used in the “e” requirement or two years of another language).
International Baccalaureate courses, and college courses that are transferable to the university.

3. Meet the examination requirement by taking the ACT with Writing or the SAT with Essay, by December of your senior year. SAT Subject Tests are not required. However, you may want to take them if you want to:
   - Demonstrate mastery of a particular subject
   - Satisfy an “a-g” requirement
   - Apply for a competitive major that strongly recommends them (e.g., Bourns College of Engineering and the College of Natural and Agricultural Sciences recommend Math Level 2 and either Chemistry or Physics).

a. ACT Assessment Test plus Writing To register, obtain a registration packet from a high school counselor or register at act.org.

b. SAT Tests To register, obtain a registration packet from a high school counselor or register at collegeboard.com.

**Graduation Rates**
The following information is provided in compliance with the Federal Student Right-To-Know Act. It reflects four- and six-year cumulative graduation rates of the 4,458 incoming first-time freshmen for Fall 2010 and does not include graduation of students who transferred to other colleges and universities. All students enrolled in a degree program are included.

- Graduated in four years: 46.7%
- Graduated in six years: 72.9%

**Paths to Admission for California Residents**
For the highest-achieving California applicants, we have two paths to admission. If you are in one of the following groups and you are not admitted to any of the UC campuses you apply to, you may be offered a spot at another campus if space permits.

1. **Statewide Path** Students who rank in the top 9 percent of California high school students according to the UC admissions index, which can be found at universityofcalifornia.edu/admissions/freshman/california-residents/admissions-index/index.html, or

2. **Local Path (ELC)** Students who rank in the top 9 percent of their graduating class at a participating high school. Students whose high schools participate in the ELC program – which most California high schools do – will be identified to be in the top 9 percent on the basis of GPA in UC-approved coursework completed in the 10th and 11th grades. To be considered for ELC, students must have a minimum GPA of 3.0 and complete the following a-g courses prior to their senior year:
   - a. History/Social Science 1 year
   - b. English 2 Years
   - c. Mathematics 2 Years
   - d. Laboratory science 1 Year
   - e. Language other than English 1 Year
   - f. College-preparatory elective (chosen from the subjects listed above or another course approved by the university) 4 Years

After students enter their coursework and grades in their applications, the University of California will compare their GPAs to the historic top GPA for their school. Students who meet or exceed that GPA, will be identified as ELC and will be designated as such on their application. For more information on this process, go to universityofcalifornia.edu/admissions/freshman/california-residents/local-path/index.html.

**Admission by Examination**
Students who do not meet UC’s minimum requirements, may be considered for admission to UC if they earn high scores on the ACT with Writing or SAT with essay, and two SAT Subject Tests. To qualify by examination, students must achieve a minimum UC Score total of 410 (425 for nonresidents), calculated according to instructions that can be found at universityofcalifornia.edu/admissions/freshman/requirements/examination/index.html. Additionally, students must earn a minimum UC Score of 63 on each component of the ACT Assessment plus Writing or SAT with Essay, and on each SAT Subject Test.

Students may not use a SAT Subject Test to meet Admission by Examination if they completed a transferable college course in that subject with a grade of C or better.

**High School Proficiency Examination** If a student does not have a high school diploma, the university will accept the Certificate of Proficiency awarded by the State Board of Education upon successful completion of the California High School Proficiency Examination. The university also

**UCR Comprehensive Review**
Comprehensive Review is the process by which UCR evaluates freshman applicants, who meet minimum UC requirements, using multiple measures of achievement and promise, while considering the context in which each student has demonstrated accomplishment. UCR will calculate an Academic Index Score (AIS) for all UC-eligible freshman applicants. The faculty of UCR have designated the measures described below to be used to calculate the AIS. Admission to UCR will be determined within the context of campus enrollment goals. Although no particular AIS will guarantee admission to UCR, prospective students who strive for the highest possible AIS increase their likelihood for admission.

**High School GPA** The strength of an applicant’s high school GPA is the strongest indicator that a student will be successful within an academically challenging UC environment. The capped GPA is calculated on the basis of all completed “a-g” courses with extra points added for UC-approved honors courses taken in grades 10 and 11, capped at 8 semesters. A capped GPA considers the extra points earned for honors-level courses and may exceed 4.0 for some students.

**ACT Assessment Plus Writing or SAT with Essay** Provide another effective measure for determining the potential for success of a UC applicant.

**Advanced Placement (AP) or International Baccalaureate (IB) courses** - AP and IB courses prepare students for college-level coursework. Therefore, students who take and do well in these courses tend to have a high probability for success within the UC environment.

**Low Family Income** Students who demonstrate high academic achievement, despite low socioeconomic status, are likely to exhibit persistence, maturity, and insight. Low family income is determined based on total family members and household income.

**First-Generation University Attendance** UC-eligible applicants who are the first in their immediate family to attend college are apt to have personal strengths that will contribute to their academic success. Students whose parents have not graduated from a four-year college or university are qualified for first-generation university attendance.

**Applicants to College of Natural and Agricultural Sciences** are strongly encouraged to take the SAT Math Subject Exam, and either the Physics or Chemistry SAT Subject Exam. Applicants are also strongly encouraged to take the ACT Science Reasoning Test and an Calculus Exam.

**Applicants to Bourns College of Engineering** should ensure strong preparation in Physics, Chemistry, and Mathematics. Their mastery of Mathematics should cover at least Pre-Calculus, but an Advanced Placement course in Calculus is recommended. Applicants are also strongly encouraged to provide evidence of adequate preparation by taking the SAT Math Subject Exam, and either the Physics or Chemistry SAT Subject Exam, or the ACT Science Reasoning Test.
will accept proficiency examinations from other states, or the General
Education Development (GED) Certificate, in place of a diploma. However,
a student must still meet the UC admission requirements and campus
selection requirements.

Nonresidents of California
Two paths to UC eligibility exist for nonresidents at the freshman level. The
first is the same as described under UC Admission Requirements and the
second is the same as described under Admission by Examination, with
the following exception: Non-resident students must have a minimum GPA
of 3.4.

Nontraditional Student Admission
UC Riverside has developed an admission program for homeschooled
or other nontraditionally educated students in recognition of the benefits
of the education these students have received, including the depth of
learning, socialization, maturity, creativity, and vision. These qualities
provide excellent foundations for pursuing an education at UC Riverside.
Visit admissions.ucr.edu/Admissions/pathsAdmissions for more information
about how UCR defines a homeschooled or other nontraditional education
and specific admission requirements.

International Admission
Complete information on how to apply to UC Riverside as an international
student can be found at international.ucr.edu. The credentials of an
international applicant—a student who holds or expects to hold a
student, exchange, visitor, diplomatic, or any other visa and who wishes to
attend school in the United States as an undergraduate—are evaluated
in accordance with the general regulations governing admission. UCR
uses the Student Exchange and Visitor Information System (SEVIS) for all
nonimmigrant F- and J-status students.

Students may apply electronically during the priority filing periods at
universityofcalifornia.edu/apply. Early in the application filing period,
students should submit the following to Undergraduate Admissions: official
certificates and detailed transcripts of record, including hours and marks,
accompanied by English translations; course syllabi; results of the Test of
English as a Foreign Language (TOEFL) or International English Language
Testing System (IELTS) examination. An applicant from another country
whose native language is not English must achieve a score of 550 (paper-
based), or 80 (Internet-based) on the TOEFL or a score of 6.5 on the
IELTS.

Students may receive more information about the TOEFL at toefl.org.
Results of the test should be forwarded to Undergraduate Admissions.
Students may receive more information about the IELTS at ielts.org.

Students who satisfy the Intersegmental General Education Transfer
Curriculum (IGETC) prior to transferring to UC, may satisfy the seven-
course pattern outlined above, depending on the courses taken. For more
information, visit assist.org.

Students who were eligible for admission to the university when they
graduated from high school—meaning that they satisfied the subject,
examination, and scholarship requirements, in addition to campus
selection—may be eligible for lower division transfer to non-selecting
majors in the College of Humanities, Arts, and Social Sciences if they have
a 2.4 GPA (2.8 GPA for non-residents) in all transferable course work.

Nonresidents of California The minimum admission requirements for
nonresidents are very similar to those for residents. Students who are not
California residents should consult with Undergraduate Admissions for
details. However, nonresidents must have a GPA of 2.8 or higher in all
transferable course work.

College-Level Examination Program
The UC does not grant credit for scores earned on the College-Level
Examination Program (CLEP).

UC Intercampus Transfer
A regular undergraduate student who is registered at any campus of the
UC may apply for transfer to another campus of the UC by filing the UC
Undergraduate Application for Admission and Scholarships. Fees and
procedures are the same for all undergraduates, and there is no special
procedure for intercampus transfer.

An undergraduate student in good standing, currently registered at UCR,
may apply for intercampus visitor status at another UC campus for one
form. Forms and instructions are available at the Office of the Registrar,
2249 Student Services Building.

Student Conduct
Disciplinary suspension or dismissal from a previously attended
educational institution is considered in the admission decision.

Credits, Transcripts, and Test Scores
Credit for English-as-a-Second-Language Course Work Students whose
first language is not English may receive up to 12 quarter units of credit
for English-as-a-second-language course work. Students may receive
workload credit (for financial aid purposes) for courses taken beyond this
12-unit limit but will not receive additional unit credit applicable to the
bachelor’s degree.

Credit for Native Language Students whose first language is not English
may receive credit for course work in their native language and literature,
provided such courses were completed at the college level in the country
of the first language or at the upper-division or graduate level at UCR or
another accredited English-speaking institution.

Unit Credit for Courses Taken Elsewhere The University grants unit credit
only for courses consistent with its curriculum that have been completed
at other accredited colleges and universities. To be accepted for credit, the
courses must be comparable to those offered at the university.

California Residents must complete the following to meet minimum
admission requirements:

1. Complete 60 semester (90 quarter) units of transferable college credit
with at least a 2.4 GPA (2.8 for nonresidents). No more than 14
semester (21 quarter) units may be taken Pass/No Pass.

2. Complete the following seven transferable college courses, earning a
grade of C or better in each course:

   a) Two courses in English (1 course in English Composition, 1 course in
      Critical Thinking);

   b) One course in mathematical concepts and quantitative reasoning;

   c) Four courses from at least two of the following subject areas:
      arts and humanities, social and behavioral sciences, and physical
      and biological sciences.

Each course must be worth at least 3 semester (4–5 quarter) units.

Students who satisfy the Intersegmental General Education Transfer
Curriculum (IGETC) prior to transferring to UC, may satisfy the seven-
course pattern outlined above, depending on the courses taken. For more
information, visit assist.org.

Students who were eligible for admission to the university when they
graduated from high school—meaning that they satisfied the subject,
examination, and scholarship requirements, in addition to campus
selection—may be eligible for lower division transfer to non-selecting
majors in the College of Humanities, Arts, and Social Sciences if they have
a 2.4 GPA (2.8 GPA for non-residents) in all transferable course work.

Nonresidents of California The minimum admission requirements for
nonresidents are very similar to those for residents. Students who are not
California residents should consult with Undergraduate Admissions for
details. However, nonresidents must have a GPA of 2.8 or higher in all
transferable course work.

College-Level Examination Program
The UC does not grant credit for scores earned on the College-Level
Examination Program (CLEP).

UC Intercampus Transfer
A regular undergraduate student who is registered at any campus of the
UC may apply for transfer to another campus of the UC by filing the UC
Undergraduate Application for Admission and Scholarships. Fees and
procedures are the same for all undergraduates, and there is no special
procedure for intercampus transfer.

An undergraduate student in good standing, currently registered at UCR,
may apply for intercampus visitor status at another UC campus for one
form. Forms and instructions are available at the Office of the Registrar,
2249 Student Services Building.

Student Conduct
Disciplinary suspension or dismissal from a previously attended
educational institution is considered in the admission decision.

Credits, Transcripts, and Test Scores
Credit for English-as-a-Second-Language Course Work Students whose
first language is not English may receive up to 12 quarter units of credit
for English-as-a-second-language course work. Students may receive
workload credit (for financial aid purposes) for courses taken beyond this
12-unit limit but will not receive additional unit credit applicable to the
bachelor’s degree.

Credit for Native Language Students whose first language is not English
may receive credit for course work in their native language and literature,
provided such courses were completed at the college level in the country
of the first language or at the upper-division or graduate level at UCR or
another accredited English-speaking institution.

Unit Credit for Courses Taken Elsewhere The University grants unit credit
only for courses consistent with its curriculum that have been completed
at other accredited colleges and universities. To be accepted for credit, the
courses must be comparable to those offered at the university.

California Residents must complete the following to meet minimum
admission requirements:

1. Complete 60 semester (90 quarter) units of transferable college credit
with at least a 2.4 GPA (2.8 for nonresidents). No more than 14
semester (21 quarter) units may be taken Pass/No Pass.

2. Complete the following seven transferable college courses, earning a
grade of C or better in each course:

   a) Two courses in English (1 course in English Composition, 1 course in
      Critical Thinking);

   b) One course in mathematical concepts and quantitative reasoning;

   c) Four courses from at least two of the following subject areas:
      arts and humanities, social and behavioral sciences, and physical
      and biological sciences.

Each course must be worth at least 3 semester (4–5 quarter) units.

Students who satisfy the Intersegmental General Education Transfer
Curriculum (IGETC) prior to transferring to UC, may satisfy the seven-
course pattern outlined above, depending on the courses taken. For more
information, visit assist.org.

Students who were eligible for admission to the university when they
graduated from high school—meaning that they satisfied the subject,
examination, and scholarship requirements, in addition to campus
selection—may be eligible for lower division transfer to non-selecting
majors in the College of Humanities, Arts, and Social Sciences if they have
a 2.4 GPA (2.8 GPA for non-residents) in all transferable course work.

Nonresidents of California The minimum admission requirements for
nonresidents are very similar to those for residents. Students who are not
California residents should consult with Undergraduate Admissions for
details. However, nonresidents must have a GPA of 2.8 or higher in all
transferable course work.

College-Level Examination Program
The UC does not grant credit for scores earned on the College-Level
Examination Program (CLEP).

UC Intercampus Transfer
A regular undergraduate student who is registered at any campus of the
UC may apply for transfer to another campus of the UC by filing the UC
Undergraduate Application for Admission and Scholarships. Fees and
procedures are the same for all undergraduates, and there is no special
procedure for intercampus transfer.

An undergraduate student in good standing, currently registered at UCR,
may apply for intercampus visitor status at another UC campus for one
form. Forms and instructions are available at the Office of the Registrar,
2249 Student Services Building.

Student Conduct
Disciplinary suspension or dismissal from a previously attended
educational institution is considered in the admission decision.

Credits, Transcripts, and Test Scores
Credit for English-as-a-Second-Language Course Work Students whose
first language is not English may receive up to 12 quarter units of credit
for English-as-a-second-language course work. Students may receive
workload credit (for financial aid purposes) for courses taken beyond this
12-unit limit but will not receive additional unit credit applicable to the
bachelor’s degree.

Credit for Native Language Students whose first language is not English
may receive credit for course work in their native language and literature,
provided such courses were completed at the college level in the country
of the first language or at the upper-division or graduate level at UCR or
another accredited English-speaking institution.

Unit Credit for Courses Taken Elsewhere The University grants unit credit
only for courses consistent with its curriculum that have been completed
at other accredited colleges and universities. To be accepted for credit, the
courses must be comparable to those offered at the university.

California Residents must complete the following to meet minimum
admission requirements:

1. Complete 60 semester (90 quarter) units of transferable college credit
with at least a 2.4 GPA (2.8 for nonresidents). No more than 14
semester (21 quarter) units may be taken Pass/No Pass.

2. Complete the following seven transferable college courses, earning a
grade of C or better in each course:

   a) Two courses in English (1 course in English Composition, 1 course in
      Critical Thinking);

   b) One course in mathematical concepts and quantitative reasoning;

   c) Four courses from at least two of the following subject areas:
      arts and humanities, social and behavioral sciences, and physical
      and biological sciences.

Each course must be worth at least 3 semester (4–5 quarter) units.
Undergraduate Admissions determines the acceptability of courses taken at an institution other than the university. The faculty of the particular school or college in which the student plans to enroll determines the applicability of such course work in satisfaction of degree requirements.

As an integral part of the system of public education of California, the university accepts approved transfer courses at full unit value that have been completed with satisfactory grades in the community colleges of the state of California.

Limitations on Transfer Credits Students will be granted up to 70 semester/105 quarter units of credit for lower-division coursework completed at any institution or any combination of institutions. For units beyond the maximum, subject credit for appropriate coursework taken in excess of this unit limitation will be granted and may be used to satisfy requirements.

- Units earned through: AP, IB, and/or A-Level examinations are not included in the limitation and do not put applicants at risk of being denied admission.

Units earned at any UC campus (Extension, summer, cross/cr/ current and regular academic year enrollment) are not included in the limitation but are added to the maximum transfer credit allowed and may put applicants at risk of being denied admission due to excessive units. Transcripts and Test Scores Undergraduate Admissions requires complete, accurate, and up-to-date information about a student’s academic program and work in progress in order to process and respond to the application in a timely manner. The transcript and other documents submitted as part of the application become the property of the university; they cannot be returned or forwarded in any form to another college or university.

Freshman Applicants Applicants are notified if a preliminary high school transcript is required. Applicants are responsible for requesting that testing agencies report examination scores for (1) either the ACT Assessment plus Writing or SAT Reasoning Test with Essay and, although not required but recommended for certain majors, (2) two SAT Subject Tests to UCR Undergraduate Admissions.

Admitted students must forward an official final high school transcript that shows the date of graduation, final transcript(s) for college work attempted, and official passing scores from Advanced Placement or International Baccalaureate specific Standard Level and all Higher Level examinations. Transcripts are due to the Office of Undergraduate Admission postmarked on or before July 1st. All other required information is due postmarked on or before July 15th.

Transfer Applicants Applicants are notified if the university requires a preliminary transcript(s). Applicants must request a final transcript from each college they attended. A transcript from the last high school they attended may also be required. Attendance at any other school or college after an application has been filed is considered to be part of the student’s record and must be reported to Undergraduate Admissions. Transcripts are due to the Office of Undergraduate Admission postmarked on or before July 1st. All other required information is due postmarked on or before July 15th.

Selection Criteria — Transfer Applicants

UCR attempts to accommodate as many qualified students from other universities and colleges as possible, particularly as juniors and seniors. In addition to meeting minimum UC eligibility requirements, transfer students will be selected on the basis of academic preparation as assessed by their GPA in all transferrable coursework and completion of required major preparatory coursework where applicable. Applicants with 120 quarter units or more are also subject to screening beyond the minimum requirements for transfer students.

School of Business Administration Admission is selective based on the GPA in all transferrable coursework with a minimum GPA of 2.7. Applicants must complete all breadth requirements (or the IGETC), and the seven published lower-division business prerequisites (with a minimum GPA of 2.5). Further information may be obtained from The School of Business Administration, 2340 Olmsted Hall, at (951) 827-4551.

Bourns College of Engineering Students are selected on the basis of academic preparation. Admission is selective based on the GPA in all transferrable coursework with a minimum GPA of 2.8, and completion of required major preparatory course work. See Admission to Majors under the Marlan and Rosemary Bourns College of Engineering section of this catalog or go to assist.org. For further information call Student Academic Affairs at (951) 827-ENGR (3647).

College of Natural and Agricultural Sciences Students are selected primarily on the basis of academic preparation, as assessed by their GPA in academic coursework and strength of preparation for the intended major. Admission is selective based on the GPA in all transferrable coursework with a minimum GPA of 2.7 and completion of required major preparatory coursework. Students should visit assist.org for updated and comprehensive major preparation requirements.

College of Humanities, Arts and Social Sciences Admission is selective based on GPA in all transferrable coursework with a minimum GPA of 2.4. Neuroscience and Psychology applicants must have a minimum GPA of 2.7 in all transferrable college coursework. Psychology applicants must also have a minimum of one UC transferrable mathematics course equivalent to Math 004 or higher. For further information call Student Academic Affairs at (951) 827-3683.

120 Quarter Units or More Applications from UC-eligible applicants with 120 quarter units or more of transfer credit are reviewed by the Dean of the College for completion of a specified pattern of courses that provides continuity with upper-division courses within the major.


**Admission to Special Categories**

Applications for admission to special categories must be filed during the application filing periods. The personal statement should include a statement of goals. Contact Undergraduate Admissions for further details. Students with no specific degree plans or goals are encouraged to enroll in courses through University Extension.

**Limited Status** A person who holds a bachelor’s degree or has completed a substantial amount of college work and who, because of special circumstances, requires specific courses toward a definite objective and for a limited period may apply for admission in Limited Status. Undergraduate Admissions determines eligibility for admission, and the status requires the approval of the dean of the appropriate college. Admission is for a specified period of time, and the student must maintain a prescribed scholastic average. Units earned are not transferable to an advanced degree.

**Second Baccalaureate** Occasionally, a student whose educational objective has changed substantially after receiving the bachelor’s degree may be considered for admission to a program for a second degree. The second baccalaureate requires senior residency and is subject to the university requirements for graduation, as well as the requirements of the college in which the second degree is to be taken, including all breadth, distribution, and major requirements. Undergraduate Admissions determines eligibility for admission, and the status requires the approval of the dean of the appropriate college. Applicants must be fully eligible for admission to the university, and their records must indicate strong probability of success in the new area. Students should check the UCOP website for UCR’s college specific policies for Limited Status/Second Baccalaureate admission.

**Notification of Admission**

Each application is considered individually; therefore, the length of time before notification may vary depending upon the circumstances of each applicant. Most fall quarter freshman applicants are notified of their status by March 31; most transfer applicants are notified by May 1. Winter quarter applicants are notified beginning September 1. In some cases, complete transcripts of course work are required before a final decision can be made.

Applicants should monitor the status of their application at My.UCR.edu. The Web site contains valuable information about admission procedures, course enrollment, housing, financial aid, and upcoming events. When offered admission by the university, students are asked to sign and return a Statement of Intent to Register (SIR) accompanied by a nonrefundable deposit of $250. This amount will be applied toward payment of university fees, provided the students register in the quarter to which they are admitted.

**Concurrent Enrollment**

Taking courses at another college or university, including UCR Extension, while in residence at UCR is called concurrent enrollment. See Finances and Registration for the policy regarding concurrent enrollment for continuing students.

**Reapplication**

Application for admission is for a specific term. If the student is not eligible for admission, or is admitted and does not register, the university requires a new application and an application fee if the student wants to be admitted to another term. The new application will be considered in light of the admission requirements in effect and the space available on campus at the time of application.

**International Baccalaureate**

The university grants 8 quarter units credit for each International Baccalaureate (IB) higher level examination on which a student scores 5 or higher. Higher level examinations are considered honors courses. The university does not grant credit for subsidiary level examinations. Some higher level examinations may be considered equivalent to freshman level courses in the subject and may be used to satisfy general education or breadth requirements. The units granted for IB examinations are not counted toward the maximum number of credits required for formal declaration of an undergraduate major or the maximum number of units one may accumulate prior to graduation from the university. Students who enter the university with IB credit do not have to declare a major earlier than other students nor are they required to graduate earlier.

See International Baccalaureate Examination Credit chart on next page.
<table>
<thead>
<tr>
<th>IB Examination</th>
<th>IB Score</th>
<th>Unit Credit</th>
<th>Bourns College of Engineering</th>
<th>College of Humanities, Arts and Social Sciences/School of Business Administration</th>
<th>College of Natural and Agricultural Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>5, 6, 7</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Biological Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business and Management</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>5, 6, 7</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classical Languages</td>
<td>5, 6, 7</td>
<td>4 *&quot;Additional Humanities&quot; breadth</td>
<td>*&quot;Additional Humanities&quot; breadth</td>
<td>*&quot;Additional Humanities&quot; breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>5, 6, 7</td>
<td>4 Elective</td>
<td>Computer Science breadth</td>
<td>Computer Science breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dance</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td>5, 6, 7</td>
<td>4 Credit for ECON 002</td>
<td>Credit for ECON 002</td>
<td>Credit for ECON 002</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Credit for ECON 003</td>
<td>Credit for ECON 003</td>
<td>Credit for ECON 003</td>
<td></td>
</tr>
<tr>
<td>English: Language and Literature</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English: Literature</td>
<td>5</td>
<td>4 Credit for ENGL 001A</td>
<td>Credit for ENGL 001A</td>
<td>Credit for ENGL 001A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Credit for ENGL 001B</td>
<td>Credit for ENGL 001B</td>
<td>Credit for ENGL 001B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6, 7</td>
<td>4 Credit for ENGL 001A</td>
<td>Credit for ENGL 001A</td>
<td>Credit for ENGL 001A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Credit for ENGL 001B</td>
<td>Credit for ENGL 001B</td>
<td>Credit for ENGL 001B</td>
<td></td>
</tr>
<tr>
<td>English: Language and Performance</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Film</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Further Math</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geography</td>
<td>5, 6, 7</td>
<td>4 Credit for GEO 002</td>
<td>Credit for GEO 002</td>
<td>Credit for GEO 002</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 &quot;Additional Social Sciences” breadth</td>
<td>&quot;Additional Social Sciences” breadth</td>
<td>&quot;Additional Social Sciences” breadth</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>5, 6, 7</td>
<td>4 Credit for HIST 020</td>
<td>Credit for HIST 020</td>
<td>Credit for HIST 020</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of the Islamic World</td>
<td>5, 6, 7</td>
<td>4 *&quot;Additional Humanities&quot; breadth</td>
<td>*&quot;Additional Humanities&quot; breadth</td>
<td>*&quot;Additional Humanities&quot; breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Languages other than English</td>
<td>5, 6, 7</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>5, 6, 7</td>
<td>4 Credit for MATH 009A</td>
<td>Credit for MATH 009A</td>
<td>Credit for MATH 009A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td>5, 6, 7</td>
<td>4 Elective</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td>5, 6, 7</td>
<td>4 Credit for PHIL 001</td>
<td>Credit for PHIL 001</td>
<td>Credit for PHIL 001</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td>5, 6, 7</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>5</td>
<td>4 Social Sciences (Psychology) breadth</td>
<td>Social Sciences (Psychology) breadth</td>
<td>Social Sciences (Psychology) breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6, 7</td>
<td>4 Credit for PSYC 002</td>
<td>Credit for PSYC 002</td>
<td>Credit for PSYC 002</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Anthropology</td>
<td>5, 6, 7</td>
<td>4 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theatre Arts</td>
<td>5, 6, 7</td>
<td>4 Credit for THEA 070</td>
<td>Credit for THEA 070</td>
<td>Credit for THEA 070</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td></td>
</tr>
<tr>
<td>Visual Arts</td>
<td>5, 6, 7</td>
<td>4 Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Advanced Placement

The university grants credit for all College Board Advanced Placement Tests for which a student scores 3 or higher. The credit may be subject credit, graduation credit, or credit toward general education or breadth requirements, as determined by each college office.

The units granted for AP tests are not counted toward the maximum number of credits required for formal declaration of an undergraduate major or the maximum number of units a student may accumulate prior to graduation from the university. Students who enter the university with AP credit do not have to declare a major earlier than other students, nor are they required to graduate earlier.

<table>
<thead>
<tr>
<th>AP Examination</th>
<th>AP Score</th>
<th>Unit Credit</th>
<th>Bourns College of Engineering</th>
<th>College of Humanities, Arts and Social Sciences/School of Business Administration</th>
<th>College of Natural and Agricultural Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art History</td>
<td>3, 4, 5</td>
<td>4</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td>Studio Art¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Drawing</td>
<td>3, 4, 5</td>
<td>4</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td>• 2-D Design</td>
<td>3, 4, 5</td>
<td>4</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td>• 3-D Design</td>
<td>3, 4, 5</td>
<td>4</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td>• General Portfolio²</td>
<td>3, 4, 5</td>
<td>4</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Humanities (Fine Arts) breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td>Biology</td>
<td>3, 4, 5</td>
<td>4</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>3, 4, 5</td>
<td>3</td>
<td>Credit for CHEM 001W plus Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Credit for CHEM 001W</td>
<td>Credit for CHEM 001W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese Language and Culture</td>
<td>3, 4</td>
<td>8</td>
<td>Elective</td>
<td>“Additional Humanities” breadth</td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• A Examination²</td>
<td>3, 4, 5</td>
<td>3, 4, 5</td>
<td>2, 4</td>
<td>Elective</td>
<td>Elective; placement after individual counseling</td>
</tr>
<tr>
<td>• AB Examination²</td>
<td>3, 4, 5</td>
<td>5, 5</td>
<td>4, 4</td>
<td>Credit for CS 010, Credit for CS 012</td>
<td>Credit for CS 010, Credit for CS 012</td>
</tr>
<tr>
<td>• Principles</td>
<td>3, 4, 5</td>
<td>8</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Macroeconomics</td>
<td>3, 4, 5</td>
<td>3, 4, 5</td>
<td>4, 4</td>
<td>Credit for ECON 002, Credit for ECON 003</td>
<td>Credit for ECON 002, Credit for ECON 003</td>
</tr>
<tr>
<td>• Microeconomics</td>
<td>3, 4, 5</td>
<td>4, 4</td>
<td>4, 4</td>
<td>Credit for ECON 001, Credit for ECON 002</td>
<td>Credit for ECON 001, Credit for ECON 002</td>
</tr>
<tr>
<td>English³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Language/Composition</td>
<td>3, 4, 5</td>
<td>4, 4, 5</td>
<td>4, 4</td>
<td>Credit for ENGL 001A, Credit for ENGL 001A, Credit for ENGL 001A</td>
<td>Credit for ENGL 001A, Credit for ENGL 001A, Credit for ENGL 001A</td>
</tr>
<tr>
<td>• Literature/Composition</td>
<td>3, 4, 5</td>
<td>4, 4</td>
<td>4, 4</td>
<td>Credit for ENGL 001A, Credit for ENGL 001A, Credit for ENGL 001A</td>
<td>Credit for ENGL 001A, Credit for ENGL 001A, Credit for ENGL 001A</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>3, 4, 5</td>
<td>3, 4, 5</td>
<td>4, 4</td>
<td>Credit for ENSC 001, Credit for ENSC 002</td>
<td>Credit for ENSC 001, Credit for ENSC 002</td>
</tr>
</tbody>
</table>

College courses taken prior to or after enrolling at the university may duplicate the content of AP examinations. In these cases, the university may not award credit for both the course and the AP exam. The university grants credit for Advanced Placement tests as described below.
<table>
<thead>
<tr>
<th>AP Examination</th>
<th>AP Score</th>
<th>Unit Credit</th>
<th>Bourns College of Engineering</th>
<th>College of Humanities, Arts and Social Sciences/School of Business Administration</th>
<th>College of Natural and Agricultural Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Language &amp; Culture</td>
<td>3, 4</td>
<td>8 Elective</td>
<td>Humanities (Language) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 Elective</td>
<td>“Additional Humanities” breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Literature³</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Humanities (Literature) breadth</td>
<td>Elective</td>
<td>Humanities (Literature) breadth</td>
</tr>
<tr>
<td>German</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Language &amp; Culture</td>
<td>3, 4</td>
<td>8 Elective</td>
<td>“Additional Humanities” breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Literature³</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Humanities (Literature) breadth</td>
<td>Elective</td>
<td>Humanities (Literature) breadth</td>
</tr>
<tr>
<td>History</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• United States</td>
<td>3, 4, 5</td>
<td>4 Credit for POSC 010</td>
<td>Credit for POSC 010</td>
<td>Credit for POSC 010</td>
<td></td>
</tr>
<tr>
<td>• Comparative Government</td>
<td>3, 4, 5</td>
<td>4 Credit for POSC 015</td>
<td>Credit for POSC 015</td>
<td>Credit for POSC 015</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• United States</td>
<td>3, 4, 5</td>
<td>4 Credit for HIST 017A</td>
<td>Credit for HIST 017A</td>
<td>Credit for HIST 017A</td>
<td></td>
</tr>
<tr>
<td>• European</td>
<td>3, 4, 5</td>
<td>4 Credit for HIST 052</td>
<td>Credit for HIST 052</td>
<td>Credit for HIST 052</td>
<td></td>
</tr>
<tr>
<td>• World</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Humanities (World History) breadth</td>
<td>Elective</td>
<td>Humanities (World History) breadth</td>
</tr>
<tr>
<td>Human Geography</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italian Language and Culture</td>
<td>3, 4</td>
<td>8 Elective</td>
<td>Human Sciences (Geography) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 Elective</td>
<td>“Additional Humanities” breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>Japanese Language and Culture</td>
<td>3, 4</td>
<td>8 Elective</td>
<td>“Additional Humanities” breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Latin</td>
<td>3, 4</td>
<td>8 Elective</td>
<td>Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 Elective</td>
<td>“Additional Humanities” breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Literature³</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Humanities (Literature) breadth</td>
<td>Elective</td>
<td>Humanities (Literature) breadth</td>
</tr>
<tr>
<td>Mathematics³⁴</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AB Examination</td>
<td>3, 4, 5</td>
<td>4 Credit for MATH 009A (additional subject coverage may be granted after individual counseling)</td>
<td>Credit for MATH 009A (additional subject coverage may be granted after individual counseling)</td>
<td>Credit for MATH 009A (additional subject coverage may be granted after individual counseling)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3, 4, 5</td>
<td>4 Credit for MATH 009B (additional subject coverage may be granted after individual counseling)</td>
<td>Credit for MATH 009B (additional subject coverage may be granted after individual counseling)</td>
<td>Credit for MATH 009B (additional subject coverage may be granted after individual counseling)</td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Theory</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Humanities (Fine Arts) breadth</td>
<td>Elective</td>
<td>Humanities (Fine Arts) breadth</td>
</tr>
<tr>
<td></td>
<td>3, 4, 5</td>
<td>4 Humanities (Fine Arts) breadth</td>
<td>Elective</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Listen and Literature³</td>
<td>3, 4, 5</td>
<td>4 Humanities (Fine Arts) breadth</td>
<td>Elective</td>
<td>Elective</td>
<td></td>
</tr>
</tbody>
</table>
### College Board Advanced Placement Examination Credit

<table>
<thead>
<tr>
<th>AP Examination</th>
<th>AP Score</th>
<th>Unit Credit</th>
<th>Bourns College of Engineering</th>
<th>College of Humanities, Arts and Social Sciences/School of Business Administration</th>
<th>College of Natural and Agricultural Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physics</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Examination B&lt;sup&gt;3&lt;/sup&gt;</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Examination C: Mechanics</td>
<td>3</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4, 5</td>
<td>4 Credit for PHYS 002A</td>
<td>Credit for PHYS 002A</td>
<td>Credit for PHYS 002A</td>
<td></td>
</tr>
<tr>
<td>• Examination C: Electricity and Magnetism</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Physics 1</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Physics 2</td>
<td>3, 4, 5</td>
<td>4 Elective</td>
<td>Natural Sciences and Mathematics (Physical Sciences) breadth</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Elective</td>
<td></td>
<td></td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>3</td>
<td>4 Social Sciences (Psychology) breadth</td>
<td>Social Sciences (Psychology) breadth</td>
<td>Social Sciences (Psychology) breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4, 5</td>
<td>4 Credit for PSYC 002</td>
<td>Credit for PSYC 002</td>
<td>Credit for PSYC 002</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Language &amp; Culture</td>
<td>3, 4</td>
<td>8 Elective</td>
<td>Elective</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4 &quot;Additional Humanities&quot; breadth</td>
<td>&quot;Additional Humanities&quot; breadth</td>
<td>&quot;Additional Humanities&quot; breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4 Elective</td>
<td></td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>• Literature &amp; Culture</td>
<td>3, 4, 5</td>
<td>4 Humanities (Literature) breadth</td>
<td>Humanities (Literature) breadth</td>
<td>Humanities (Literature) breadth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4 Elective</td>
<td></td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td>3</td>
<td>4 Credit for STAT 040</td>
<td>Credit for STAT 040</td>
<td>Credit for STAT 040</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4, 5</td>
<td>4 Credit for STAT 040</td>
<td>Credit for STAT 040</td>
<td>Credit for STAT 040</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> Maximum credit 8 units
<sup>2</sup> Maximum credit 4 units
<sup>3</sup> No longer offered.
<sup>4</sup> Maximum credit 4 units for AB examination and AB Subscore examination

---

See “Programs and Courses” for subject abbreviations
Feasibility and Expenses

Student expenses depend upon a great many factors that should be considered carefully before planning a budget. Financial help needed — beyond funds that students or their families are able to provide — should be determined well in advance of the entering quarter. Use the charts in this section as guides to planning and visit finaid.ucr.edu for detailed information on costs to attend UCR.

Residence Classification

Students pay nonresident supplemental tuition if they have not been living in California for more than one year immediately prior to the residence determination date for the term in which they propose to register at UCR. Along with the criterion physical presence, the other criteria are intent to become a California resident and financial independence. Information on these three criteria is provided at registrar.ucr.edu and below, under Residence for Tuition Purposes.

Residence classification of new, readmitted, and continuing students is made for each term and at each campus of the UC. Classifications are based on evidence presented in and supporting each student’s Statement of Legal Residence. Students sign all Statement of Legal Residence forms under oath, and further information required may need to be provided under oath, by declaration or affidavit.

The residence determination date is the day instruction begins at the last of the UC campuses to open for the quarter and, for schools on the semester system, the day instruction begins for the semester. Students classified as nonresidents retain that status until they apply for, and receive, a new classification. Students planning to file for residence status after their first year should talk with the residence affairs officer well before the appropriate residence determination date, preferably during their first few weeks in California. Students may apply for classification as California residents as soon as they meet all three criteria for residence and, if successful in changing their status, would not pay nonresident supplemental tuition for subsequent quarters if they continued to meet the criteria.

Residence Determination All questions concerning residency are referred to the residence affairs officer in the Office of the Registrar. No other campus personnel are authorized to supply information regarding residence requirements for tuition purposes. Students wishing to appeal a final decision on residence classification by the residence affairs officer are assisted and referred to the appropriate member of the General Counsel’s Office.

Late Fees

Late fees are assessed to students who fail to make payments or file forms by published deadlines. Late enrollment and late registration fees may be waived only for the following reasons: student health problems verified by a physician; death in the family; or a verified administrative error on the part of the university.

Fee Exemptions

Dependents of Veterans The California Education Code provides for exemption from certain fees at state-owned colleges, universities, and other schools for eligible students who are dependents or spouses of veterans whose death or disability was service connected. Qualifying UCR students are eligible for exemption from the Student Services Fee, tuition, and Professional Degree Supplemental Tuition. Claims for fee exemptions must be presented to the university during the academic year for which the claim applies. Retroactive approval can be granted only in situations in which students applied for the exemption in a timely manner but approval was delayed by the U.S. Department of Veterans Affairs processing of an original or reopened service-connected disability compensation or Dependency and Indemnity Compensation claim. Contact the Financial Aid Office, 2106 Student Services Building, (951) 827-3878, for information.

Exemption from Nonresident Supplemental Tuition Some students may be eligible for exemption from nonresident supplemental tuition. Visit registrar.ucr.edu for information.

Fee Reductions

Employees A regular status employee who meets the admission requirements of the university is eligible for a two-thirds reduction of both the Student Services Fee and tuition for up to 9 units or three regular-session university courses per quarter or semester, whichever is greater. An employee so registered is ineligible for the services and facilities of the counseling center, gymnasiums, or the student health services, other than those to which the employee may be otherwise entitled.

Required Student Tuition and Fees Fall Quarter 2017

For detailed information on fees, visit registrar.ucr.edu

<table>
<thead>
<tr>
<th>Undergraduate Students</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Services Fee</td>
<td>$376.00</td>
<td>$376.00</td>
</tr>
<tr>
<td>Tuition</td>
<td>3,834.00</td>
<td>3,834.00</td>
</tr>
<tr>
<td>Health Insurance Premium</td>
<td>585.92</td>
<td>585.92</td>
</tr>
<tr>
<td>Recreation Center Fee</td>
<td>59.00</td>
<td>59.00</td>
</tr>
<tr>
<td>Recreation Expansion Fee</td>
<td>149.00</td>
<td>149.00</td>
</tr>
<tr>
<td>Division I Fee</td>
<td>35.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Student Center Fee</td>
<td>110.00</td>
<td>110.00</td>
</tr>
<tr>
<td>ASCUR Fee</td>
<td>12.50</td>
<td>12.50</td>
</tr>
<tr>
<td>ASPB Fee</td>
<td>30.00</td>
<td>30.00</td>
</tr>
<tr>
<td>UCR Student Services Fee</td>
<td>6.00</td>
<td>6.00</td>
</tr>
<tr>
<td>KUCR Fee</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Highlander Fee</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Highlander Empowerment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Services Fee</td>
<td>14.00</td>
<td>14.00</td>
</tr>
<tr>
<td>EOP Fee</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>Student Voice Initiative</td>
<td>1.33</td>
<td>1.33</td>
</tr>
<tr>
<td>Subsidized Student Admission Plan</td>
<td>2.50</td>
<td>2.50</td>
</tr>
<tr>
<td>UC Student Association Fee</td>
<td>.75</td>
<td>.75</td>
</tr>
<tr>
<td>Green Campus Action Plan</td>
<td>2.50</td>
<td>2.50</td>
</tr>
<tr>
<td>Total—California Residents</td>
<td>$5,225.00</td>
<td>$9,338.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graduate Students</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Services Fee</td>
<td>$376.00</td>
<td>$376.00</td>
</tr>
<tr>
<td>Tuition</td>
<td>3,834.00</td>
<td>3,834.00</td>
</tr>
<tr>
<td>Graduate and Professional Student Health Insurance Premium</td>
<td>1188.06</td>
<td>1188.06</td>
</tr>
<tr>
<td>Recreation Center Fee</td>
<td>59.00</td>
<td>59.00</td>
</tr>
<tr>
<td>Recreation Expansion Fee</td>
<td>149.00</td>
<td>149.00</td>
</tr>
<tr>
<td>Student Center Fee</td>
<td>110.00</td>
<td>110.00</td>
</tr>
<tr>
<td>Graduate Student Association Fee</td>
<td>13.13</td>
<td>13.13</td>
</tr>
<tr>
<td>Graduate Student Association Conference Travel</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Graduate Student Association (GASUCR) Fee Fellowship</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>UCR Student Services Fee</td>
<td>6.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Total—California Residents</td>
<td>$5,746.24</td>
<td>$10,870.24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fee Exemption</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonresident supplemental tuition</td>
<td>5,034.00</td>
<td></td>
</tr>
<tr>
<td>Total—Nonresidents</td>
<td>$14,563.00</td>
<td></td>
</tr>
</tbody>
</table>

Note Students in the M.B.A. and M.P.P. program pay Professional Degree Supplemental Tuition. Additional mandatory fees such as the Professional Degree Supplemental Tuition and the Medical School Disability Insurance Fee are assessed to all medical school students. Visit registrar.ucr.edu for more information.

Totals do not include the Technology Course Materials Fee of $2.00 per unit for graduate students and $4.00 per unit for undergraduate students.

The amounts shown in this document represent fees as currently approved. However, all University fees are subject to change, and the fee amounts billed for this period may be adjusted at a future date.

Finances and Registration
Refunds for All Continuing and Readmitted Students are as follows:

Refunds for All Other Students

Refunds for New Students Receiving Federal Financial Aid

Fee refunds for new students receiving Title IV federal financial aid are as follows:

Prior To and Including Day 1 Prior to and including the first day of instruction, eligible fees paid are refunded in full.

Day 2 and After Beginning the second day of instruction, a prorated refund is given for eligible fees paid.

If students withdraw during a quarter, federal regulations require UCR to calculate the amount of federal financial aid that has been “earned” for the period they attended. If they withdraw before completing 60 percent of the quarter, a pro rata portion of the aid must be returned to the federal government. Any portion of unearned aid that must be returned to federal aid programs by UCR will be deducted from the amount of the tuition and fee and/or housing refund. If the amount UCR must return to federal aid programs exceeds the amount of the student’s institutional refund, the student’s account may be billed. More information regarding the return of Title IV federal aid requirements is available at finaid.ucr.edu.

Deferred Payment Plan

The Deferred Payment Plan (DPP) offers students an opportunity to pay their quarterly fees and tuition in three monthly installments. For each quarter of participation, a new application must be submitted through rweb.ucr.edu, with a processing fee of $25. Visit sbc.ucr.edu/students/deferred_payment_plan.html for more information.

Refunds

The portion of a refund allocated to a program may not exceed the amount of any portion of unearned aid that must be returned to federal aid programs by UCR. If a Housing or Registration refund is due to a student under UCR’s refund policy and the student received financial aid under any aid program other than Federal Work-Study, the refund shall be returned to student assistance programs in the following order: outstanding balances on Federal Direct Unsubsidized Stafford Loan, Federal Direct Stafford Loan, Federal Perkins Loan, Federal Direct PLUS Loan, Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Cal Grant A or B, UC Student Loan, Grant-in-Aid State, other institutional grants or scholarships. The portion of a refund allocated to a program may not exceed the amount a student received from that program.

Distribution Formula for Institutional Refunds

If a Housing or Registration refund is due to a student under UCR’s refund policy and the student received financial aid under any aid program other than Federal Work-Study, the refund shall be returned to student assistance programs in the following order: outstanding balances on Federal Direct Unsubsidized Stafford Loan, Federal Direct Stafford Loan, Federal Perkins Loan, Federal Direct PLUS Loan, Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Cal Grant A or B, UC Student Loan, Grant-in-Aid State, other institutional grants or scholarships. The portion of a refund allocated to a program may not exceed the amount a student received from that program.

Financial Support

The Financial Aid Office assists students with meeting educational expenses that cannot be met from personal resources. To obtain financial aid, students must file the Free Application for Federal Student Aid (FAFSA) with the Financial Aid Office yearly. FAFSAs are available online beginning October 1 for the upcoming academic year at fafsa.ed.gov. Undocumented students who meet the California high school attendance and graduation requirements of state law AB540 who are ineligible to file the FAFSA should complete the California Dream Application available online at dream.csac.ca.gov. See chart for deadlines for financial aid.

Students applying for other grants, loans, and work-study should apply as early as possible. Applications are accepted year-round, with awards to late applicants based on fund availability. Funding cannot be guaranteed to students whose FAFSA or Dream Applications are submitted after March 2.

An analysis of the FAFSA or Dream Application is required to determine the amount that a student’s parents, the student, and/or the student’s spouse can be expected to contribute toward the cost of the student’s education. The university expects the student and parent (if the student is dependent), or spouse (if the student is married), to contribute toward the educational costs to every extent possible. In addition to filing the FAFSA or Dream Application, applicants for financial aid may also be required to submit supporting materials (such as income tax transcripts) that the Financial Aid Office uses to determine each student’s financial need.

Financial Aid Office
2106 Student Services Building
(951) 827-3878;
finaid@ucr.edu; finaid.ucr.edu

The Financial Aid Office assists students with meeting educational expenses that cannot be met from personal resources. To obtain financial aid, students must file the Free Application for Federal Student Aid (FAFSA) with the Financial Aid Office yearly. FAFSAs are available online beginning October 1 for the upcoming academic year at fafsa.ed.gov. Undocumented students who meet the California high school attendance and graduation requirements of state law AB540 who are ineligible to file the FAFSA should complete the California Dream Application available online at dream.csac.ca.gov. See chart for deadlines for financial aid.

Students applying for other grants, loans, and work-study should apply as early as possible. Applications are accepted year-round, with awards to late applicants based on fund availability. Funding cannot be guaranteed to students whose FAFSA or Dream Applications are submitted after March 2.

An analysis of the FAFSA or Dream Application is required to determine the amount that a student’s parents, the student, and/or the student’s spouse can be expected to contribute toward the cost of the student’s education. The university expects the student and parent (if the student is dependent), or spouse (if the student is married), to contribute toward the educational costs to every extent possible. In addition to filing the FAFSA or Dream Application, applicants for financial aid may also be required to submit supporting materials (such as income tax transcripts) that the Financial Aid Office uses to determine each student’s financial need.

Financial Aid Deadlines

Students submit FAFSA or Dream Application for the upcoming year March 2
New Cal Grant applicants submit GPA Verification Form to California Aid Commission March 2
Scholarships
Continuing undergraduates submit UC Recalibrating Student Undergraduate Scholarship Application March 2
Entering students apply with the Application for Undergraduate Admission and Scholarships November 30
All undergraduate financial aid applicants must also apply for California State Grants (Cal Grant A and/or B) by completing the FAFSA or Dream Application, and GPA Verification Form and submitting them by the March 2 filing deadline. If the California Student Aid Commission determines that a student is ineligible for a Cal Grant A or B award, the grant may be replaced with a Federal Direct Stafford Loan in the financial aid package from UCR.

International students are expected to have the necessary funds to cover their entire period of study. The Financial Aid Office does not have funds available to offer assistance to international students. Assistance is not available to students on “limited” status or to those enrolled in UCR Extension. An exception is made for students admitted on “limited” status who must take required prerequisite course work for full admission into the Graduate Division. Students who fall into this category must submit documentation from the Graduate Admissions Office confirming that they are taking prerequisite course work for graduate admission. For information on graduate student support, see Financial Support under Graduate Studies in this catalog.

Grants, Loans, Employment, and Scholarships

Students who receive financial aid may receive funds from one or more of the following sources: grants, loans, employment, and scholarships. These sources are described briefly in the following sections; more detailed information regarding eligibility criteria, fund disbursement rules, and enrollment requirements can be obtained from the Financial Aid Office and on the financial aid website at finaid.ucr.edu.

Veterans Affairs Benefits

School Certifying Official
Highlander One Stop Shop, Student Services Building
(951) 827-4921;
Vasco@ucr.edu
financialaid.ucr.edu

The Financial Aid office hosts the School Certifying Official, who is the liaison to the U.S. Department of Veterans Affairs (VA) for students who are eligible for VA educational benefits as a result of their own military service or that of a parent or spouse. It’s the student’s responsibility to report to Financial Aid any change in status that may affect benefits. The Certifying Official can be directly contacted at vasco@ucr.edu.

Children and spouses or registered domestic partners of veterans whose death or disability (at any percentage) was service-connected may also be eligible for exemption from most university fees under provisions of the California Educational Code. Application may be made to any California county veterans services office. Claims or fee exemptions should be presented to the university during the academic year for which the claim applies. Retroactive approval can be granted only in situations in which students applied for the exemption in a timely manner but approval was delayed by the VA’s processing of an original or reopened service-connected disability compensation or Dependency and Indemnity Compensation claim; a copy of the initial denial letter from the California Department of Veterans Affairs or county services office is required to document such circumstances.

Grants

The Federal Pell Grant program is federally funded and may provide awards up to a maximum of $5,920 for the academic year. To be eligible, an applicant must be a U.S. citizen or eligible noncitizen, must be enrolled as an undergraduate, and must not have previously received a bachelor’s degree. An exception is available for eligible students enrolled in the teaching credential program in the Graduate School of Education. Students apply for the Pell Grant on the FAFSA or Dream Application.

Federal Supplemental Education Opportunity Grants are federally funded, need-based grants available only to U.S. citizens and eligible noncitizen undergraduate students who have not previously received a bachelor’s degree. The grants range from $100 to $4,000 per year.

The State of California–Cal Grant A and B Program The Cal Grant A program provides awards ranging from $100 to $12,630 for the academic year. To be eligible, new applicants must be California residents. Awards are based on academic achievement and financial need. The Cal Grant B program provides awards ranging from $100 to $14,300. To be eligible, applicants must be California residents and must demonstrate financial need. The awards are for students from disadvantaged families.

UCR Grant awards are offered to undergraduates with the greatest financial need whenever guidelines and funding levels permit.

Loans

In addition to these amounts, under the Federal Direct Unsubsidized Stafford Loan Program dependent students may borrow up to $2,000 per year, and independent students may borrow $6,000 for the first or second year of undergraduate study (0–89 quarter units), or $7,000 for the third or fourth year of undergraduate study (90 or more quarter units), or $7000 for teaching credential study, and $20,500 for graduate study. Interest on a Federal Direct Unsubsidized Stafford Loan accrues immediately and must be paid while in school or added back to the principal amount borrowed.

Dependent undergraduate students may borrow an aggregate of $31,000 in combined Federal Direct Subsidized and Unsubsidized Stafford Loans, of which no more than $23,000 can be from Subsidized Stafford Loans. Independent undergraduate and teaching credential students may borrow an aggregate of $57,500 in combined Federal Direct Subsidized and Unsubsidized Stafford loans of which no more than $23,000 can be from Subsidized Stafford Loans, and graduate students may borrow a combined aggregate maximum of $13,500, including amounts borrowed as undergraduates.

An origination fee of 1.069% is deducted from the amount of the loan prior to disbursement. The interest rate for new loans disbursed on or after July 1, 2017 is 4.45% for undergraduate Subsidized and Unsubsidized Stafford loans, and 6% for graduate Subsidized Stafford loans. Interest rates will be set annually for new loans and are subject to change. Minimum monthly repayment of $50 per month begins 6 months after students cease to be enrolled at least half-time. Borrowers can choose a repayment plan based on their financial circumstances with repayment periods ranging from up to 10 years for standard fixed monthly repayment, to up to a period of 12 to 30 years under alternate repayment options. Information on repayment plans is available at ed.gov/offices/OSFAP/DirectLoan/RepayCalc/dindex2.html.

Graduate students may borrow Federal Grad PLUS Loans for up to the annual cost of education minus any estimated financial aid received. An origination fee of 4.276% is deducted from the amount of the loan prior to disbursement. A FAFSA application must be submitted for this loan. This loan carries a fixed interest rate of 7%, for new loans disbursed on or after July 1, 2017, which begins accrual immediately upon disbursement. The terms, including the six-month grace period, are otherwise the same as for Unsubsidized Stafford Loans.

Parents may borrow up to the annual cost of education minus any estimated financial aid received by the student from Federal Direct PLUS Loans (Parent Loans), regardless of financial need. A FAFSA application must be submitted for this loan. New parent borrowers awarded the PLUS loan will be instructed to complete a PLUS Loan Request form online, then a separate online loan promissory note. The application approval process includes a standard credit check for all parent borrowers. An origination fee of 4.276% is deducted from the

Finances and Registration / 40
amount of the loan prior to disbursement. This loan has a fixed interest rate of 7%, for new loans disbursed on or after July 1, 2017. Interest begins accruing on the PLUS loan after the first disbursement. The first payment of principal and interest is due approximately 60 days after the final loan disbursement for the year is made, but may be deferred while the student is enrolled.

Federal Perkins Loans are available to undergraduate students. These loans are awarded to students who are U.S. citizens or eligible noncitizens. The amount a student may borrow is determined by financial need but may not exceed $4,000 per year and $20,000 for undergraduates. Repayment may be extended over a 10-year period. Interest is 5 percent on the unpaid balance, beginning 6 months after students cease to be enrolled at least half-time.

DREAM Loans are available to undocumented AB540 undergraduate students. Applicants must complete a California Dream Application. The amount a student may borrow is determined by the Financial Aid Office based on annual allocations. Interest rates are subject to change annually and are the same as those for the Federal Direct Subsidized Stafford Loan program (4.45% for loans disbursed on or after July 1, 2017).

University Loans A limited number of University Loans are available to undergraduate students for up to $5,500. Awards are made subject to the availability of funds. The amount a student may borrow is determined by financial need. Interest is 5 percent on the unpaid balance; repayment may be made over a period of not more than 10 years, beginning 6 months after the date on which the borrower ceases to be enrolled at least half-time. Co-signatures are required.

Emergency Student Loan Fund In addition to the long-term loans from financial aid programs mentioned above, UCR has an emergency student loan fund. This loan, which does not bear interest, is of a short-term nature to cover emergency needs of up to $500. Students may borrow up to three times a year.

Employment

Federal Work-Study is awarded to students with demonstrated financial need. Work-study awards enable students to reduce the amount of loan indebtedness they may incur while attending the university.

Various work opportunities are available through the UCR Career Center, online at careers.ucr.edu, in either on-campus or off-campus jobs at nonprofit and community services agencies.

Scholarships

Scholarship awards are based on a student’s academic achievements and, except for honorary scholarships, on need. Scholarships are considered gift assistance.

Most scholarships available through the Financial Aid Office are based on financial need. Other undergraduate scholarships are offered to entering and continuing undergraduates who show evidence of high scholastic attainment. Applicants must meet all priority deadlines for consideration. Non-need based scholarship awards, including Alumni Scholarships, are available to undergraduate students. Financial need is not required. Awards range from $100 to $5,000.

Regents Scholarship, one of the highest honors conferred upon UC students, is awarded on the basis of academic excellence and exceptional promise, without reference to financial need. Students are eligible upon graduation from high school. The appointments run for four years for students entering from high school. Regents Scholars receive an honorarium each year of appointment.

Chancellor’s Scholarship, an award offered to incoming freshmen with a distinguished high school academic record. The scholarship provides an honorarium applied toward student fees. More information regarding the terms of the scholarship award and the amount of the honorarium are available on the Chancellor’s Scholarship Terms that the recipient accepts on MyUCR when offered this award.

Highlander Excellence Scholarship, an award offered to incoming freshmen with a distinguished high school academic record. The scholarship provides an honorarium toward college expenses. More information regarding the terms of the scholarship award and the amount of the honorarium are available on the Highlander Excellence Scholarship Terms that the recipient accepts on MyUCR when offered this award.

Chancellor’s Transfer Scholarship, a non-renewable award offered to incoming transfer students with a transfer GPA of 3.00 or above who have financial need.

Chancellor’s Performance Awards Information on Chancellor’s Performance Awards may be obtained from the departments of Art; Creative Writing; Dance; Music; and Theatre, Film and Digital Production.

Engineering Scholarships Information on scholarships in Engineering may be obtained from the Bourns College of Engineering Student Affairs Office.

Natural and Agricultural Scholarships Information on scholarships in the natural and agricultural sciences may be obtained from the College of Natural and Agricultural Sciences Student Affairs Office.

Departmental Scholarships Some scholarships are available through academic departments. For more information, students should contact their department.

Graduate Fellowships and Assistantships For information on graduate fellowships and assistantships refer to the Graduate Studies section of this catalog or contact the Graduate Division.

Undergraduate Research Grants As a research university UCR encourages the tradition of student and faculty engagement in research. UCR provides grant support for students to deepen their knowledge and skills in cutting edge research, field work, and other creative activities under the close guidance of a faculty mentor. Student travel for the purpose of presenting research work at a scholarly conference is also supported through these funds. Grants are available on a quarterly basis. All awards support the costs of conducting a project and cannot be used as a student salary or scholarship aid. Student grant proposals may be initiated directly by students after approaching a faculty member for sponsorship or by faculty suggesting projects to undergraduates.

Student grant awards may be available from the student’s department or college, or through the office of Undergraduate Education. For more information visit ssp.ucr.edu

Registration and Enrollment

Official registration consists of two steps.

1. Enrollment in classes
2. Payment of fees

Except where noted, the following information applies to both undergraduate and graduate students. Additional information concerning enrollment and academic policies applying only to graduate students is in the Graduate Studies section of this catalog. The Web site registrar.ucr.edu provides detailed information on registration and enrollment, including details about the following:

- Academic Calendar
- Classes, class hours and locations, and instructors
- Changing your class schedule
- Fees and paying fees
- Final exams
- Grades
- Graduation

Most enrollment and payment functions can be performed at rweb.ucr.edu.

See also information on Expected Progress.

Part-Time Study

Undergraduates Part-time study (less than 12 units) is available to undergraduate students who find it difficult to enroll full time because of health problems, family and home responsibilities, or occupational and financial
need. Students undertaking an approved course load of 10 units or fewer in any quarter shall pay the full Student Services Fee, one-half tuition and one-half nonresident supplemental tuition (if applicable) for that quarter. Students considering part-time study should discuss their plans with the associate dean of their college, whose approval is required.

Graduates In some programs, half-time study is possible for graduate students who for reasons of occupation (i.e., full-time employment), unusual family responsibilities, or health reasons are not able to attend full time. A half-time student may not enroll for more than 6 units at any level. Half-time for the Online Masters in Engineering is 5 units and for the Masters in Business Administration it is 8 units. Graduate students who are approved for this program receive a refund of one-half of the tuition, one-half of the nonresident supplemental tuition (if applicable), and one-half of the Professional Degree Supplemental Tuition (if applicable). For further details and an application, contact the Graduate Division.

Concurrent Enrollment Options

UCR credit for any course taken at another college institution (including UCR Extension) while the student is in residence at UCR is called credit from concurrent enrollment. Credit is normally awarded only under unusual circumstances or through the Cross Registration Program described below during the regular academic year and only with prior approval of the associate dean of the UCR college in which the student is enrolled.

UCR Extension students taking regular-session UCR courses through concurrent enrollment may receive grade points as well as unit credit (effective Spring 1999) should they continue in or be subsequently admitted or readmitted to regular UCR student status. A transcript of the work must be submitted to the Office of Undergraduate Admissions.

Courses taken elsewhere during the summer by a UCR student do not require that the student be under extraordinary circumstances, but they do require prior approval to receive UCR credit even if the student is not in residence at UCR during that summer. Regular Summer Sessions courses taken at UCR are credited automatically to the UCR academic record of any student enrolled in the regular academic year.

Cross Enrollment

Senate Bill 1914 (Killea) The California Education Code Sections 66750 through 66756, commonly referred to as Senate Bill 1914 (Killea), permits undergraduate students enrolled in any campus of the California Community Colleges, the California State University, or the UC to enroll without formal admission in a maximum of one course per academic term at a campus of either of the other systems on a space-available basis at the discretion of the appropriate campus authorities on both campuses. At UC campuses, the beginning of the third week of instruction has been designated as the date by which an instructor can determine when space is available to accommodate a student seeking to enroll on this basis. (Normally, instructors in all segments permit students to attend classes until their final course registration has been certified.) Killea does not allow enrollment at another campus within the same system. Students who seek to cross enroll under this program must have met all of the following requirements:

1. Completed at least one term at their home campus as a matriculated student
2. Enrolled for a minimum of six units at their home campus for the current term
3. Earned a cumulative grade point average of 2.00
4. Paid appropriate fees and any applicable tuition at their home campus for the current term
5. Completed appropriate academic preparation for the desired course, as determined by the host campus, consistent with the standards applied to regularly enrolled students
6. Have been classified as a California resident by their home campus

Both schools must be participating in this program before a student can take a course at another institution for the $24 per unit cross enrollment fee. Additional information and cross enrollment application forms are available at the Office of the Registrar.

CSUSB Cross Registration Program The Cross Registration Program allows a full-time UCR undergraduate student who has officially declared a major and who is in good academic standing to enroll simultaneously at California State University, San Bernardino for no more than one course per quarter. The program is designed for students to take classes not available at UCR. (This program is not available during Summer Session.) Approvals are required from the student's academic advisor, college dean, and the Registrar. Application forms and deadline information may be obtained from the Office of the Registrar.

Simultaneous Enrollment and Cross-Campus Enrollment Simultaneous Enrollment is similar to the Intercampus Visitor Program, but participants are enrolled in at least six units at UCR while simultaneously taking additional classes at another UC campus. Cross-Campus Enrollment allows participants to simultaneously take online courses offered by another UC campus. Participants of either program don't have to be formally admitted nor pay additional tuition/fees; however other fees may apply depending on the course. For additional information and application for Simultaneous Enrollment, please go to the Highlander One Stop Shop (HOSS), on the first floor of the Student Services Building. For additional information and to initiate enrollment for Cross-Campus Enrollment course opportunities please go to crosseenroll.universityofcalifornia.edu.

Eligibility requirements for both programs include:

- Has completed a minimum of 12 units as a matriculated student at UCR (home campus).
- Is enrolled for a minimum of 6 units for the current term at UCR (home campus)
- Is in good standing.
- Has the appropriate academic preparation as determined by the host campus.
- Must have fees paid by Fee Payment deadline

Intercampus Visitor Program

The Intercampus Visitor Program enables qualified undergraduates at the UC to take advantage of educational opportunities at other UC campuses. Under this program, students may take courses that are not available on their home campus, participate in special programs, or study with a distinguished faculty member at another campus. Participants may enroll at another campus for only one term. Additional information on requirements and application forms can be obtained at the Highlander One Stop Shop (HOSS). Intercampus visitors must apply for financial aid at their host campus and must be making satisfactory academic progress on their home campus to be eligible to be awarded.

Withdrawals and Leaves of Absence

Undergraduate students who wish to terminate work in the university during a current quarter, officially and without scholarship penalty, must initiate an application for withdrawal through myforms.ucr.edu. The student must settle all accounts and return any university property such as books, keys, laboratory equipment, and uniforms. After the first few weeks of the quarter, such petitions are granted only under exceptional circumstances.

Students who withdraw are no longer considered continuing students. Students wishing to return to the university must apply for readmission by the published deadlines. Visit registrar.ucr.edu for deadline information.

Students who withdraw from the university without authorization may receive grades of “F” in all courses in which they are enrolled. Further, the Special Services Office is required to notify the Department of Veterans Affairs when any student fails, receives no credit, or withdraws from all subjects undertaken.

The Planned Educational Leave Program (PELP) is for undergraduate students who want to interrupt their regular education for one year or less while clarifying educational goals, gaining practical experience away from campus, or enhancing the prospect of successful completion of an academic program. Students must have completed at least one quarter of course work at UCR and be in good academic standing to qualify. Students holding F-1/J-1 visas should consult with an International Student Advisor before participating in this program. Information on PELP is available from
the dean of the student’s college, UCR Counseling and Psychological Services, and the Office of the Registrar.

The Planned University Leave Program (PULP) is designed for undergraduate students who plan to interrupt their education at the UC to study at another academic institution. A student planning to attend a postsecondary institution in the United States should consult the dean’s office of the student’s college.

Graduate students who wish to withdraw or apply for a leave of absence should contact the Graduate Division.

Planned Opportunities Abroad Agreement (POAA) permits UCR students to study abroad on a non-UC program through the Other Abroad Programs (OAP) and return to UCR without having to file for readmission. POAA advising and applications are available at the Study Abroad Programs, Surge, Room 321. studyabroad.ucr.edu.

Readmission

Undergraduate students who wish to return to UCR must file an application for readmission with their college Student Academic Affairs office. Visit registrar.ucr.edu for deadline information. A nonrefundable application fee of $70 is charged. Approval of the dean of the student’s college or division is required for readmission. Students dismissed or not in good standing may be required to meet with the appropriate dean. Readmission of students disqualified for disciplinary purposes is subject to approval of the Dean of Students.

Transcripts from other institutions (including University Extension) attended during a student’s absence must be filed with the Undergraduate Admissions Office at least six weeks prior to the quarter of readmission.

Graduate students desiring readmission or termination of leaves of absence should contact the Graduate Division.

Student Records and Transcripts

The Office of the Registrar prepares and permanently retains records of students’ academic work at UCR for regular sessions and summer sessions. It maintains separate academic records for undergraduate, medical, and graduate careers. The academic record chronologically lists courses, units, grades, cumulative GPA, transfer credits, and total units.

Students may order copies of their transcript through rweb.ucr.edu. Otherwise, the transcript of a student’s UCR academic record is released only upon receipt of a signed request by the student authorizing its release. Application may be made in person at the Office of the Registrar, or by mail; telephone requests cannot be honored. Students can order transcripts for regular ($10 fee for each official transcript) or rush service. Application should be made two weeks in advance of the time the transcript is needed. Rush service for the transcript is available within 24 hours of receipt of the application; the fee is $10 per transcript plus a $10 service fee.

Express mail service is available for an additional fee based on current USPS rates. Fax service is available at $2 per page plus the aforementioned charges as appropriate. Payment is due in advance for all transcript service. A check or money order payable to Regents UC should be submitted with the application for transcript. All outstanding debts to the university (with the exception of long-term financial aid loans not yet due and payable) must be paid in full before a transcript will be released.

Students are strongly advised to check their academic records carefully and to bring any discrepancies to the attention of the Office of the Registrar immediately. Supporting enrollment documents are retained for no more than one year. After one year, it is assumed that students accept the accuracy of their academic records. Once a degree has been posted, changes to a student’s academic record are allowed only to correct an administrative error.

Disclosure of Student Records

In accordance with the federal Family Educational Rights and Privacy Act (FERPA) of 1974 as amended, and campus procedures that implement the University of California Policies Applying to the Disclosure of Information from Student Records, the following information is published.

Students’ academic records are maintained in their academic department and appropriate college or school or the Graduate Division; the maintenance of these records is the responsibility of the department chair or dean. Students who believe that their records contain incorrect or misleading information and who seek review of these records with a view toward altering or expunging a portion of them should make initial inquiry and petition through the appropriate department chair or academic dean, who institutes an informal investigation and, if necessary, refers the matter for hearing.

Office of the Registrar

Student records maintained by this office include the official UCR academic record (transcript), academically-related information, and the residence classification information. The maintenance of these records is the responsibility of the Registrar. These records are available only to officials and employees of the University of California who need access to them for the performance of their official duties or to bona fide agents of the university for the collection of overdue debts to the university (but only as may be necessary to ensure collection of the overdue debt). Students who believe that their records contain incorrect or misleading information and who seek review of those records with a view toward altering or expunging a portion of them should make initial inquiry and petition through the Registrar, who institutes an informal investigation and, if necessary, refers the matter for hearing. Students may inspect records, maintained by the campus, of disclosures of personally identifiable information from their student records.

Office of Undergraduate Admissions

Records are maintained by this office for every undergraduate student who attended UCR with the exception of students enrolled exclusively in University Extension or Summer Sessions. These files containing the original admission application, transcripts from institutions previously attended, and other documents related to applications for admission are held for five years after the last date of attendance or until graduation (whichever occurs earlier) at which time they are purged. Maintenance of these records is the responsibility of the Director of Undergraduate Admissions.

Office of Financial Aid

Records maintained by this office are relevant to financial aid awards, work-study employment, and academic information as it pertains to satisfactory academic progress standards. These records include, but are not limited to, the Free Application for Federal Student Aid (FAFSA), Federal Income Tax Forms (1040, 1040A, 1040EZ), other verification forms, and student employment forms. Maintenance of these records is the responsibility of the Director of Financial Aid.

Students who have records in various student service offices such as Career Services, UCR Counseling and Psychological Services, Health Service, Housing, International Student Resource Center, Learning Center, Student Special Services (for disabled and veterans’ services), and Women’s Resource Center should contact those offices for information. Student discipline records are kept in the office of Student Conduct & Academic Integrity Programs.

The University of California, Riverside considers the following to be public information with respect to individual students: name; addresses (local, permanent, e-mail); telephone numbers; date and place of birth; major field of study; dates of attendance; degrees and honors received; the name of the most recent previous educational institution attended; participation in officially recognized university activities, including intercollegiate athletics; and the name, weight, and height of participants on intercollegiate university athletic teams.

Students have a right to refuse to permit any or all of the above categories of personally identifiable information to be designated as public information with respect to themselves. Students who do not want their information to be published in the campus directory must check the appropriate privacy restriction through rweb.ucr.edu. Students who wish to have any or all of the items defined as public information to be restricted from release outside the university must check each item to be restricted on R’Web.

Students who choose to restrict personally identifiable information about themselves that has been defined as public information are advised of some potential implications. The campus may not then disclose to anyone (including prospective employers, hometown newspapers, and others outside the university) information from a restricted category, such as the award of a Regents Scholarship, election to Phi Beta Kappa, degree(s) granted and the date(s) conferred, and dates of attendance.

Copies of the University of California and UCR Policies Applying to Disclosure of Information from Student Records are available in the following offices on the UCR campus: Office of the Executive Vice
Residence for Tuition Purposes

Students who have not been living in California with the intent to make it their permanent home for more than one year immediately before the residence determination date for each term in which they propose to attend the university must pay nonresident supplemental tuition as well as all assessed fees. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter. For schools on the semester system, the residence determination date is the day instruction begins for the semester.

Law Governing Residence The rules regarding residence for tuition purposes at the University of California are governed by the California Education Code and implemented by Standing Orders of the Regents of the University of California.

Who is a Resident? If you are an adult student (at least 18 years of age), you may establish residence for tuition purposes in California if you are a U.S. citizen or a permanent resident or other immigrant, or if you are a nonimmigrant who is not precluded from establishing a domicile in the United States. Check with the Residence Affairs Officer in the Office of the Registrar for the latest information on qualifying nonimmigrant visas.

To establish residence, you must be physically present in California for more than one year prior to the residence determination date, and you must have come here with the intent to make California your home as opposed to coming to California to go to school.

Physical presence in the state solely for educational purposes does not constitute the establishment of California residence, regardless of the length of your stay.

You must demonstrate your intention to make California your home by severing your residential ties with your former state of residence and by establishing those ties with California. If these steps are delayed, the one-year physical presence requirement will be extended until you have demonstrated both presence and intent for one full year.

If your parents are not residents of California, you will be required to be financially independent to qualify as a resident for tuition purposes.

Requirements for Financial Independence You are considered “financially independent” if one or more of the following apply: (1) you are at least 24 years of age by December 31 of the calendar year for which you are requesting residence classification; (2) you are a veteran of the U.S. Armed Forces; (3) you are a ward of the court or both parents are deceased; (4) you have legal dependents other than a spouse; (5) you are married or a registered domestic partner, or are a graduate or professional student, and you were not claimed as an income tax deduction by your parents or any other individual for the tax year immediately preceding the term for which you are requesting resident classification; or (6) you are a single undergraduate student and were not claimed as an income tax deduction by your parents or any other individual for the two tax years immediately preceding the term for which you are requesting resident classification and you can demonstrate self-sufficiency for those two years. (Note that financial dependence is not a factor in residence status for graduate student instructors, graduate student teaching assistants, research assistants, junior specialists, postgraduate researchers, graduate student researchers, and teaching associates who are employed 49 percent or more of full-time in the term for which classification is sought.)

Establishing Intent to Become a California Resident Indications of your intent to make California your permanent residence can include the following: registering to vote and voting in California elections; designating California as your permanent address on all school and employment records, including military records if you are in the military service; obtaining a California driver’s license or, if you do not drive, a California identification card; obtaining California vehicle registration; paying California income taxes as a resident, including taxes on income earned outside California from the date you establish residence; establishing a California residence in which you keep your personal belongings; and licensing for professional practice in California. The absence of these indicia in other states during any period for which you claim residence can also serve as an indication of your intent. Documentary evidence is required, and all relevant indications will be considered in determining your classification. Your intent will be questioned if you return to your prior state of residence when the university is not in session.

General Rules Applying to Minors If you are an unmarried minor (under age 18), your residence is considered to be the residence of the parent with whom you live. If you have a parent living, you cannot change your residence by your own act, by the appointment of a legal guardian, or by the relinquishment of your parent’s right of control. If you live with neither parent, your residence is that of the parent with whom you last lived. Unless you are a minor alien present in the United States under the terms of a nonimmigrant visa that precludes you from establishing domicile in the United States, you may establish your own residence when both your parents are deceased and a legal guardian has not been appointed. If you derive California residence from a parent, that parent must satisfy the one-year durational residence requirement.

Specific Rules Applying to Minors

Divorced or Separated Parents You may be able to derive California resident status from a California resident parent if you move to California to live with that parent on or before your 18th birthday.

Parent of Minor Moves from California You may be entitled to resident status if you are a minor U.S. citizen or eligible alien whose parent(s) was a resident of California who left the state within one year of the residence determination date if

(a) you remained in California after the departure of your parent(s);
(b) you enroll in a California public postsecondary institution within one year of the departure of your parent(s); and
(c) once enrolled, you maintain continuous attendance in that institution.

Financial independence is not required in this case.

Two-Year Care and Control You may be entitled to resident status if you are a U.S. citizen or eligible alien and you have lived continuously with an adult who is not your parent for at least two years prior to the residence determination date. The adult with whom you are living must have been responsible for your care and control for the entire two-year period and must have been living in California during the one year immediately preceding the residence determination date.

Students Who May Be Exempt from Nonresident Supplemental Tuition Visit ucp.edu/general-counsel for information on exemptions.

Temporary Absences If you are a nonresident student who is in the process of establishing a residence for tuition purposes and you return to your former state during noninstructional periods, your presence in California will be presumed to be solely for educational purposes, and only convincing evidence to the contrary will rebut this presumption. Students who are in the state solely for educational purposes will not be classified as residents for tuition purposes regardless of the length of their stay.

If you are a student who has been classified as a resident for tuition purposes and you leave the state temporarily, your absence could result in the loss of your California residence. The burden will be on you (or your parents if you are a minor) to verify that you did nothing inconsistent with your claim of a continuing California residence during your absence. Steps that you (or your parents) should take to retain a California residence include

1. Continuing to use a California permanent address in all records.
2. Continuing to satisfy California tax obligations. If you are claiming California residence, you are liable for payment of income taxes on your total income from the date you establish your residence in California, including income earned in another state or country.
3. Retaining your California voter’s registration and vote by absentee ballot.
4. Maintaining a California driver’s license and vehicle registration. If it is necessary to change your driver’s license or vehicle registration, you...
must change them back within the time prescribed by law.

Petition for Resident Classification You must petition in person at the Office of the Registrar, 2249 Student Services Building, for a change of classification from nonresident to resident status. All changes of status MUST be initiated before the first day of classes for the term for which you intend to be classified as a resident.

Time Limit on Providing Documentation If additional documentation is required for residence classification but is not readily accessible, you will be given until the end of the applicable term to provide it. Nonresident supplemental tuition must be paid pending the outcome of the decision.

Incorrect Classification If you were classified as a resident incorrectly, you are subject to a nonresident classification and to the payment of all nonresident supplemental tuition not paid. If you concealed information or furnished false information and were classified incorrectly as a result, you may be subject to university discipline. Resident students who become nonresidents must immediately notify the campus residence affairs officer.

Inquiries and Appeals Inquiries regarding residence requirements, residence determinations and/or recognized exceptions should be directed to the Residence Affairs Officer, Office of the Registrar, 2249 Student Services Building, University of California, Riverside, CA 92521-0118. You may also go to ucop.edu/residency/index.html. No other university personnel are authorized to supply information relative to residence requirements for tuition purposes.

Students do not have an automatic right to appeal every nonresident determination. University of California Residence Policy permits you to appeal your classification as a non-resident ONLY if:

1. The decision to classify you as a nonresident for purposes of tuition and fees was based on – a significant error of fact, a significant procedural error, or an incorrect application of policy which, if corrected, would required that you be reclassified as a resident.

2. Significant new information because available after the date of the campus decision classifying you as a nonresident; despite the exercise of reasonable diligence (care and attention) the information was not previously known or available to you, and, based on the new information your classification as a nonresident is incorrect.

No appeals based solely upon disagreement with the campus decision will be accepted. For further information or to obtain the Application to Appeal form please go to ucop.edu/residency/appeals.html; please scroll to the bottom of the page and click on Application for Appeal. You would print the Application to Appeal form, attach a copy of your campus residence determination, and submit it to the Office of the General Counsel (OGC) at one of the addresses indicated on the form. Do not submit any other documents. Your appeal must be received at OGC within thirty (30) days following the date of the campus decision classifying you as a nonresident. An OGC Residency analyst will determine whether you have stated appropriate grounds for an appeal. If your appeal is accepted for review, the Residency Analyst will obtain your residence file from the campus and may request documentation from you at that time. The decision on your appeal is final. You may not file any further appeals of nonresident classification for the term for which you have been declared a non-resident. Only staff members in the OGC are authorized to explain or provide information regarding UC Residence Policy pertaining to appeals.

You are advised that the foregoing is a summary of the law regarding residence. Regulations adopted by the Regents are available for inspection in the Office of the Registrar. Note that changes may be made in the residence requirements between the publication of this statement and the relevant residence determination date.

Privacy Notice All information requested on the Statement of Legal Residence form is required by the authority of Standing Order 110.2 (a)-(d) of the Regents of the University of California for determining whether you are a legal resident for tuition purposes. The residence affairs officer in the Office of the Registrar maintains the requested information. You have the right to inspect university records containing the residence information requested on the form.

For information on other policies applicable to students, visit deanofstudents.ucr.edu.
Academic Policies

Catalog Rights Policy for Undergraduate Degrees

Students who enter UCR as freshmen normally follow the catalog in effect in their first year of studies. Transfer students who have completed appropriate transfer programs have prior catalog rights. Check with the college dean’s office for more information.

Academic Senate Regulation R6.12 states as follows: To be awarded the bachelor’s degree, a student must either (a) meet graduation requirements in the UCR catalog in effect in the year of his/her graduation from the Riverside campus; or (b) fulfill graduation requirements in one UCR catalog applicable during any of the previous four years in which the student successfully completed at least one quarter or one semester of full-time college-level work, regardless of where matriculated. Upon applying for candidacy, the student must specify the applicable catalog.

At UCR, courses are assigned a unit value determined by the number of hours of work per week required of the student. Specifically, Academic Senate regulations require three hours of work per week for each unit of credit. For example, in a 4-unit course scheduled to meet four hours per week, a student is expected to spend eight hours of preparation outside of class.

Grades in courses are assigned as follows:

- **Passing** “A” (distinction), “B” (high pass), “C” (pass), “D” (marginal pass). Grade point values per unit are as follows: “A”=4, “B”=3, “C”=2, “D”=1. The grades “A,” “B,” “C,” and “D” may be modified by plus (+) or minus (−) suffixes. Minus grades carry three-tenths grade point less per unit, and plus grades (excluding “A+”) carry three-tenths grade point more per unit than unsuffixed grades.

- **Not passing** “F” (failure). No grade point value.

- **Grade Delay** “GD.” Assigned temporarily when grade posting is delayed for administrative reasons. Students who see “GD” on their grade report or transcript should contact their instructor for clarification.

- **Incomplete** “I.” Units are not charged and grade points are not assigned.

- **Withdrawal** “W.” Course dropped after the end of the add/drop period. Units are not charged and grade points are not assigned.

The grade point average (GPA) is determined by multiplying each grade point value by the number of units assigned to the course, adding up these grade point units, and dividing the total grade point units by the total number of units for which letter grades are received.

Satisfactory/No Credit Grades

A student in good standing may undertake courses on a Satisfactory/No Credit (S/NC) basis subject to the following limitations: the grade “S” is awarded for work satisfactory for unit credit in meeting degree requirements. For undergraduates, the requirement is a “C” average (2.00); for graduate students, it is a “B” average (3.00). Units are assigned for courses graded “S,” but “S” has no grade point equivalent and does not enter the GPA. Neither units nor grade points are assigned for an “NC” grade; the grade is recorded on the transcript but does not enter the GPA.

Some graduate and undergraduate courses may, in accordance with regulations, be designated for grading on an S/NC basis only. Graduate courses are letter graded unless the course description specifies otherwise. In certain preidentified graduate courses, the department may allow a third (residual) category in which a graduate student may elect to take a course on an S/NC basis, provided that the graduate advisor consents. (Graduate students must petition to take undergraduate courses outside their major on an S/NC basis, and they may not take undergraduate courses in their major on an S/NC basis.) Students should consult the Graduate School of Education before electing courses on an S/NC basis to be used for a teaching credential.

Students enrolled in an undergraduate degree program may receive credit for courses undertaken and graded “S” on the UCR campus to a limit of one-third of the total units undertaken and passed on the Riverside campus at the time the degree is awarded. Units completed on another campus of the university by a Riverside graduate student enrolled as an intercampus visitor are considered Riverside work for the purposes of this regulation.

Courses required in or prerequisite to the undergraduate student’s major subject may be taken on an S/NC basis only on approval of the chair of the student’s department (or other primary instructional unit) in each individual case. A student on “limited” status may take courses on an S/NC basis at the discretion of the dean of the school or college in which the student is enrolled. Courses in the X or XR300, X400, or 300 series are not subject to the one-third limitation on courses graded “S.” For additional limitations on 300 and 400 series courses, see individual college sections in the Undergraduate Studies section of this catalog.

A student may elect “S/NC” or delete “S/NC” from a course by filing an Enrollment Adjustment Form through myforms.ucr.edu. The deadline is the end of the eighth week of instruction and is listed each quarter at registrar.ucr.edu (click on Academic Calendar).

Incomplete Grades

The grade “I” (incomplete) is a provisional grade which denotes that a student’s work was of passing quality but incomplete for good cause. Units attempted are not charged for courses graded “I.” The grade of “I” may be replaced if the work is completed as specified by the instructor prior to the end of the following quarter. When a course graded “I” has not been successfully completed after one additional quarter or by the time the student is ready to graduate (whichever is less), it will be replaced by a grade of “F” or by “NC” (if the course were taken on an S/NC basis). The appropriate dean may extend the time for successful completion when he or she considers that circumstances warrant it, provided the request is received before the grade “I” is changed to “F” or “NC.”

In Progress Grades

For certain courses extending over more than one term, where, by consent of the Academic Senate, evaluation of the student’s performance may be deferred until the end of the final term, provisional grades of “IP” (in progress) are assigned in the intervening terms.

Neither units nor grade points are assigned for “IP” grades. The provisional grades are replaced by the final grade if the student completes the full sequence. In the event that the full sequence is not completed, the grade “IP” is replaced by the grade “I,” and further changes in the student’s record are subject to regulations governing the grade “I.”

Workload Credit

Workload credit is given for UCR classes preparatory to regular university work. Workload credit does not carry units for graduation but does count as part of a student’s academic course load and enrollment status. Grades assigned for workload credit have a leading “W” before the official grade.

Repetition of Courses

Repetition of courses not authorized to be taken more than once for credit is subject to the following conditions: generally, a student may repeat only courses in which a grade of “D,” “F,” or “NC” was received. In some circumstances, students may repeat a “C-” to satisfy an academic requirement. Courses that would place the student above the 16 unit maximum will not be included and will not be split.

For example, in courses taken to meet the Entry Level Writing Requirement, such as ENGL 004 and ENGL 005, students must earn a grade of “C” or higher to satisfy the requirement, so students who receive a grade of “C-” may repeat the course.
Degree credit for a course will be given only once, but the grade assigned at each enrollment shall be permanently recorded. In computing GPA of an undergraduate who repeats courses in which the student received a “D” or an “F,” only the most recently earned grades and grade points shall be used for the first 16 units repeated. In the case of further repetitions, the GPA shall be based on all grades assigned and the total units attempted. Courses in which a grade of “D” or “F” has been earned may not be repeated on an S/NC basis. Repetition of a course more than once requires approval by the appropriate dean in all instances.

Students should be aware that some professional and graduate schools count the grades for all courses, including those repeated, in calculating a student’s GPA. The GPA used by such schools could differ significantly from that shown on a student’s UCR transcript.

The Department of Veterans Affairs will not consider toward full time those units which are a repeat of courses in which a grade of “D-” has been received, unless a higher grade in the course is specifically required for graduation. Contact the Financial Aid Office, (951) 827-3878, for additional details.

### Change of Grade

All grades except “I” and “IP” become final when they are assigned. No term grade may be revised by reexamination. No change of grade may be made on the basis of reassessment of the quality of a student’s work. However, at the discretion of the instructor in charge of a course, reexamination and reassessment of work may be allowable under the terms of the Sanctioning Guidelines of the UCR Academic Integrity Policy. See Academic Integrity later in this section. An instructor may approve and report to the Registrar a correction of a recorded course grade at any time if clerical or procedural error has been made in assigning, transmitting, or recording the original grade.

### Procedures for the Appeal of Grades

The Regulations of the Riverside Division of the Academic Senate state that if a student believes that nonacademic criteria have been used in determining a grade, the student shall attempt to resolve the grievance with the instructor of the course through written appeal to the instructor via the chair of the department. If the grievance is not resolved to the student’s satisfaction at the departmental level, the student may file a complaint with the dean of the college or school having jurisdiction over the course or with the dean of the Graduate Division if the student is in graduate status. The complaint should be filed immediately after the alleged use of nonacademic criteria but no later than six weeks after the beginning of the subsequent quarter. Nonacademic criteria are criteria not directly reflective of class performance, such as discrimination on political grounds or for reasons of race, religion, sex, or ethnic origin or for other arbitrary or personal reasons.

### Expected Progress for Undergraduate Students

**Expected Progress** A full-time undergraduate student is considered to be making Expected Progress toward a baccalaureate degree if he or she:

1. passes at least 45 units each academic year,
2. declares a major by the time the student earns 90 units, and
3. follows a program of study consistent with the requirements of the student’s declared major or undeclared student’s College or School.

**Continued Registration** A full-time undergraduate student is considered ineligible for Continued Registration if he or she:

1. does not pass at least 37 units in each academic year, or
2. does not complete the Expected Progress requirements as stated above.

**Failure to Meet Criteria for Continued Registration** Registration of a full-time undergraduate student who is ineligible for Continued Registration under any of the criteria described above shall be at the discretion of the faculty in the student’s College or School or Associate Dean for Student Academic Affairs in each College or School.

**Units Passed** For purposes of determining eligibility for Continued Registration, in addition to units earned by passing regularly enrolled courses, the following defines what shall be counted as units passed.

1. Workload only, non-credit courses with passing grades shall be counted as units passed.
2. If a student receives a grade of “D” in a course and then repeats and passes the course, the units from each enrollment shall be counted as units passed during the quarter the course was taken, provided the student has not accumulated more than a total of 16 repeated units.
3. Units earned during a summer session, either at UCR or another accredited school and transferred to UCR, shall be counted as units passed during the academic year immediately preceding the summer session.
4. Units passed by examination shall be counted as units passed during the quarter in which the examination was taken.
5. Units graded IP (In Progress) shall be counted as units passed.
6. Units graded I (Incomplete) are not counted as units passed. When the grade of I is replaced by a passing grade, the units shall be counted toward Expected Progress for the quarter in which the I grade was awarded.

**Units of Courses Taken at Other Institutions** A student is prohibited from obtaining transfer units for courses taken at a non-University of California campus in a quarter during which the student is enrolled as a full-time student at UCR. Summer session course work is exempt from this restriction.

1. To request an exception, a petition must be submitted to and approved by the appropriate College or School committee or administrative officer prior to the quarter of concurrent enrollment.
2. In those instances where approval has been granted, units earned from courses taken at a non-University of California campus shall be counted toward the Expected Progress in the quarter(s) in which the concurrent enrollment occurred.

### Posthumous Awards

The University of California, Riverside seeks to extend sympathy and compassion to the families of students who pass away near the completion of their degrees and to recognize the academic achievement of students who would have fulfilled the requirements of the degree. These actions must also be balanced with attention to academic and institutional integrity. For more information on identifying and considering candidates for the award of posthumous undergraduate degree, please contact the Office of Student Affairs in the appropriate college.

### Final Examinations

The instructor in charge of an undergraduate course shall be responsible for assigning the final grade in the course. The final grade shall reflect the student’s achievement in the course and shall be based upon adequate evaluation of that achievement. The instructor’s methods of evaluation must be clearly announced during the progress of the course. Evaluation methods must be of reasonable duration and difficulty and in accord with applicable departmental policies. The methods may include a final written examination, a term paper, a final oral examination, a take-home examination, or other evaluation device. If a final written examination is given, it shall not exceed three hours in duration and shall be given only at the time and place announced at registrar.ucr.edu. No student shall be excused from assigned final examinations.

### Backdating Units

Undergraduate students who have no more than two courses or 8 units of course work remaining to be completed in their program for the bachelor’s degree at UCR and who have been approved for admission to graduate status may begin the course work for an advanced degree at the beginning of their final quarter of undergraduate study. The student must inform the college office prior to enrollment in course work. When students are registered in graduate status, they then petition for credit for the courses completed beyond those required for a bachelor’s degree. The petition must be signed by the dean of the school or college, attesting to the fact that the student’s deficiency was as stated, and the petition is subject to approval by the department and the dean of the Graduate Division.
Credit by Examination

Credit by examination may be earned in accordance with regulations established by each college. The student should consult the Undergraduate Studies section of this catalog for specific regulations.

A UCR student in residence may take examinations for degree credit in courses offered on the campus without formally enrolling in them. The results of the examinations are entered upon the student's record. There is a $5 service charge for each petition.

Undergraduate Credit for Graduate Courses

Students interested in obtaining undergraduate credit for graduate courses should contact the office of the dean of their college for further information.

Undergraduate classification is determined by the number of quarter units earned. Postbaccalaureate and graduate classifications are based on the student’s academic objective and whether or not the student is advanced to candidacy for a doctorate.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Completed Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>0–44.9</td>
</tr>
<tr>
<td>Freshman</td>
<td>45–89.9</td>
</tr>
<tr>
<td>Sophomore</td>
<td>90–134.9</td>
</tr>
<tr>
<td>Junior</td>
<td>135 or more</td>
</tr>
<tr>
<td>Credential Only</td>
<td></td>
</tr>
<tr>
<td>Medical Program</td>
<td></td>
</tr>
<tr>
<td>Graduate</td>
<td></td>
</tr>
<tr>
<td>Master’s</td>
<td></td>
</tr>
<tr>
<td>Doctoral 1 (not advanced to candidacy)</td>
<td></td>
</tr>
<tr>
<td>Doctoral 2 (advanced to candidacy)</td>
<td></td>
</tr>
<tr>
<td>Visitor/Non-degree seeking</td>
<td></td>
</tr>
<tr>
<td>Post-Baccalaureate</td>
<td></td>
</tr>
</tbody>
</table>

Scholarship Regulations

Academic Standing To remain in good academic standing, a student must maintain a GPA of at least 2.00 and make progress toward the degree at a satisfactory rate.

Academic Probation Students are placed on academic probation if, at the end of any term, their GPA for the term is less than 2.00 or their cumulative GPA, computed on the total of all courses undertaken in the university, is less than 2.00 (“C” average).

Academic Disqualification Students are subject to disqualification from further registration in the university a) if, at the end of any term, their GPA for that term is less than 1.50 or b) if, after two terms on academic probation, their cumulative GPA, computed on the total of all courses undertaken in the university, is less than 2.00 (“C” average).

Students who are subject to the provisions of this regulation are also subject to such supervision as the faculty of their college may determine. The faculty may disqualify a student under its supervision from further registration in the university or, by suspending the provisions of this regulation, may permit a student subject to disqualification to remain in the university.

Undergraduate students who are disqualified are excluded from the university, and their connection with the university is presumed to be ended by such exclusion. Under certain circumstances, disqualified students may be readmitted upon their petition to the college and interview with the dean. Ordinarily, students are not readmitted until after the lapse of a year and unless their deficiencies are repairable within a reasonable period of time. During the period of disqualification, a student must give evidence of conduct which indicates that improved academic performance can be expected upon readmission. If readmitted, students must remove their deficiencies through above-average work undertaken in the university. It is usually required that all deficiencies be removed during the first year after readmission.

To transfer from one campus of the university to another, or from one college to another on the same campus, students who have been disqualified or who are on probation must obtain the approval of the appropriate dean to whose jurisdiction transfer is sought. Upon completion of the transfer, the students are subject to such supervision as the faculty of their college may determine.

Graduate students must maintain an average of at least three grade points per unit in all upper-division and graduate courses taken for letter grade during residence at the UC. Only courses in which the student is assigned grades “A,” “B,” or “C,” or equivalent, may be counted in completion of the requirements for the master’s degree. Graduate students who acquire scholarship deficiencies are subject to action by the dean of the Graduate Division.

Programs for Outstanding Students

Departments of the colleges offer and administer various courses and honors programs for specially prepared, outstanding students. In some departments, equivalent special studies and seminar programs have been designed for students with special aptitudes. Interested students should consult their faculty advisors early for details of the program in their major department.

Honors

Chancellor’s Honor List Students who are placed on the dean’s honor list for all three quarters in a single academic year (fall, winter, and spring) are placed on the Chancellor’s Honor List for that academic year.

Dean’s Honor List Any student who in any quarter completes a minimum of 12 units with letter grades, with no grade in any course below a “B” and no grade of “W,” “NC” or “I,” and who has a GPA of 3.50 or better for all work undertaken in the university for that quarter, is placed on the Dean’s Honor List.

Graduation with Honors The Academic Senate has established the following standards for award of honors at graduation: No more than the top 2 percent (by GPA) in the June graduating class shall receive highest honors. No more than the next 4 percent of graduating students shall receive high honors, and no more than the next 10 percent shall receive honors. To be eligible for honors at graduation, a student must have completed 60 or more quarter units of graded courses at the UC. The GPAs used to determine class rank shall be based on courses taken at the UC.

Students may obtain a statement of the specific requirements for graduation with honors from the office of the dean of their college.

University Honors Program For a description of the University Honors Program, see Educational Opportunities in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section of this catalog.

Academic Integrity

Academic Integrity for Students at the University of California, Riverside.

Policy

University Of California Policies Applying to Campus Activities, Organizations, and Students, section 100.00 Policy on Student Conduct and Discipline states that “Chancellors may impose discipline for the commission or attempted commission (including aiding or abetting in the commission or attempted commission) of the following types of violations by students:

102.1 All forms of academic misconduct including but not limited to cheating, fabrication, plagiarism, or facilitating academic dishonesty.

102.2 Other forms of dishonesty including but not limited to fabricating information, furnishing false information, or reporting a false emergency to the University.”

Principles of Academic Integrity

At the University of California, Riverside (UCR) honesty and integrity are fundamental values that guide and inform us as individuals and as
appropriate academic conduct in a particular situation, he or she should not use this as an excuse for academic misconduct. If a student is in doubt about whether an action constitutes academic misconduct, the student should consult the appropriate academic disciplines and engage honestly in all academic assignments. Anything less than total commitment to honesty circumvents the contract for intellectual enrichment that students have with the University to become an educated person, undermines the efforts of the entire academic community, and diminishes the value of an education for everyone, especially for the person who cheats. Both students and faculty are responsible for ensuring the academic integrity of the University.

These guidelines establish definitions for academic misconduct and procedures for the adjudication of academic integrity cases by the Office of Student Conduct and Academic Integrity Programs (SCAIP) for undergraduate students and Graduate Division for graduate student cases. Misunderstanding of appropriate academic conduct will not be accepted as an excuse for academic misconduct. If a student is in doubt about a particular situation, the student should consult with the instructor in the course to avoid the serious charge of academic misconduct.

**Types of Academic Misconduct**

The following provides definitions of academic misconduct to assist students in developing an understanding of the University’s expectations, recognizing that no set of written guidelines can anticipate all types and degrees of violations of academic integrity. To the extent that these definitions are not exhaustive, duly appointed representatives of the University will judge each case according to its merits.

Academic misconduct is any act that does or could improperly distort student grades or other student academic records.

- **Cheating** Fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.
- **Fabrication** Making up data or results and recording or reporting them, including laboratory or field research results. In the context of student academic integrity, this also includes falsifying academic or university documents and providing false information or testimony in connection with any investigation or hearing under this policy.
- **Plagiarism** The appropriation of another person’s ideas, processes, results, or words without giving appropriate credit. This includes the copying of language, structure, or ideas of another and attributing (explicitly or implicitly) the work to one’s own efforts. Plagiarism means using another’s work without giving credit.
- **Facilitating academic dishonesty** Assisting another in violating the policy of Academic Integrity, such as taking an exam for another student or providing coursework for another student to turn in as his or her own effort.
- **Unauthorized collaboration** Working with others without the specific permission of the instructor on assignments that will be submitted for a grade. This applies to in-class or take-home tests, papers, labs, or homework assignments. Students may not collaborate without faculty authorization.
- **Interference or sabotage** Damaging, removing, or otherwise harming another student’s work or University materials and systems to affect the academic performance of others.
- **Failure to comply with research regulations** such as those applying to human subjects, laboratory animals, and standards of safety.
- **Retaliation** of any kind against a person who reported or provided information about suspected or alleged misconduct and who has not acted in bad faith.

**Research** To foster intellectual honesty with regard to undergraduate research, all academic units at UCR are encouraged to develop statements that fit the distinctive research climate and needs of their individual disciplines. These guidelines may cover responsibilities of research supervisors, assignment of credit for publications, training of research apprentices, requirements for record keeping of experimental procedures and data storage.

Policies relevant to research and agencies funding research are posted on the UCR Office of Research website.

**Courses** Faculty members, teaching assistants, and other instructional personnel are encouraged to include statements addressing academic integrity as part of the syllabus for every course and to educate students about expectations and standards in the context of the course in order that students may not, through ignorance, subject themselves to the charge of academic misconduct. Instructors are further encouraged to inform students of campus resources available for dealing with academic difficulty.

**Undergraduate Procedures**

Throughout the process of reviewing allegations of academic misconduct, this policy articulates deadlines for action based on calendar days. If the day of a deadline falls on a weekend, holiday, or day the University is otherwise closed, that deadline will be moved to the next day the University is open.

**I. Faculty Actions**

**Research** In cases of alleged academic integrity violations in undergraduate research, faculty members, teaching assistants, and other instructional personnel should report suspicion of fraudulent or unethical research practice by students, including but not limited to undergraduate student researcher employees, immediately to the Chair of the department, Dean of the school or Director of the organized research unit. The report must then be forwarded to the Vice Chancellor for Research who will be responsible for coordinating further actions.

**Courses** If a faculty member, teaching assistant, or other instructional personnel suspects that an act of academic misconduct has occurred in a course, she or he must promptly communicate with the student regarding the alleged act of misconduct and the information upon which the allegation is based within 30 calendar days of discovery of the alleged act. Under special circumstances, the instructor may make a request for an extension of time through the Vice Provost for Administrative Resolution. If the discovery is made by a teaching assistant, reader, grader, or tutor, he or she should immediately communicate to the Faculty member in charge of the course, so that the Faculty member in charge can proceed with the investigation.

Whenever possible, the communication should take place through an in-person consultation and should be conducted in a manner that respects each student’s privacy and maintains an environment that supports teaching and learning. When a meeting is not possible or practical, an instructor may communicate with the student in writing. Written communication will be sent to the student’s University e-mail address. When multiple students are involved, faculty members are encouraged to communicate with each student separately.

The Faculty member or the student may request the assistance of the Ombudsperson at the conference to assist in a fair and focused discussion about what may have occurred.

The student must be given the opportunity to respond to the allegation of misconduct. When communication is made in writing, students will be given 14 calendar days to respond.

After conferring with the student and/or considering the student’s written response, the faculty member may determine there has been no misconduct, in which case she or he may dismiss the allegation and take no further action.

If the faculty member determines that it is more likely than not that the student committed an act of academic misconduct, regardless of the student’s intent to engage in misconduct, the instructor may then pursue one of the following actions:

A. In cases where the student does not dispute the facts upon which the charges are based, the instructor may impose an appropriate academic sanction, taking into account the clarity of course
expectations, the level of the student’s experience or knowledge of principles of academic integrity, the nature of the assignment, and the degree of intentionality and pre-meditation of the misconduct. These admissions of guilt and the sanction the instructor imposes are final.

Actions taken must be documented through the Academic Misconduct Referral form, or a referral memo to SCAIP, the central location where all records of incidents of academic dishonesty are kept on file. It is essential that the form or referral memo include the student’s name and student identification number, the name of the class in which the act took place, the date or time period in which the act occurred, a description of the academic misconduct, a summary of actions taken, all original documentation supporting the charge, and the academic sanctions assigned.

B. In cases where the student disputes the facts upon which the charges are based, the instructor will refer the case to SCAIP. The Academic Misconduct Referral form, available at conduct.ucr.edu, or memo must include the student’s name and student identification number, the name of the class in which the act took place, the date or time period in which the act occurred, a description of the academic misconduct, a summary of actions taken by the instructor, all original documentation supporting the charge (except where prohibited by law), and the academic sanctions recommended. Faculty members are encouraged to forward a copy of the course syllabus and other written communication that addresses academic integrity standards and expectations for the course. Faculty are further encouraged to evaluate the assignment or examination on its merits and to make note of the grade to be assigned in the event the student is not found responsible for violation of the University’s policies or where insufficient evidence exists to hold the student responsible.

Faculty members who will not be available to participate fully in resolving allegations (e.g., individuals holding part-time or temporary appointments, those on sabbatical or other leave, or those leaving University employment) must provide a copy of all documentation to the immediate supervising administrator: department chair, program director, center director, or dean of school, who will serve as a proxy for the Faculty member to conclude the case.

If grades are awarded while the case is in progress, the Faculty member is expected to assign a temporary grade placeholder of Grade Delay “GD pending the outcome of the review process.

The Faculty member is encouraged to evaluate the disputed assignment or examination on its merits and to note the grade to be assigned in the event that the student is not found responsible for violation of the University of California Policy on Student Conduct and Discipline or where insufficient evidence exists to hold the student responsible.

C. Violations that the instructor believes to be particularly egregious shall be referred directly to the School or College Academic Integrity Committee in the instructor’s School or College for review.

The student may not avoid the imposition of a sanction by withdrawing from a course. If the student is found not responsible for academic misconduct, the student will be permitted to request a withdrawal from the course with a grade of “W” using Undergraduate Enrollment Adjustment Procedures.

II. Administrative Actions

Research  The Vice Chancellor for Research, in consultation with the original recipient of the report, will review the description of the academic misconduct and documentation supporting the charge and determine if unethical conduct may have occurred, and if so, may undertake a preliminary inquiry or formal investigation following the guidelines outlined in UCR Policy on Integrity in Research, posted on the Office of Research Affairs website at http://www.ora.ucr.edu/ori.aspx. In the event that the preliminary inquiry or formal investigation finds probable cause to warrant disciplinary proceedings, charges of misconduct will be processed in accordance with existing procedures for adjudicating alleged academic misconduct in courses.

Courses  The table on the next column shows the steps in the investigation and review process.

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible Body: Undergraduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of Cases  • Faculty member’s suspicion of misconduct in a course, communication with student, and determination of outcome  • Faculty member documents actions via Academic Misconduct Referral Form for Review Stage 1</td>
<td>Faculty Member</td>
</tr>
<tr>
<td>Review Stage 1  • Administrative Review</td>
<td>Student Conduct and Academic Integrity Programs [SCAIP]</td>
</tr>
<tr>
<td>Review Stage 2  • Hearings for cases that are complex, egregious, and/or repeated cases of misconduct  • Appeals of decisions made at Review Stage 1</td>
<td>Academic Integrity Committees of each college/school [AICs] Hearing panels constituted from the AICs</td>
</tr>
<tr>
<td>Review Stage 3  • Annual assessments of cases addressed at Review Stages 1 &amp; 2  • Appeals of primary decisions made at Review Stage 2</td>
<td>Campus Academic Integrity Executive Committee</td>
</tr>
</tbody>
</table>

A. In cases where the student does not dispute the facts upon which the charges are based, SCAIP, upon receipt of the Academic Misconduct Referral Form, will follow up with the student in writing to formally advise the student of the academic sanctions assigned by the instructor as well as appropriate disciplinary sanctions assigned by the University.

The decision shall be forwarded in writing to the student within 20 calendar days of the review; and communicated to the instructor, school or college and/or division in accordance with legitimate educational interest criteria as articulated by the Family Education Rights and Privacy Act.

Students with a record of previous academic misconduct will be referred to the Academic Integrity Committee in their School or College for a formal hearing (Review Stage 2), with a recommendation that suspension or dismissal be considered.

B. In cases where the student disputes the facts upon which the charges are based, upon receipt of the Academic Misconduct Referral Form, SCAIP will notify the student of their alleged violation of the University of California Policy on Student Conduct and Discipline, the factual basis for the charges, and the plan to conduct a Review Stage 1 Administrative Review of the case. The student will be advised that the Administrative Review is intended as a thorough exposition of all related facts and written materials associated with the alleged misconduct, and that it is not intended as an adversarial criminal or civil legal proceeding. It is not modeled on these adversarial systems; nor does it serve the same functions; rather, it is an academic process unique to the community of scholars that comprise a University. The student will also be informed of his or her right to be assisted by an advisor of his or her choice. Such written notification will occur within 20 calendar days of the receipt of the referral by SCAIP and will be sent to the student’s University e-mail address.

1. Review Stage 1, Administrative Review, process:

The Administrative Review conducted by SCAIP involves meetings with the student, the Faculty member, and others who may have relevant information. The student will have the opportunity to discuss any extenuating circumstances, causes, and motivations that may have contributed to the alleged misconduct. If SCAIP deems it necessary, the Administrative Review will be scheduled such that both the faculty member and the student can attend. The purpose of an Administrative
Review is to explore and investigate the incident giving rise to the appearance of academic dishonesty, and to reach an informed conclusion as to whether or not academic dishonesty occurred. In keeping with the ultimate premise and justification of academic life, the duty of all persons at a Review is to assist in a thorough and honest exposition of all related facts. A Review is not in the character of a criminal or civil legal proceeding. It is not modeled on these adversarial systems; nor does it serve the same functions; rather, it is an academic process unique to the community of scholars that comprise a University.

The review will:
• explain fully the alleged violation of the Standards of Conduct
• review written materials associated with the alleged misconduct
• give the student and the instructor the opportunity to present their accounts of the incident and present any witnesses or other individuals who may have relevant information about the incident
• address how the student’s alleged conduct was judged; why the behavior is unacceptable, the impact of conduct on others in the community, causes and motives of the conduct, and alternatives for balancing personal circumstances with needs and expectations of the community

2. Outcome of the Administrative Review:
If SCAIP determines it is more likely than not that the student is responsible for academic misconduct, the academic sanctions recommended by the faculty member as well as appropriate disciplinary sanctions will be assigned taking into account the clarity of course expectations, the level of the student’s experience or knowledge of principles of academic integrity, the nature of the assignment, and the degree of intentionality and premeditation of the misconduct.

The decision shall be forwarded in writing to the student within 20 calendar days of the review and communicated to the instructor, school or college and/or division in accordance with legitimate educational interest criteria as articulated by the Family Education Rights and Privacy Act. In cases where the instructor has held a grade in abeyance pending the outcome of an Administrative Review, she or he shall submit a final grade with the Registrar that is consistent with the decision of SCAIP as to the question of misconduct.

3. Appeals of Decisions by Faculty Members and/or from Review Stage 1:
Academic Integrity Committees, described in Section C function as the appellate bodies for decisions made at Review Stage 1. Section E below more fully explains appeal procedures.

C. Cases involving a student with a record of previous academic misconduct or cases that are sufficiently complex to require additional consultation shall be referred directly by SCAIP for a Stage 2 review by the Academic Integrity Committee in the relevant college/school for a formal hearing.

III. Academic Integrity Committees
1. Review Stage 2, College/School Academic Integrity Committees for Cases Involving Undergraduate Students
An Academic Integrity Committee will be established in each School or College to:
• hear cases referred by SCAIP that are sufficiently complex to require additional review
• hear serious and repeated violations of academic misconduct upon referral from an instructor or SCAIP
• consider appeals of decisions and/or sanctions imposed by SCAIP

The Academic Senate’s Committee on Committees will appoint four faculty members from each of BCOE, CNAS, and SoB, and six from CHASS to the undergraduate Academic Integrity Committees for each college/school to serve one-year terms, effective September 1-August 31. Each committee should include faculty who are available to participate in hearings during the summer months.

In addition, SCAIP will solicit and review applications from interested undergraduate and graduate students and make recommendations to the Associated Students of UCR and Graduate Student Association regarding students to be appointed to serve on each college/school committee for one-year terms, effective September 1-August 31. The final endorsement of student members will rest with the Committee on Committees. Students are not eligible to serve if they have been suspended or are on academic or disciplinary probation, have been evicted from University Housing for reasons related to conduct, or have a case pending before SCAIP. (Am 20 February 07)

In all cases an effort will be made to appoint members who represent the disciplinary diversity within each college/school, whenever possible. Staff support to the committees will be provided by the office of the Vice Provost for Administrative Resolution, the office of the AVC/Dean of Students, and SCAIP.

2. Hearing Panels
SCAIP will schedule a hearing panel of three to five members, from the relevant AIC for each case. A quorum of the committee consists of three persons, with at least one faculty member and one student for School or College Committees. In the absence of a quorum, the hearing will be rescheduled. Staff support to the Committee will be provided by the Vice Provost for Administrative Resolution or his/her designee.

The purpose of an Academic Integrity Committee Hearing is to explore and investigate the incident giving rise to the appearance of academic dishonesty, and to reach an informed conclusion as to whether or not academic dishonesty occurred. In keeping with the ultimate premise and justification of academic life, the duty of all persons at a hearing is to assist in a thorough and honest exposition of all related facts. A hearing is not in the character of a criminal or civil legal proceeding. It is not modeled on these adversarial systems; nor does it serve the same functions; rather, it is an academic process unique to the community of scholars that comprise a University.

The Vice Provost for Administrative Resolution or his/her designee will serve as a non-voting administrative chair to facilitate the hearing. The administrative chair shall rule on all questions of procedure and evidence, including but not limited to: the order of presentation of evidence, admissibility of evidence, applicability of regulations to a particular case, and relevance of testimony.

3. Hearing Procedures
Preparation: Prior to the hearing, panel members will receive and review a copy of the notification of charges and documentary evidence provided by the instructor, the University, and the student.

Introductory comments: At the beginning of the hearing, the administrative chair will ask all present at the hearing to introduce themselves for the record. The administrative chair will ask any panel members to disqualify themselves from participation if they believe for any reason that they cannot render a just and fair decision and will permit the student to request that a member be disqualified if the student believes for an appropriate reason that a panel member cannot render a just and fair decision. If a student or faculty member of the hearing panel is disqualified, another member will be appointed to fill the same role, if needed for a quorum. The chair will read aloud the charges of academic misconduct and the student will be asked to respond to the charges by (a) accepting responsibility, (b) accepting responsibility and noting that there are mitigating circumstances, or (c) denying responsibility for the alleged violation of the University of California Policy on Student Conduct and Discipline.

Presentation of accounts: The faculty member and the student will be given the opportunity to present their accounts of the incident and present any witnesses or other individuals who may have relevant information about the alleged academic misconduct. Hearing panel members will be given an opportunity to ask questions of the faculty member, the student, and witnesses. Each party will then be asked if there is additional information needed, or if any discrepancies or questions need to be presented or addressed.
Deliberation: The hearing panel will deliberate in private to decide, by a majority vote, if a preponderance of the evidence indicates that the student is responsible or not responsible for alleged violation of University of California Policy on Student Conduct and Discipline.

If the student is found to be responsible for violations of the Policy, the Committee shall be informed of the student’s prior record to determine whether the student has been found responsible for previous academic misconduct. Based on this information, the Committee will determine the sanction(s) to be assigned.

Notification of decision: Once the hearing panel has reached a decision, the parties involved will reassemble, and the results of the deliberation will be presented. Within 20 calendar days, the Vice Provost for Administrative Resolution or his/her designee will send written notification to the student, the faculty member, and the dean or his/her designated associate dean for student academic affairs of the college/school detailing the decision and the sanctions imposed by the hearing panel. The notification will also outline the appeal process.

Records: An audio recording of the hearing, but not the deliberations, shall be made and retained in SCAIP as part of the record for as long as the disciplinary record is retained, or for seven years from the date of decision, whichever is shorter (see Section F below). The student may obtain a copy of the recording upon paying the expense of making such copy. Either the student with conduct under investigation or the faculty member may arrange for a stenographer to make a full transcript of the proceedings at his/her own expense. If one party has the proceedings transcribed, arrangements shall be made before the hearing as to how to apportion the cost if both parties want copies. Other than for the purpose of the official record as provided above, mechanical or electronic devices for recording or broadcasting shall be excluded from the hearing.

4. Students may appeal the decision of Stage 2 review by the Academic Integrity Committees in writing to the Campus Academic Integrity Executive Committee

College Academic Integrity Executive Committee The Vice Provost for Administrative Resolution or his designee shall select one faculty member and one student from each Academic Integrity Committee to serve as the Campus Academic Integrity Executive Committee for undergraduates. The Campus Academic Integrity Executive Committee also serves as the appellate body for primary decisions made at Review Stage 2 for undergraduate students. The Executive Committee will also review, on an annual basis, cases addressed by SCAIP and Academic Integrity Committee actions to provide oversight and direction and to ensure that policies and procedures are appropriate and properly applied.

IV. Appeals

1. Channels for Appeals

Stage 1 Review decisions made by SCAIP may be appealed through the School or College Academic Integrity Committee in the faculty member’s School or College. Appellate decisions of a School or College Academic Integrity Committee are final.

Stage 2 Review decisions made by a School or College Academic Integrity Committee may be appealed to the Campus Academic Integrity Executive Committee. Appellate decisions of the Campus Academic Integrity Executive Committee are final.

2. Criteria for Appeals

- New evidence not reasonably available at the time of the original hearing, the absence of which can be shown to have had a detrimental impact on the outcome of the hearing
- Procedural error that can be shown to have had a detrimental impact on the outcome of the hearing
- Errors in the interpretation of University policy so substantial as to deny one of the parties a fair hearing
- Grossly inappropriate sanction having no reasonable relationship to the charges

3. Appeal Procedures

- The Faculty member or the student may appeal a decision in writing to the appropriate body for appeal, as described above. The appeal must be made within 14 calendar days after the written decision is made available.
- Appeals must be authored and signed by the submitting party. Appeals produced by advisors or other non-parties will not be considered.
- The filing of a timely appeal suspends the imposition of sanctions until the appeal is decided. Grades or degrees will be withheld pending conclusion of the appeal.
- When an appeal has been filed, the relevant parties may be requested to respond in writing to the matters in question before a decision about the appeal is made. The non-appealing party, whether student or Faculty member, will be notified of the appeal as soon it has been received by the appropriate appellate body and will be given an opportunity to submit a written statement for consideration during the appeal process.
- The appellate body will determine whether the grounds for appeal have been satisfied and whether further process is necessary to resolve the appeal. Findings of fact will be accepted as determined by the original adjudicating body, unless the appellate body determines that the original adjudicating body acted in an arbitrary, capricious, or unfair manner.
- The appellate body will make a decision based on the written submissions within 20 calendar days, or indicate in writing what further process is necessary for final resolution.
- The appellate body may approve, reject, or modify the decision and sanction in question. The action taken shall be communicated in writing to the student, the faculty member, SCAIP, and/or the original adjudicating body within 20 calendar days after receipt of the appeal and related documents. The decision of the appellate body is final.

V. Maintenance Of Records

SCAIP shall serve as the central location where all written, audio, and electronic records of incidents of academic misconduct are kept on file. The records will be readily available for review by the Deans and Associate Deans of each College or School, the Dean of the Graduate Division, the Executive Vice Chancellor and Provost and the Vice Provost for Administrative Resolution, in accordance with legitimate educational interest criteria as articulated by the Family Educational Rights and Privacy Act.

The file of a student found in violation of campus regulations (including the transcripts or recordings of the hearing) will be maintained by the SCAIP for a period of at least seven years from the date of the letter providing notice of final disciplinary action, unless otherwise determined by the Vice Provost for Conflict Resolution. When a student is suspended as a result of a violation of the University of California Policy on Student Conduct and Discipline, the fact that suspension was imposed must be posted on the academic transcript for the duration of the suspension. When a student is dismissed as a result of a violation of this policy, the fact that dismissal was imposed must be posted on the academic transcript permanently.

VI. Scheduling for Hearings and Appeals

In general, Academic Integrity Committees will conduct hearing panels September through June, the main academic year. In special circumstances, including hearings involving graduating seniors and those involving course sequences and prerequisites, SCAIP and the Academic Integrity Committees will work to expedite the process and endeavor to hold summer hearings on a limited basis.

 Regulations Specifically for Graduate Students

1. Requirements and Expectations in Research

To foster intellectual honesty with regard to graduate student research, all academic units at UCR are encouraged to develop statements that fit the distinctive research climate and needs of their individual disciplines. These
guidelines may cover responsibilities of research supervisors, assignment of authorship or credit for publications, training of research apprentices, requirements for record keeping of experimental procedures and data storage.

It is the responsibility of each individual engaged in research at UCR to be informed of University policies relating to research and of the policies and procedures of the agencies funding research. Relevant policies are posted on the UCR Office of Research website.

2. Allegations of Misconduct in Research

All allegations of research misconduct by graduate students should be immediately reported to the Associate Dean for Graduate Academic Affairs in the Graduate Division. The Associate Dean will then inform the Vice Chancellor for Research who serves as the UCR Research Integrity Officer and who, in furtherance of the University's obligations and responsibilities, has been delegated the administrative authority by the Chancellor with respect to the oversight, implementation, maintenance and updating of the Policy and Procedures for Responding to Allegations of Research Misconduct at the University of California, Riverside. All complainants should consult the Policy and Procedures for Responding to Allegations of Research Misconduct at the University of California, Riverside prior to bringing an allegation of research misconduct to the Associate Dean.

The Vice Chancellor for Research or his/her designee will review the description of the research misconduct and all documentation supporting the charge. He/she will determine, together with the Associate Dean for Graduate Academic Affairs, if misconduct may have occurred, and if so, may undertake a preliminary inquiry or formal investigation, following the guidelines outlined in the UCR Policy on Integrity in Research, posted on the UCR Office of Research website. In the event that the preliminary inquiry or formal investigation finds probable cause with respect to research misconduct to warrant disciplinary proceedings, charges of misconduct will be processed in accordance with procedures for adjudicating alleged academic misconduct in courses, as outlined below, beginning with Review Stage 1.

3. Requirements and Expectations in Courses

Instructional personnel responsible for courses (herein referred to as Faculty) are encouraged to include statements addressing academic integrity as part of the syllabus for every course and to educate students about expectations and standards of the course in order that students may not, through ignorance, subject themselves to the charge of academic dishonesty as part of the syllabus for every course.

Faculty are further encouraged to include statements addressing academic integrity as part of the syllabus for every course and to educate students about expectations and standards of the course in order that students may not, through ignorance, subject themselves to the charge of academic dishonesty as part of the syllabus for every course.

Faculty are further encouraged to inform students of campus resources available for dealing with academic difficulty.

4. Allegations of Misconduct in Courses

The table below shows the steps in the investigation and review process.

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible Body: Undergraduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of Cases • Communication with the student regarding suspected misconduct and documentation of actions via the Graduate Academic Misconduct Referral Form</td>
<td>• Faculty Member</td>
</tr>
<tr>
<td>Review Stage 1 • Initial (Administrative) Review</td>
<td>• Associate Dean for Graduate Academic Affairs</td>
</tr>
<tr>
<td>Review Stage 2 • Hearings for cases that are complex, egregious, and/or repeated cases of misconduct • Appeals of decisions made at Review Stage 1</td>
<td>• Graduate Academic Integrity Committee (GAIC)</td>
</tr>
<tr>
<td>Review Stage 3 • Annual assessments of cases addressed at Review Stages 1 &amp; 2 • Appeals of primary decisions made at Review Stage 2</td>
<td>• Graduate Council</td>
</tr>
</tbody>
</table>

4.1. Initiation of Cases

If a Faculty member suspects that an act of academic misconduct has occurred in a course, he or she must promptly communicate with the student regarding the alleged misconduct and the information upon which the allegation is based; the notification process must occur within 30 calendar days from the discovery of the alleged act. The Faculty member may make a request for an extension of time through the Associate Dean for Graduate Academic Affairs. If the discovery is made by a student, teaching assistant, reader, grader, or tutor, he or she should immediately communicate to the Faculty member in charge of the course, so that the Faculty member in charge can proceed with the investigation.

Whenever possible, communication with the student should take place through an in-person consultation and should be conducted in a manner that respects the student’s privacy and maintains an environment that supports teaching and learning. When multiple students are involved, Faculty are encouraged to communicate with each student separately. The Faculty member or the student may request the presence at the consultation meeting of the Ombudsperson.

When an in-person meeting is not possible, the Faculty member may communicate with the student in writing. Written communication should be sent to the student’s University e-mail address.

The student must be given the opportunity to respond to the allegation of misconduct. When communication is made in writing, students will be given 10 calendar days to respond.

After conferring with the student and/or considering the student’s written response, the Faculty member may determine that there has been no misconduct, in which case the Faculty member may dismiss the allegation and take no further action.

If the Faculty member determines that it is more likely than not that the student committed an act of academic misconduct, regardless of the student’s intent to engage in misconduct, the case moves to Stage 1 in the review process.

Faculty members who will not be available to participate fully in resolving allegations (e.g., individuals holding part-time or temporary appointments, those on sabbatical or other leave, or those leaving University employment) must provide a copy of all documentation to the immediate supervising administrator: department chair, program director, center director, or dean of school, who will serve as a proxy for the Faculty member to conclude the case.

If grades are awarded while the case is in progress, the Faculty member should assign a temporary grade placeholder of Grade Delay “GD” pending the outcome of the review process.

4.1.1. Student Admits Responsibility

If the student admits responsibility for the alleged misconduct, the Faculty member may immediately impose an appropriate academic sanction. The Faculty member must document the case and the sanction on the Graduate Academic Misconduct Referral form and send the form to the Associate Dean for Graduate Academic Affairs. Faculty members are advised to consult with the Graduate Advisor for the student’s program and with the Associate Dean for Graduate Academic Affairs prior to imposing the academic sanction.

4.1.2. Student Admits Responsibility

If the student does not admit responsibility but the Faculty member makes a determination of misconduct, the Faculty member will refer the case to the Associate Dean for Graduate Academic Affairs using the Graduate Academic Misconduct Referral Form. The referral form must include the student’s name and student identification number, the name of the class in which the act took place, the date or time period in which the act occurred, a description of the academic misconduct, a summary of actions taken, all original documentation supporting the charge (including a copy of the course syllabus and other written communication that addresses academic integrity standards and expectations for the course) and the academic actions and disciplinary sanctions recommended by the Faculty member. Faculty members are advised to consult with the Graduate Advisor for the student’s program and with the Associate Dean for Graduate Academic Affairs prior to recommending sanctions.
The Faculty member also will evaluate the disputed assignment or examination on its merits and note the grade to be assigned in the event that the student is not found responsible for violation of the University of California Policy on Student Conduct and Discipline or where insufficient evidence exists to hold the student responsible.

Upon receipt of the Academic Misconduct Referral Form, the Associate Dean for Graduate Academic Affairs will notify the student of the University of California Policy on Student Conduct and Discipline that was allegedly violated, the factual basis for the charges, and the plan to conduct an Initial [Administrative] Review of the case. The student will be advised that the Initial [Administrative] Review is intended as a thorough exposition of all related facts and written materials associated with the alleged misconduct, and that it is not intended as an adversarial criminal or civil legal proceeding. The student will also be informed of his or her right to be assisted by an advisor of his or her choice. Such written notification will occur within 20 calendar days of the receipt of the referral by the Associate Dean and will be sent to the student’s University e-mail address.

A student may not avoid the imposition of a sanction by withdrawing from a course. A student officially notified of alleged academic misconduct may not withdraw from the course until the determination of responsibility is made and any sanctions are imposed. A sanction for a violation of academic integrity that affects the course grade will be applied. If the student is found not responsible for academic misconduct, the student will be permitted to withdraw from the course in accordance with campus regulations.

4.2. Review Stage 1: Initial [Administrative] Review

The Initial [Administrative] Review, conducted by the Associate Dean for Graduate Academic Affairs, involves meetings with the student, the Faculty member, and others who may have relevant information. The student will have the opportunity to discuss any extenuating circumstances, causes, and motivations that may have contributed to the alleged misconduct. If the Associate Dean deems it necessary, a joint meeting will be scheduled at a time when both the Faculty member and the student can attend. If the Faculty member is unavailable for a timely Initial [Administrative] Review, the immediate supervising administrator will be asked to serve in place of the Faculty member.

4.2.1. Outcome of the Initial [Administrative] Review

If the Associate Dean for Graduate Academic Affairs determines that it is more likely than not that the student is responsible for academic misconduct, the academic actions recommended by the Faculty member, as well as any disciplinary sanctions imposed by the University, will be assigned.

The determination shall be forwarded by the Associate Dean for Graduate Academic Affairs in writing to the student within 20 calendar days of the Initial [Administrative] Review; notice will be sent to the student’s University e-mail address and communicated to the Faculty member and to the dean of the college/school in accordance with legitimate educational interest criteria as articulated by the Family Education Rights and Privacy Act. In cases where the Faculty member has held a grade in abeyance pending the outcome of an Initial [Administrative] Review, he or she shall submit a final grade to the Registrar that is consistent with the determination by the Associate Dean for Graduate Academic Affairs as to the question of misconduct. Either the student or faculty member can appeal the decision of the Associate Dean for Graduate Academic Affairs.

Cases involving a student with a record of previous academic misconduct or cases that are sufficiently complex or egregious to require additional consultation by the Graduate Academic Integrity Committee (GAIC) for a formal hearing. Review Stage 2 also serves as the stage for appeals of decisions made at Review Stage 1. Appellate decisions at Review Stage 2 are final.

The Academic Senate’s Committee on Committees will appoint faculty to the Graduate Academic Integrity Committee to serve one-year terms, effective September 1-August 31, and will appoint one faculty member from the GAIC to serve as chair. The GAIC will consist of at least one member from each school and at least two members from each college and should include faculty who are available to participate in hearing during the summer months.

In addition, the Graduate Division will solicit and review applications from interested graduate students and make recommendations to the Graduate Student Association of UCR regarding students to be appointed to serve on the GAIC for one-year terms, effective September 1-August 31. The final endorsement of student members will rest with the Committee on Committees. Students are not eligible to serve if they have been suspended or are on academic or disciplinary probation, have been evicted from University Housing for reasons related to conduct, or have a case pending before the Graduate Division, GAIC, or Graduate Council.

Faculty and student members should represent the disciplinary diversity within each college/school, whenever possible. Staff support to the committee will be provided by the Graduate Division.

4.3. Review Stage 2: Complex Cases and Appeals from Stage 1

Review Stage 2 is reserved for cases involving a student with a record of previous academic misconduct or cases that are sufficiently complex or egregious to require additional consultation by the Graduate Academic

4.3.1. Hearing Panels

For each Stage 2 case, the chair of the GAIC will schedule a hearing panel of three to five GAIC members. A quorum is required for a hearing to proceed and consists of three persons, including at least one faculty member and one student.

The Associate Dean for Graduate Academic Affairs or designee will serve as the non-voting member of the hearing panel. The chair of the hearing panel shall rule on all questions of procedure and evidence, including but not limited to: the order of presentation of evidence, admissibility of evidence, applicability of regulations to a particular case, and relevance of testimony.

4.3.2. Hearing Panels

1. Preparation: Prior to the hearing, panel members will receive and review a copy of the notification of charges and documentary evidence provided by the Faculty member, the University, and the student.

2. Introductory comments: At the beginning of the hearing, the chair will ask any panel members to disqualify themselves from participation if they believe that they cannot render a just and fair decision, and will permit the student to request that a member be disqualified if the student believes for an appropriate reason that a panel member cannot render a just and fair decision. If a student or Faculty member of the hearing panel is disqualified, another member will be appointed to fill the same role, if needed for a quorum. The chair will read aloud the charges of academic misconduct, and the student will be asked to respond to the charges by (a) accepting responsibility, (b) accepting responsibility and noting that there are mitigating circumstances, or (c) denying responsibility for the alleged violation of the University of California Policy on Student Conduct and Discipline.

3. Presentation of accounts: The Faculty member and the student will be given the opportunity to present their accounts of the incident and to present any witnesses or other individuals who may have relevant information about the alleged academic misconduct. Hearing panel members will be given an opportunity to ask questions of the Faculty member, the student, and witnesses. Each party will then be asked if there is additional information needed, or if any discrepancies or questions need to be presented or addressed.

4. Deliberation: The hearing panel will deliberate in private to decide, by a majority vote, if a preponderance of the evidence indicates that the student is responsible or not responsible for alleged violation of University of California Policy on Student Conduct and Discipline.

5. Determination of sanctions: If the student is found to be responsible for violations of policies, the hearing panel shall be informed of the student’s prior record of academic misconduct. Based on this information and the recommendation of the Faculty member, the committee will determine the disciplinary sanctions to be assigned, how and for how long the record of
the sanctions will be maintained on the student’s permanent record, and the conditions that must be met for the record to be removed, if any.

6. Notification of decision: Once the hearing panel has reached a decision, the parties will reassemble, and the results of the deliberation will be presented. Within 20 calendar days, the Associate Dean for Graduate Academic Affairs will send written notification to the student, the Faculty member, and the dean or his/her designated associate dean for student academic affairs of the college/school detailing the decision and the sanctions imposed by the hearing panel. The notification will also outline the appeal process.

7. Records: An audio recording of the hearing, but not the deliberations of the hearing panel, shall be made and retained by the Graduate Division as part of the record for as long as the disciplinary record is retained, or for seven years from the date of decision, whichever is shorter (see Section 6 below). The student may obtain a copy of the recording upon paying the expense of making such copy. Either party may arrange for a stenographer to make a full transcript of the proceedings at his/her own expense. If one party has the proceedings transcribed, arrangements shall be made before the hearing as to how to apportion the cost if both parties want copies. Other than for the purpose of the official record as provided above, mechanical or electronic devices for recording or broadcasting shall be excluded from the hearing.

4.4. Review Stage 3: Appeals from Stage 2 and Annual Assessment of Cases

Review Stage 3 is reserved for appeals of primary decisions made at Review Stage 2, and for annual assessment of cases adjudicated at Review Stages 1 and 2. For each Stage 3 case, the Chair of the Graduate Council or designee shall select a 3-5 member subcommittee of the Graduate Council to serve as an appeal panel. Each Stage 3 hearing will be conducted according to the Hearing Procedures described above in Section 4.3.2.

The Graduate Council additionally conducts annual assessments of cases adjudicated at Review Stages 1 and 2 for the purpose of providing oversight and ensuring that policies and procedures are appropriately and consistently applied.

5. Appeals

Decisions of the Associate Dean for Graduate Academic Affairs may be appealed to the GAIC. Appellect decisions by the GAIC are final. Primary decisions of the GAIC may be appealed to the Graduate Council. Appellate decisions by the Graduate Council are final. In any decision that includes a sanction of dismissal of a graduate student, the Dean of the Graduate Division will be the final arbiter.

5.1. Criteria for Appeals

Appeals must be based on one or more of the following:

- New evidence not reasonably available at the time of the original hearing, the absence of which can be shown to have had a detrimental impact on the outcome of the hearing
- Procedural error that can be shown to have had a detrimental impact on the outcome of the hearing
- Errors in the interpretation of University policy so substantial as to deny one of the parties a fair hearing
- Grossly inappropriate sanction having no reasonable relationship to the charges

5.2. Appeal Procedures

Appeals must be based on one or more of the following:

- New evidence not reasonably available at the time of the original hearing, the absence of which can be shown to have had a detrimental impact on the outcome of the hearing
- Procedural error that can be shown to have had a detrimental impact on the outcome of the hearing
- Errors in the interpretation of University policy so substantial as to deny one of the parties a fair hearing
- Grossly inappropriate sanction having no reasonable relationship to the charges

1. The Faculty member or the student may appeal a decision in writing to the appropriate body for appeal, as described above. The appeal must be made within 10 calendar days after the written decision is made available.

2. Appeals must be authored and signed by the submitting party. Appeals produced by advisors or other non-parties will not be considered.

3. The filing of a timely appeal suspends the imposition of sanctions until the appeal is decided. Grades or degrees will be withheld pending conclusion of the appeal.

4. When an appeal has been filed, the relevant parties may be requested to respond in writing to the matters in question before a decision about the appeal is made. The non-appealing party, whether student or Faculty member, will be notified of the appeal within 10 calendar days and will be given an opportunity to submit a written statement for consideration within 20 calendar days.

5. The appellate body will determine whether the grounds for appeal have been satisfied and whether further process is necessary to resolve the appeal. Findings of fact will be accepted as determined by the original adjudicating body, unless the appellate body determines that the original adjudicating body acted in an arbitrary, capricious, or unfair manner.

6. The appellate body will make a decision based on the written submissions within 20 calendar days, or indicate in writing what further process is necessary for final resolution.

7. The appellate body may approve, reject, or modify the decision and sanction in question. The action taken shall be communicated in writing to the student, the Faculty member, and the original adjudicating body within 20 calendar days after receipt of the appeal and related documents. The decision of the appellate body is final.

6. Maintenance of Records

Graduate Division shall serve as the central location where all written, audio, and electronic records of incidents of academic misconduct are kept on file. The records will be readily available for review by the Deans and Associate Deans of each College or School, the Dean of the Graduate Division, the Executive Vice Chancellor and Provost, and the Vice Provost for Conflict Resolution, in accordance with legitimate educational interest criteria as articulated by the Family Educational Rights and Privacy Act.

The file of a student found in violation of campus regulations (including the transcripts or recordings of the hearing) will be maintained for a period of at least seven years from the date of the letter providing notice of final disciplinary action, unless otherwise determined by the Associate Dean for Graduate Academic Affairs. When a student is suspended as a result of a violation of the University of California Policy on Student Conduct and Discipline, the fact that suspension was imposed must be posted on the academic transcript for the duration of the suspension. When a student is dismissed, the fact that dismissal was imposed must be posted on the academic transcript permanently.

Campus Policies and Regulations

Disabled Access Grievance Procedure

UCR remains committed to its historical excellence in the area of accessibility for the disabled. UCR, in compliance with federal laws, state laws, and university regulations, does not discriminate on the basis of race, color, national origin, sex, disability, or age in any of its programs, activities, services, or practices.

This nondiscrimination policy covers admission and access to, and treatment and employment in, university programs and activities. As well, individuals may complain of any action which they believe discriminates on the grounds of race, color, national origin, sex, disability, or age.

The Vice Chancellor of Business and Administrative Services, is designated as the employee responsible for coordinating the university’s efforts to comply with Section 504 of the Rehabilitation Act of 1973 and with the Americans with Disabilities Act of 1990. The following procedure has been
in psychological harm to any student or other person. Incidents of hazing may be addressed through student disciplinary action, criminal charges, and/or civil action.

More information about hazing and how to report hazing is available in the Vice Chancellor, Student Affairs office or Student Conduct and Academic Integrity Programs office.

**Fees**

Students are expected to pay all fees and charges which they incur. Those with outstanding obligations to the university are not allowed to register; obtain a diploma, transcript of official record; or participate in certain university services.

**University of California Nondiscrimination and Affirmative Action Policy Regarding Academic and Staff Employment**

It is the policy of the university not to engage in discrimination against or harassment of any person employed or seeking employment with the University of California on the basis of race, color, national origin, religion, sex, gender, gender expression, gender identity, pregnancy, physical or mental disability, medical condition (cancer-related or genetic characteristics), genetic information (including family medical history), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services.

This policy applies to all employment practices, including recruitment, selection, promotion, transfer, merit increase, salary, training and development, demotion, and separation. This policy is intended to be consistent with the provisions of applicable state and federal laws and university policies.

University policy also prohibits retaliation against any person who assists someone with a complaint of discrimination or harassment, or participates in any manner in an investigation or resolution of a complaint of discrimination or harassment. Retaliation includes threats, intimidation, reprisals, and/or adverse actions related to employment.

In addition, it is the policy of the university to undertake affirmative action, consistent with its obligations as a federal contractor, for minorities and women, for persons with disabilities, and for covered veterans. The University commits itself to apply every good faith effort to achieve prompt and full utilization of minorities and women in all segments of its workforce where deficiencies exist. These efforts conform to all current legal and regulatory requirements, and are consistent with University standards of quality and excellence.

In conformance with federal regulations, written affirmative action plans shall be prepared and maintained by each campus of the university, by the Lawrence Berkeley National Laboratory, by the Office of the President, and by the Division of Agriculture and Natural Resources. Such plans shall be reviewed and approved by the Office of the President and the Office of General Counsel before they are officially promulgated.

This policy supersedes the University of California Nondiscrimination and Affirmative Action Policy Regarding Academic and Staff Employment, dated July 1, 2008. The University of California, Riverside is an affirmative action/equal opportunity employer. Inquiries regarding the University’s equal opportunity policies should be directed to the Assistant Vice Chancellor, Diversity, Excellence and Equity/ Director of Faculty and Staff Affirmative Action (951) 827-5604.

**Sexual Harassment and Sexual Violence**

UC Riverside (UCR) is committed to fostering an environment where all UCR students can work and learn in an atmosphere that is inclusive, safe, rewarding, and free of all forms of harassment, exploitation, or intimidation. Under the University of California’s Policy on Sexual Harassment and Sexual Violence, sexual harassment, sexual offenses or acts of sexual violence including, sexual assault, domestic violence, dating violence and stalking are strictly prohibited. All students affiliated with UCR have a responsibility in preventing sexual harassment, sexual offenses or acts of
sexual violence. The University will respond promptly to all reports of sexual harassment and sexual violence involving UCR students, and will take appropriate action to prevent, to correct, and discipline behavior that violates the campus’ policy.

You are strongly encouraged to review and become familiar with UCR’s Policies and Procedures for Responding to Reports of Sexual Harassment and Sexual Violence which are available through the Title IX/Sexual Harassment Office at titleix.ucr.edu.

The policy includes a definition of sexual harassment, sexual violence, dating violence, domestic violence, sexual assault, consent, incapacitation, and stalking. In addition, the policy provides clarification of the University’s obligation for responding to reports of sexual harassment and sexual violence. To learn more about the University’s obligations go to titleix.ucr.edu, click on Violence Against Women Reauthorization Act (VAWA).

For information, assistance, to explore options for addressing sexual harassment and sexual violence, or to make a report contact:

**Title IX/Sexual Harassment Office**
Debbie Artis, Director/Title IX Compliance Officer
349 Surge Building
(951) 827-7070

Office Hours: 8:00 a.m. to 5:00 p.m.

**For immediate assistance contact law enforcement:** UC Riverside Police Department 911 or (951) 827-5222

Additional resources on campus for information, assistance, or to make a report contact:
- Campus Health Center (951) 827-3031
- Harassment/Sexual Assault Resource Services Specialist (951) 827-6225
- Office of the Ombudsperson (951) 827-3213*
- Residence Life, Judicial (951) 827-5472
- Student Affairs Case Manager (951) 827-9354
- Student Conduct & Academic Integrity Programs (951) 827-4208
- UCR Counseling and Psychological Services (951) 827-5531
- Lesbian, Gay, Bisexual & Transgender Resource Center (951) 827-2267
- Women’s Resource Center (951) 827-3337

*The Office of the Ombudsperson is an independent office and not affiliated with any department unit on campus.

Consistent with UCR’s Principles of Community, sexual harassment and sexual violence education prevention presentations and workshops are available to all students, including but not limited to, new incoming students, transfer students, Student Organizations and Clubs, and Student Athletes, to educate about prohibited conduct, the problems associated with harassment and sexual violence, and how to address and report complaints. For information about education prevention programs, contact the Title IX/Sexual Harassment Office at (951) 827-7070.

**Speech and Assembly**
Campus policies and procedures governing use of “free speech” on campus and conduct at “speakers and other public events” are available in the Vice Chancellor, Student Affairs office.

**Student Grievances**
The Non-academic Student Grievance Procedures are available in the Vice Chancellor, Student Affairs office.

**Substance Abuse**
UCR is committed to achieving and maintaining a campus community that fosters personal and institutional excellence and strives to provide conditions under which the work of the university can go forward freely, with the highest standards of quality and institutional integrity. In keeping with this commitment, each student should help to create a campus community that is free from the problems of substance abuse and dependency.

The Official Notice to Students Regarding Substance Abuse in University Campus Communities is issued pursuant to the requirements of Subpart B, Section 86.100 of the federal Drug-Free Schools and Communities Act of 1989. Students found to be in violation may be disciplined. Discipline can vary in severity from warning to expulsion from the University of California.

The text of the Official Notice along with Legal Sanctions Pertaining to the Use of Alcohol and Controlled Substances (a list of applicable federal and state laws) can be obtained from the Vice Chancellor, Student Affairs office.
Goals of an Undergraduate Education

The faculty of UCR hereby declare the following set of general educational goals to be pursued through our individual and collective efforts in teaching and guiding the undergraduates of this campus.

A university education must help students realize their potential as individuals and contributing participants in society. This involves the acquisition of knowledge and skills, as well as preparation for future responsibilities.

A general education provides a framework that enables one to appreciate and critically examine the significant aspects of civilization. This framework is derived from the study of world history; political and economic systems; the ethnic, cultural, and religious diversity of the peoples of the Earth; the arts and letters of all cultures; the social and natural sciences; and technology. Such a broad education is the foundation for concentrated studies that enable students to prepare for careers and to strive for an understanding of the world in which they live and about which they must make decisions.

A university education nurtures the critical skills of oral and written communication, including the exercise of these skills in a language other than one’s own. It must teach students to become verbally and quantitatively literate, to analyze and synthesize, and to regard the acquisition of knowledge as a lifetime activity. A university education must promote tolerance of the opinions of others and an understanding of the mutual dependence of human beings on each other and on their natural environment. The student’s university years also provide an opportunity to develop integrity, self-esteem, self-discipline, style, humanness, commitment to the general welfare, sensitivity to the interplay of environment and technology, and confidence that the human drama is worthy of a lengthy future.

UCR has three undergraduate colleges and one undergraduate school that offer bachelor’s degrees: Humanities, Arts, and Social Sciences; Natural and Agricultural Sciences; Engineering, and Business Administration.

Requirements for the Bachelor’s Degree

Requirements for the bachelor’s degree vary according to the college and major selected. There are three kinds of requirements: general university, college, and major.

1. General University requirements
   - Entry-Level Writing
   - American History and Institutions Unit
   - Scholarship
   - Residence

2. College breadth requirements
   - English Composition
   - Humanities
   - Social Sciences
   - Ethnicity
   - Foreign Language
   - Natural Sciences and Mathematics
   - Additional Courses

3. Major requirements
   - Lower-Division or Core Courses
   - Upper-Division Courses

Students should plan a program of study carefully and consult an academic advisor. Students are responsible for meeting all requirements for graduation.

General University Requirements

General university requirements are university-wide requirements that all undergraduates must satisfy. The following regulations and requirements are applicable to all undergraduate students on the Riverside campus.

University of California Entry-Level Writing Requirement

All university faculty assume that students are proficient in reading and writing English, and that they understand how to compose an essay on an academic topic. For this reason, students are asked to provide proof of their writing ability on entering the university.

Completion of the UC Entry-Level Writing Requirement is a prerequisite to ENGL 001A. The UC Entry-Level Writing Requirement may be completed after enrollment in the university by passing an Entry-Level Writing Requirement course as directed by the University Writing Program (see below). It may be completed before enrollment in any one of the following ways:

1. Receiving a score of 680 or better on the College Board SAT Reasoning Test, Writing test (last administered January 2016).
2. Achieving a score of 30 or better on the ACT, English Language Arts test.
3. Achieving a score of 30 or better on the ACT, Combined English/Writing test (last administered June 2015).
4. Receiving a score of 3, 4, or 5 on the College Board Advanced Placement Test in English (Language and Composition or English Literature and Composition). In addition to fulfilling the UC Entry-Level Writing Requirement, a score of 3 satisfies the ENGL 001A requirement; a score of 4 or 5 satisfies the ENGL 001A and ENGL 001B requirements.
5. Receiving a score of 5, 6, or 7 on an International Baccalaureate Higher Level English A: Literature exam (formerly known as Higher Level English A1 exam).
6. Receiving a 6 or 7 on an International Baccalaureate Standard Level English A: Literature exam (formerly known as Standard Level English A1 exam).
7. Receiving a 5, 6, or 7 on an International Baccalaureate Higher Level English A: Language and Literature exam.
8. Receiving a 6 or 7 on an International Baccalaureate Standard Level English A: Language and Literature exam.
9. Completion with a grade of “C” or better of a 4 quarter unit or 3 semester unit college-level course in English composition, taken at another institution before the student enters the university and judged acceptable by the Office of Undergraduate Admissions.
10. Receiving a passing grade on the UC Analytical Writing Placement Exam administered by the UC System.

All freshmen from California high schools who have not met the UC Entry-Level Writing Requirement and who are entering in the fall quarter must take the UC Analytical Writing Placement Exam to be administered throughout the state. The examination is normally given the second Saturday in May.

Early in April, students who have not passed the Entry-Level Writing Requirement will receive an email or letter directing them to the test center at which they must take the AWPE.

Out-of-state students and students admitted after the test notification date will take the examination on campus. For more information, see ucop.edu/e1wr.

Students also have an opportunity to pass the requirement in UCR’s summer sessions by passing ENGL 004 or ENGL 005 before they become full-time students in the fall. They can also take a pre-ENGL 001A class.
Policies and Regulations

during the summer at a local college or university before they become full-time students at UCR. Students taking summer courses not at UCR can then retake the UC Analytical Writing Placement Exam at UCR at the end of the summer.

Students who have not met the requirement upon entrance to UCR are placed into one of the following UCR courses of instruction. Placement in these courses is determined by the Director of the University Writing Program and is based on the student's performance on the UC Analytical Writing Placement Exam.

1. BSWT 001 (an ESL course preparatory to BSWT 003)
2. BSWT 003 (an ESL course preparatory to ENGL 004)
3. ENGL 004
4. ENGL 005*
5. A qualifier course plus ENGL 006D

To pass the Entry-Level Writing Requirement (once enrolled as full-time students), students must earn a course grade of "C" (2.0) or better in ENGL 004, ENGL 005*, ENGL 01PA, or earn a course grade of "C" (2.0) or better in a qualifier course approved by the University Writing Program and the Academic Senate.

According to systemwide regulations, any student who has not satisfied the Entry-Level Writing Requirement after three quarters of university residence (three quarters of enrollment during the regular academic year) is not normally eligible to enroll for a fourth quarter at the University of California. (For students placed in BSWT 001 or BSWT 003, this three-quarter residence rule begins after satisfactory completion of BSWT 003 or at the start of their fourth quarter of regular enrollment at UCR, whichever comes first.) Students are encouraged to complete the requirement as soon as possible in their freshman year.

*ENGL 005 is no longer offered.

American History and Institutions

Candidates for a bachelor’s degree must satisfy the requirement in American History and Institutions by demonstrating a knowledge of American history and of American political institutions and ideals. The requirement may be satisfied by satisfactory completion of any one of the following:

1. One (1) high school unit in American History, or 1/2 high school unit in American History and 1/2 high school unit in civics or American Government
2. The requirement in a junior college or other accredited institution
3. One college course in the field of American History or one college course in the field of American Government. UCR courses that fulfill this requirement are HIST 017A or 017B, POSC 010, POSC 100, and POSC 113

Students applying for one of the teacher credential programs should check with the Graduate School of Education concerning limitations on ways of meeting this requirement.

Unit Requirement

A minimum of 180 units of academic work with a grade point average of 2.00 in all courses undertaken in the UC is required for graduation.

Not more than 6 units of physical education activities courses, no 400 series course, and not more than three courses in the 300 series may be counted toward the 180 unit requirement.

Scholarship Requirement

To receive a bachelor's degree, students must obtain twice as many grade points as units (2.00 grade point) for all courses attempted in the university. An exception to this rule is made for those students undertaking certain honors courses.

Residence Requirement

The minimum residence at the UC required for a degree is three quarters. One of the three quarters may be completed in a UCR summer session in which the student carries 12 units, unless a reduced load is approved in advance by the dean of the student's college.

Courses completed in UC Extension are not considered work in residence, even if taken through concurrent enrollment.

Thirty-five (35) of the final 45 units must be earned in residence in the student's college (this does not preclude the student from taking courses in other colleges on campus). For students who are enrolled in the Education Abroad Program, UC Washington, D.C. program, or UC Sacramento Program, 35 of the final 90 units, including the final 12 units, must be earned in residence. Eighteen (18) of the 35 units may be completed in summer session courses on the Riverside campus.

With the approval of the dean of a student's college or school, a candidate for the bachelor's degree who was in active service in the armed forces of the United States in the year preceding the awarding of the degree may be recommended for the degree after only one quarter of university residence in which the candidate completes at least 16 units or passes a comprehensive examination in the major or field of concentration.

College Breadth Requirements

Each college has established additional requirements for a degree. The requirements of the colleges at Riverside are designed to stimulate an interest in areas of knowledge not necessarily related to a student's major field. Students should note that they consist of a certain number of units and courses covering a variety of fields. Although these requirements determine a large and important part of the four-year curriculum, there are opportunities for students in all departments to do special, independent work.

The main objective of the colleges on the Riverside campus is to provide a setting within which students may develop those qualities of mind and character necessary to intellectual advancement and to useful membership in society. The major areas of human knowledge form the substance of the colleges on the Riverside campus: the College of Humanities, Arts, and Social Sciences; the College of Natural and Agricultural Sciences; The Marian and Rosemary Bourns College of Engineering; and The School of Business. The breadth requirements for the colleges are similar; however, refer to each college's section for a detailed discussion of its requirements.

Courses taken in a student's major discipline (including courses cross-listed with the major discipline) may not be applied toward satisfaction of the Humanities, Social Sciences, Ethnicity, or the Natural Sciences and Mathematics requirements except for Biology majors in connection with the Biological Sciences requirement, English majors in connection with the English Composition requirement, History majors in connection with the World History requirement, Ethnic Studies majors in connection with the Ethnicity requirement, Foreign Language majors in connection with language requirements, and students permitted by their college to take a Senate-approved alternative to English 1C in order to satisfy the third-quarter writing requirement. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements. Students are urged to make sure that they understand which courses are permitted to satisfy more than one requirement.

Information on specific degree requirements and courses is available in the academic advising office in each college.

Placement exams may be required before a student takes courses in certain subjects, such as mathematics and foreign languages. The placement exam may be taken only once in each subject during a student's UCR career. For foreign languages, a sufficiently high score on the UCR placement exam can fulfill the Foreign Language requirement.

For details about the UC policy on intercampus reciprocity of breadth requirements and the UC policy on the Intersegmental General Education Transfer Curriculum, see below.

Intercampus Reciprocity Policy Regarding Breadth/General Education Requirements

Students who transfer from one UC campus to another and who have completed the Breadth/General Education (B/GE) requirements of the campus from which they have transferred (except for upper-division B/GE requirements) will be considered to have met the B/GE requirements of the campus to which they transfer.

Courses taken for B/GE requirements at the campus from which they transfer will be accepted toward the appropriate B/GE requirements of the campus to which they transfer.
Intersegmental General Education Transfer Curriculum (IGETC) Policy

The Intersegmental General Education Transfer Curriculum (IGETC) is a series of courses offered in the California community colleges that transfer students may complete as a way to satisfy the lower-division breadth/general education requirements at the UC or the California State University. The IGETC program is administered through the California community college system. Completion of the IGETC must be certified by a community college counselor and submitted to UCR with the student's final transcript before the first term of enrollment.

The IGETC is accepted for students pursuing majors in the College of Humanities, Arts, and Social Sciences and The School of Business, as extensive major preparation is not required at the lower-division level. All students should ensure that the CHASS Student Academic Affairs office or the Undergraduate Business Programs Office have received the certified IGETC during their first quarter of UCR attendance.

The College of Natural and Agricultural Sciences does not accept IGETC, although courses taken to satisfy IGETC may be applied toward the college’s breadth pattern. Although the Bourns College of Engineering (BCOE) accepts completion of IGETC as satisfying the majority of the college’s breadth requirements for transfer students, some additional breadth coursework may be required after enrollment at Bourns. For more information on BCOE breadth requirements, go to student.engr.ucr.edu/policies/requirements/breadth.html. Prospective applicants are strongly encouraged to focus on preparatory course work for their desired major, such as mathematics, science, and other technical preparatory course work, rather than on IGETC completion. (Strong technical preparation is essential for success in the admissions process, and subsequently, in all coursework at Bourns.) For more information, go to engr.ucr.edu/undergrads/transferring.

Major Requirements

A major is a coordinated group of upper-division courses giving depth to a student’s work in a chosen area. A list of degrees offered and possibilities for establishing individual majors are described in each college section below. Degrees are also listed in the front of the catalog. A student should choose a major not later than the beginning of the junior year. However, a choice of major before that time facilitates program planning in most academic fields.

The departmental major represents advanced and relatively specialized work in one of the academic disciplines in the college. The interdepartmental or nondepartmental major is broader in scope and usually based upon two or more disciplines. The individual major is designed for the student who has an unusual but definite academic interest for which no suitable major is offered.

Major requirements are described in detail in the Programs and Courses section of this catalog under the department or program offering the major.

The responsibility for fulfillment of all degree requirements — general university, college, and major — rests with the student. Students are urged, however, to seek program counseling with appropriate advisors.

Assignment to a major or to the undeclared category (open to freshman and sophomore students) is based on the student’s choice indicated on the Application for Admission. The student should enroll in accordance with this choice; changes may be made following course enrollment.

Change of Major

Students may transfer from one major to another, elect a double major within their college, or add a second major in another college by filing a declaration with the dean of the colleges concerned. Students must be in good academic standing and meet eligibility requirements to change or add majors.
Graduate Studies

Graduate students at UCR are an essential part of the university’s distinguished research teams and full partners in the undergraduate teaching mission of the faculty. Founded as a research institution in 1907, Riverside is the oldest of the UC’s southern campuses. UCR combines the intellectual and material resources of the UC system with a uniquely intimate research environment, fostering a type of frequent and high-powered faculty-student contact unavailable at other universities.

Graduate degrees at UCR are research degrees, certifying that students are trained in the techniques of independent inquiry and have demonstrated the capacity to make unique contributions to their fields. Occupying a distinctive niche in disciplines ranging from chemistry to dance history, computer science to economics, UCR offers graduate and professional programs leading to the degrees of doctor of philosophy, master of arts, master of business administration, master of education, master of finance, master of fine arts, master of professional accountancy, master of public policy, and master of science.

Administration

Campus policies concerning graduate education are set by the Graduate Council, a committee of the Academic Senate, and carried out by the Graduate Division staff under the direction of the Graduate Dean.

Each academic program has a graduate advisor appointed by the Graduate Dean. Advisors assist students in program planning and completing degree requirements and write a yearly evaluation of each student’s progress toward the degree. Students should make an effort to confer regularly with their graduate advisor.

Graduate Student Association

The Graduate Student Association (GSA) seeks to represent the views of graduate students and promote their interests with the faculty and administration, both at the campus level and universitywide. All graduate students whose fees include the GSA fee are members. Further information can be found under Graduate Student Association in the Services for Students section of this catalog. For more detailed descriptions of GSA activities and services, visit gsa.ucr.edu.

Application and Admission

The admission process has as its prime objective the selection of those students most likely to complete their chosen graduate programs with distinction. After consultation between the program and the Graduate Division, the final authority to admit rests with the Graduate Dean.

Applicants are initially reviewed and rated based on their undergraduate and, where appropriate, postbaccalaureate GPAs. The minimum requirement for admission to graduate status is the bachelor’s degree or its academic equivalent from an accredited institution. However, the evaluation process is intended to be flexible, and programs take a variety of other factors into consideration when making their admissions recommendations, including GRE or other test scores, GPA in the major subject, letters of recommendation, and the reputation of the degree-granting program or institution.

Soon after the program forwards its recommendation to the Graduate Division, the applicant is notified of the dean’s decision. If admission is offered with work still in progress, official transcripts reflecting the satisfactory completion of this work and the awarding of the degree (where appropriate) must be submitted as soon as possible. An offer of admission is valid for a specific quarter only. Accepted students who wish to be admitted for a subsequent quarter must reapply and, if additional course work has been completed, submit updated transcripts.

Applicants should apply at graduate.ucr.edu/grad_admissions.html

Campus-wide application deadlines for domestic students are September 1 for the fall quarter, November 15 for the winter quarter, and March 1 for the spring quarter. Visit graduate.ucr.edu/app_deadlines.html for deadline information.

The deadline for students seeking fellowship awards, teaching or research assistantships, and other merit-based forms of support is January 5.

Graduate Degrees and Programs

<table>
<thead>
<tr>
<th>Discipline</th>
<th>M.A.</th>
<th>M.S.</th>
<th>M.F.A.</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting, Auditing and Assurance</td>
<td>M.P.A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthropology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemistry and Molecular Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bioengineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomedical Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell, Molecular, and Developmental Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical and Environmental Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparative Literature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing and Writing for the Performing Arts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Dance Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>M.Ed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entomology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Toxicology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evolution, Ecology, and Organismal Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Choreography</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td>M.Fin.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetics, Genomics, and Bioinformatics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geological Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>M.B.A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Science and Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics, Applied</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td></td>
<td>M.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroscience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Biology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Pathology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Policy</td>
<td>M.P.P.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southeast Asian Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics, Applied</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Art</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Applications are not accepted from students wishing to work toward the master’s degree only.
These deadlines may vary somewhat by program, so applicants should not hesitate to contact programs directly for additional information. Please refer to International Student Admissions section below for information about international student deadlines.

A nonrefundable application fee must be submitted at the time of application:

Domestic application fee (US citizens and US permanent residents):
- $80 all programs (except M.B.A., M.Fin. & M.P.Ac.)
- $100 M.B.A., Flex M.B.A., M.Fin. & M.P.Ac.

International application fee (non-immigrant):
- $100 all programs (except M.B.A., M.Fin. & M.P.Ac.)

The following must also be submitted:
1. Official transcripts from each college or university attended since high school
2. Three letters of recommendation
3. Graduate Record Examination (GRE) general test score is required by most programs

Some programs also require the appropriate GRE subject test. GRE scores are not required for the teacher education credential programs or the MFA programs in Creative Writing & Writing for the Performing Arts, Experimental Choreography, and Visual Art. The M.B.A., M.Fin., M.P.Ac. & Ph.D. in management programs accept either the Graduate Management Admission Test (GMAT) or the GRE. Test scores should not be older than five years.

Domestic applicants whose first language is not English and who have not earned an advanced degree at an institution where English is the exclusive language of instruction must provide proof of English proficiency. Please see complete information below under International Student Admission.

International Student Admissions

International students follow the same procedures and are governed by the same regulations as domestic applicants with the following exceptions.

Applicants whose first language is not English and who have not earned an advanced degree at an institution where English is the exclusive language of instruction must submit scores from the Test of English as a Foreign Language (TOEFL). This exam is administered by the Educational Testing Service and offered in nearly every country abroad. The minimum acceptable scores are: 550 for the written exam; 213 for the computer-based exam, and 80 for the internet-based exam (iBT). Applicants should arrange to take the examination in their home country by visiting ets.org.

The TOEFL must be taken no more than two years prior to the intended quarter of enrollment.

Applicants may submit scores from the Academic Module of the International English Language Testing System (IELTS). This exam also must be taken no more than two years prior to the intended quarter of enrollment at UCR. The minimum acceptable score is an overall bandscore of 7 with no score less than 6 on any individual component. Please request an official Test Report Form (TRF) from the test center where the test was taken.

International students must also complete a financial statement (provided on the application). The university will be unable to issue a Certificate of Eligibility (I-20 or DS2019) without evidence of the applicant’s ability to pay all fees and expenses for the duration of the program of study.

Application deadlines for international students are June 1 (January 5 for admission with fellowship support) for the fall quarter, September 1 for the winter quarter, and December 1 for the spring quarter. These deadlines may vary somewhat by program, so applicants should not hesitate to contact programs directly.

The International Student Resource Center specializes in providing information and a broad range of services to international students and can be contacted at (951) 827-4113 or visit internationalcenter.ucr.edu.

Reapplication

Students who have not maintained continuous enrollment and have no student status will have to reapply to the University to continue in their degree programs. They should follow the same process as new students to apply for readmission. The Graduate Division will retain a students' file for five years. Students applying for readmission within that five year period will not have to provide the University with new transcripts if they have not enrolled elsewhere but will need to provide a new statement of purpose and one letter of recommendation. Students who have been gone over five years must order transcripts from all former institutions attended.

Students will be held to the new catalog requirements at the time of readmission and will lose their candidacy when they fail to maintain continuous enrollment unless the Graduate Dean approves an exception. Students may return on filing fee status to graduate if they have not used it before and the Dean approves an exception and allows them to reenter under their original catalog requirements and approves their continued advancement to candidacy.

Teaching Credential Programs

Prospective applicants to teaching credential programs should contact the Graduate School of Education, education.ucr.edu for admission information and application materials or see Graduate School of Education later in this catalog.

Degrees and Programs

The minimum requirements for master's and doctor of philosophy degrees are outlined below. Individual program requirements are described in the Programs and Courses section of this catalog.

Foreign Language Requirement

Each program determines what, if any, knowledge of a foreign language or languages should be required of students pursuing graduate degrees. Proficiency in a foreign language may be demonstrated by (1) passing a written examination administered by the department or program or (2) successfully completing a course or courses specified by the program or (3) alternative methods outlined by the specific program. With the support of the program and the approval of the graduate dean, students may receive credit for foreign language examinations or course work completed not more than four years before being admitted to graduate study at UCR.

Professional Development Requirement

Professional development training is required for all MS, MA, MFA and Ph.D. programs. Training typically includes elements of research and professional ethics, grant and professional writing, strategies for success in graduate school and the profession, pedagogy, public speaking, career and job market guidance, and other relevant topics to help students become successful professionals. Each program determines the format, content, and extent of its training in order to make it specific to, and appropriate for, the discipline. A program may provide all of its training independently, or it may partner with other programs, or utilize services provided by other campus units or professional organizations.

Training must be for unit credit and may be delivered as a single course or as portions of multiple courses.

Standards of Scholarship

Only courses in which grades of “A,” “B,” “C,” or “S” are received may be counted toward satisfying graduate degree requirements. To continue in good standing and obtain an advanced degree, students must maintain a minimum GPA of 3.00 in all upper division and graduate level courses related to the degree. In addition, students must demonstrate acceptable progress toward their degree objectives. This entails the acceptable completion of all course work and other degree requirements in a timely fashion. Students are considered to be making unacceptable progress and become subject to dismissal when:

- they have 12 or more units of “I” grades outstanding;
- the overall GPA falls below 3.00;
- the quarterly GPA falls below 3.00 for two consecutive quarters;
- the quarterly GPA falls below 3.00 for two consecutive quarters;
they fail to fulfill program requirements such as exams or research in a timely and satisfactory manner;
they have not completed their programs within one year after reaching the normative time; or
they fail to pass comprehensive or qualifying examinations in two attempts;
they fail to make progress in research for two consecutive quarters

Satisfactory/No Credit (S/NC) Grading
Graduate students may take course work on an S/NC basis only when the course description indicates that this is an option. Graduate students may not use undergraduate or graduate courses taken on an S/NC basis to complete their master's or PhD degree requirements, unless the course only is offered on an S/NC basis. Exceptions must be approved by the Dean of the Graduate Division. A grade of S is equivalent to a grade of B (3.0) or better but does not count towards the student's grade point average. No credit is given for a course in which a grade of NC is assigned.

Repeating Courses
A graduate student may repeat only those courses in which a grade of D, F or NC was received. Repetition of a course more than once requires the Dean's approval. Only the most recently earned grade is used in computing the student's grade point average. Courses in which a grade of D or F has been earned may not be repeated on an S/NC basis.

Incomplete Grades
Most commonly, professors will grant an Incomplete if students were unable to take the final examination or finish a paper at the required time due to illness or other unavoidable problems that can be verified, providing the student's work in the course was of passing quality. In order to remove the "I", students must complete the work required by the end of the next academic quarter (whether in attendance or not)—professors will then report the grade to the Registrar on a Grade Change Form. Incompletes cannot be removed by enrolling in the course during the following quarter. Make arrangements with your instructor on how to replace the "I" for a grade. The "I" will automatically revert to an "F" (or NC) after one quarter. PhD students cannot graduate with an "I" grade on their record. Master's students can only graduate with an "I" if they do not need the course for the degree and are continuing in the PhD program.

Changing Grades
Grades are final at the end of each quarter. If you discover a clerical or procedural error was made in the posting of your grade, contact the instructor immediately and request a revision. This type of revision can be made only if: 1) the basis for the change is found in work which you submitted as part of the regular assignments during the quarter; 2) the change is not the result of re-examination (unless your initial grade was Incomplete); 3) the change does not involve a change in the grading basis (from S/NC to letter grade or the reverse). Only the instructor can change a grade.

Appeal of Grades
The Regulations of the Riverside Division of the Academic Senate state that if a student believes that non-academic criteria have been used in determining a grade, the student shall attempt to resolve the grievance with the instructor of the course through written appeal to the instructor via the chair of the department. If the grievance is not resolved to the student's satisfaction at the departmental level, the student may file a complaint with the Dean of the Graduate Division. The complaint should be filed immediately after the alleged use of non-academic criteria but no later than six weeks after the beginning of the subsequent quarter. Non-academic criteria are criteria not directly reflective of class performance, such as discrimination on political grounds or for reasons of race, religion, sex, or ethnic origin or for other arbitrary or personal reasons.

Exams
Only two attempts at major exams are allowed unless the program has special approval from the Graduate Council for additional attempts.

Minimum Degree Requirements
Master's Degree
The minimum required period of residence in the University is one academic year (3 quarters) of which two quarters must normally be spent at the University of California, Riverside. A candidate for a higher degree is regarded as a student in residence in a regular term only if he/she is actually enrolled in at least four units of upper division and/or graduate work; or, in a ten-week summer session at least four units.

The master's degree can generally be earned in one of two ways: by writing a thesis or by passing a comprehensive examination. Some programs offer only one of these options.

Both plans require a minimum of 36 quarter units of graduate (200 level) or upper-division (100 level) undergraduate work in the major subject or some other subject deemed relevant by the program faculty. Many programs have additional requirements. Courses at the 300 and 400 level do not count towards this minimum requirement.

Unless otherwise stated in the program description, the normative time required to complete the master's degree is two years.

Plan I (Thesis) requires that at least 24 units be in graduate (200) level courses taken at a University of California campus (see residency requirements). Of these, only 12 may be in graduate research for the thesis and, in most cases, none may be in courses numbered 291 (exam preparation). Students are guided by a committee of three faculty who must be approved by the Graduate Dean. In addition to requiring an acceptable thesis, the department may require any examination that it feels necessary to confirm that the student has an appropriate knowledge of the discipline. Once completed the thesis must adhere to University standards and be filed in the Graduate Division electronically.

Plan II (Comprehensive Examination) requires that at least 18 units be in graduate (200) level courses taken at a University of California campus (see residency requirements). None of these may be in graduate research for the thesis or, in most cases, in courses numbered 291 (exam preparation). Students must take a comprehensive examination, the content of which is determined by the department or program. No more than two attempts to pass the exam are allowed.

Master's students in residence and in good standing may earn course credit by examination. Consult the departmental graduate advisor for further details.

Advancement to Candidacy in Master's Program
Students must file for advancement to candidacy no later than the first week of the quarter in which they expect to receive their degree. Some degree requirements may be in progress at that time. The forms for advancement to candidacy are obtained from graduate.ucr.edu/pub_forms.html and filed in the Graduate Division after obtaining the graduate advisor's approval. In the event of some unexpected delay, students have up to one year from the completion date of all course requirements to complete their remaining academic requirements. Students must complete all requirements for the degree by the last day of the quarter in which they intend to graduate. Students cannot graduate with an Incomplete grade unless they are continuing in a PhD program. Students may not graduate with a GD grade outstanding. Students must be enrolled or on filing fee status to complete degree requirements. If they were enrolled (or on filing fee status) every quarter of the previous academic year then they may complete during the summer without paying fees.
**Duplication of Degree**

Permission to work for a second master’s degree may be approved when there is little relation in content between the two degrees. Duplication of a master’s degree in a single field is allowable only with permission of the Graduate Dean.

Pursuit of a second doctorate is not permitted for currently enrolled graduate students. It is rarely permitted for students when they first apply to the University. For the Graduate Dean to consider such an exception it must be in a fundamentally unrelated area and there will be no duplication or waiving of coursework if approved.

**Continuing from the Master’s to the Doctorate**

Students who are enrolled in a master’s program may petition to pursue the doctorate in their field of study. To do so, they should file a Change in Degree Objective Form with the Graduate Division while they are enrolled. Approval by the department is not automatic; the department determines whether or not each student has the academic potential to succeed in its Ph.D. program. This requirement for evaluating each student's potential and academic fitness to proceed toward the Ph.D. is enforced regardless of the student's initial degree objective at matriculation.

**Doctoral Degree**

The minimum academic residence for the Ph.D. is six quarters at the University of California, three of which must be spent in continuous residence at UCR. The normative time required for the Ph.D. varies considerably and is given at the end of each program’s description in the Programs and Courses section of this catalog. For the doctoral degree, normative time is defined as the period of full-time registration required to earn the degree. For most UCR programs, this is between five and seven years.

The doctorate, the highest degree the university can bestow, is a research degree, conferred on the recommendation of a doctoral committee, which is nominated in consultation with the student by the program faculty and confirmed by the Graduate Dean.

Because the Ph.D. is a research degree, the university gives programs considerable latitude in establishing degree requirements. The individual student’s program of study is planned in consultation with the graduate advisor, who supervises the student's progress prior to the appointment of the doctoral committee.

A doctoral program generally involves two stages. The first stage is spent fulfilling the requirements established by the program or department and the Graduate Council, typically a series of courses culminating in written and oral qualifying examinations. When these are passed, the student is advanced to candidacy for the Ph.D.

The second, or in-candidacy stage, is devoted primarily to independent study and research and to the preparation of the dissertation. The doctoral dissertation must be an original work of research in the candidate’s chosen field of specialization. The doctoral committee determines the acceptability of the dissertation and may require that the student defend its contents in a final oral examination.

**Candidate in Philosophy**

A Ph.D. student who is advanced to candidacy and has to leave UCR without a degree may apply for the Candidate in Philosophy. This is awarded only to students leaving UCR without a master’s or doctoral degree.

**Designated Emphases**

All graduate students admitted to a Ph.D. program may participate in a Designated Emphasis (D.E.), a specialization that might include a new method of inquiry or an important field of application related to two or more existing Ph.D. programs. The Designated Emphasis is awarded in conjunction with the Ph.D. degree and is signified by a transcript designation. Graduate students who have completed a Designated Emphasis may be more competitive candidates for positions in their primary disciplines. For a complete list of D.E.’s visit graduate.ucr.edu/pub_forms.html.

**Special Programs**

**GradSuccess**

GradSuccess (graduate.ucr.edu/success) provides a variety of services to meet the needs of UCR’s diverse graduate student population by offering programs, workshops, seminars and consultations. It supports graduate students in becoming successful professionals and is comprised of the following programs:

- Graduate Student Resource Center (GSRc) gsrc.ucr.edu: The resource center coordinates career preparation, academic support, and health & wellness programming specifically tailored for graduate students. Please visit the website for a complete list of activities for the quarter.
- Teaching Assistant Development Program (TADP) tadp.ucr.edu: UCR has a long history as a distinguished teaching campus and regards teaching assistant (TA) training as a crucial part of graduate instruction. TADP sponsors activities designed to help TAs develop their teaching skills and prepare them to be successful professors.
- University Teaching Certificate Program (UTC) utc.ucr.edu: This 20-week program is designed to assist university-level instructors in developing teaching and lecturing strategies, designing a teaching philosophy, and becoming members of the professional teaching community.
- Graduate Student Mentorship Program (GSMP) gradmentors.ucr.edu: This program helps first-year graduate students transition to UCR and graduate student life by pairing first-year students with a graduate student and faculty mentor from a related field.
- Graduate Writing Center (GWRC) gwrc.ucr.edu: Located in UOB 122, this center offers multidisciplinary writing support and instruction to all UCR graduate students and postdoctoral scholars in all writing endeavors, including job materials, coursework, proposals, and theses/dissertations.
- Graduate Quantitative Methods Program (GradQuant) gradquant.ucr.edu: Located in LFSC 1425, this center offers training in quantitative methods, statistical software, and computer programming for students in all fields through one-on-one consultations and workshops.

**Intercampus Exchange**

The Intercampus Exchange Program (ICE) allows students to register for up to three courses at another UC campus. To be eligible, students must be in good standing with at least one quarter in residence at UCR and demonstrate at least one of the following: the need to take a course or courses not offered at UCR, the need to study with a particular individual, or the need for continuous access to library holdings or other facilities not available at UCR.

**Education Abroad**

The Education Abroad Program (EAP) provides students with the opportunity to study abroad at one of several study centers. To be eligible, students should have completed one year of graduate study, be making acceptable progress toward the degree, and know the language of the host country. Applications and information can be obtained from the Study Abroad Programs. Additional information can also be found in the Education Abroad Program sections of this catalog.

**Fees and Financial Support**

See Fees and Expenses under the Finances and Registration section of this catalog for a list of estimated expenses and a schedule of mandatory quarterly fees. Deadlines for paying fees are published quarterly at registrar.ucr.edu.

Graduate students serving as teaching assistants (TAs) or graduate student researchers (GSRs) who are appointed at 25 percent time (10 hours per week) or more qualify for a remission of the student services fee and tuition. Nonresident supplemental tuition is paid for nonresident GSRs who are appointed 45 percent time or more for an academic term, and who meet the eligibility requirements for the GSR title. Students should check with their departments for further information on these fee remissions. All students who are considered nonresidents for tuition purposes and...
are advanced to candidacy for the Ph.D. on or before the first day of
direction will receive a reduction of 100 percent of the nonresident
supplemental tuition. Each student is eligible for this reduced nonresident
supplemental tuition rate a maximum of three calendar years. Time spent
not registered (withdrawn, on leave, or filing fee status) will count toward
the three-year total unless the Graduate Dean grants an exception. A
student must be advanced by the first day of instruction to qualify for that term.

All graduate students are assessed a quarterly fee for a health insurance
policy providing year-round and worldwide coverage (Graduate Student
Health Insurance Plan–GSHIP). This insurance is designed to supplement
outpatient care available to students through the Student Health Services.
This premium is paid for all teaching assistants, graduate student
researchers, and readers/tutors employed 25 percent time or more.

Students who can demonstrate to the Student Health Services that they
have comparable insurance from another source may obtain an exemption
from the GSHIP premium. Students awarded the exemption have the
GSHIP fee removed from their bill but do not receive any monetary
compensation. Deadlines for applying for the exemption are firm.

Information regarding GSHIP benefits, claims, comparable coverage
exemptions, and optional dependent coverage can be obtained from the
Health Insurance Coordinator, Student Health Services (951) 827-5683.
More information about GSHIP remissions for teaching assistants and
graduate student researchers is available from the Graduate Division, or a
student’s academic program.

Students who have not established legal residency in California must pay
nonresident supplemental tuition. Regulations governing the determination
of California residency are outlined in the Finances and Registration
section of this catalog. All students will be assessed this fee until they
are declared a resident by the Registrar’s Office. Even those who were
undergraduates at UCR must complete these forms.

The Deferred Payment Plan offers students an opportunity to pay their fees
in three monthly installments. An application and fee must be submitted
by the deadline set by the Student Business Services office. Students must
apply each quarter and may apply through their R’Web accounts.

Career Employees (Reduced Fee Program)
A student who is a career employee of the University may be eligible for a
two-thirds reduction in fees through the Employee Reduced Fee Program.
Contact the Benefits Office for more information (hr.ucr.edu/education/
benefits.html). Because employees already have health insurance they should
contact the Student Health Services about obtaining an exemption from
GSHIP.

Fellowships
Fellowships are awarded on the basis of scholarly achievement and
promise. Students apply to their prospective programs, which then
nominate the most qualified applicants. Recipients must complete a full-
time program of study or research each quarter, maintain a GPA of 3.00 or
better, have no more than 7 units of “Incomplete” grades, be advanced to
candidacy for the Ph.D. within their programs normative time to candidacy,
and be making acceptable progress toward their degrees. Fellowships
are offered only to full-time students pursuing degrees. Full-time UCR
employees, credential and non-degree objective students are not eligible
for fellowships. Full-time UCR employees may apply for reduced fees (see
above).

Fellowship holders may supplement their awards with employment, with
the prior approval of the Graduate Dean. Supplementation levels vary with
the type and amount of fellowship award.

Teaching and Research Assistantships
Graduate students may be employed by the university on a part-time
basis (not to exceed 50 percent time, or 20 hours per week) during
the academic year. Students who hold assistantships must register for
and complete a full program of study or research and remain in good
standing for the duration of their employment. Students are responsible
for reviewing their course enrollment to ensure that they are enrolled in
at least 12 units. They may not have more than 7 units of “Incomplete”
grades and must be advanced to candidacy within their programs
normative time to candidacy after entry to the Ph.D. program. TAs are
appointed through their departments and must maintain a GPA of 3.00
or better and be making acceptable progress toward their degree. Any

students whose native language is not English must pass a test of spoken
English (TOEFL-IBT or SPEAK test) before performing TA duties. No one
may serve in teaching title codes (Teaching Assistant, Teaching Fellow,
Associate In_ ) for more than 18 quarters.

Graduate student researchers, GSRs, are appointed through their
departments and can be paid on a full-time basis for up to three months
during the summer. To be appointed to and retained as a GSR, students
must maintain a GPA of 3.00 or better and be making acceptable progress
toward the degree. GSR appointments are made through the department
or program.

Loan Programs
Federal Direct Stafford Loans and Federal Direct Unsubsidized Stafford
Loans are available to graduate students through the Financial Aid Office.
Students should contact the Financial Aid Office or check finaid.ucr.edu for
a FAFSA if they want to be considered for these federal loan funds.

Research Grants
Dissertation Research Grants provide funds to doctoral candidates for
research-related expenses associated with the dissertation. Applicants
must be advanced to candidacy and plan to be registered during the
period of the award. Proposals may be funded up to a maximum of
$1,000. Applications are available at graduate.ucr.edu/list_final.html.

The Master’s Thesis Research Grant is for students enrolled in the Creative
Writing and Writing for the Performing Arts, Experimental Choreography,
Southeast Asian Studies, and Visual Art for the purposes of expenses
directly related to thesis research. Applications are available at graduate.
ucr.edu/list_final.html.

Graduate Student Association Conference Travel Grants help to meet the
financial needs of students who have been invited to present scholarly
papers or posters at regional and national professional conferences. The
program, administered by the UCR Graduate Student Association, funds
both conference attendees and presenters, with attendees reimbursed at
one half the rate of presenters. The percentage of reimbursement is set
monthly and is based on the volume of applications received. More infor-
mation can be found at gsa.ucr.edu/conference-travel-grants/.

Registration, Enrollment and Transfer of Credit
Continuous Registration
Unless a leave of absence has been granted, students must register for
every academic quarter once their graduate studies begin. Students must
either be registered or on filing fee status in the quarter in which the
degree is awarded. If a student was enrolled or on filing fee status every
quarter of the previous academic year, then they may complete their
degree during the summer without paying fees.

Filing Fee Status
Students who have completed all degree requirements except for filing
their dissertations/theses or sitting for their master’s comprehensive
examinations are eligible for filing fee status during the final quarter of
residence. For students writing dissertations or theses, the student’s
committee must have read and approved a draft of the manuscript, with
only minor revisions remaining.

Students on filing fee status pay only one-half of the student services
fee. Because filing fee status is tied to that fee, it can vary from quarter
to quarter. See registrar.ucr.edu for information on fees. Only one
quarter on filing fee status is allowed, unless a student fails the master’s
comprehensive exam. Then a retake of the exam on filing fee status is
allowed. Students who fail to complete their degree programs by the
appropriate deadline while on filing fees status must register and pay full
fees for the following quarter.

Leave of Absence
A leave of absence is intended to allow the temporary interruption of the
student’s academic program. Leaves are granted for the following reasons:
1. Serious illness or other temporary disability
2. The need to concentrate on a job or occupation not directly related to the degree program
3. Family responsibilities

To be eligible for a leave of absence, students must have the approval of their graduate advisor, be in good standing, and have been enrolled for at least one quarter. Leaves are not normally granted for more than one year.

Since students on leave do not pay fees, they may not use university facilities or make demands on faculty time. Students on leave are ineligible for fellowships, research grants, and financial aid. Appointment as a graduate student researcher or teaching assistant, or any other appointment requiring full-time enrollment, is not possible. Nor can students on leave take qualifying examinations or receive credit for academic work done during the leave period.

**In Absentia Registration**

Students pursuing graduate study or research outside the state of California for an entire quarter may register in absentia and receive an 85 percent reduction in the student services fee and tuition. Refer to the Finances and Registration section of this catalog for a schedule of fees. In absentia registrants are normally advanced to candidacy for the doctorate; master's candidate are normally in the stage of researching the master’s thesis.

**Withdrawal**

Students who withdraw during the first five weeks of a quarter are entitled to a partial refund of fees. The amount of the refund is determined by the number of calendar days elapsed between the first day of instruction and the date on which a withdrawal form is filed with the Graduate Division. See the Schedule of Refunds in the Finances and Registration section of this catalog. Students who have applied for the Deferred Payment Plan are considered registered students and are held to the same refund schedule.

Students who are unable to file the necessary paperwork due to illness or emergency should call the Graduate Division at (951) 827-3390.

**Lapse of Candidacy**

Candidacy for the degree may lapse after withdrawing or failing to register at the end of a leave of absence.

**Enrollment**

Each quarter, graduate students must pay their fees and enroll by the date indicated at registrar.ucr.edu. Course schedules require the prior approval of the departmental graduate advisor.

All graduate students are expected to carry a full academic course load unless good reasons exist for not doing so. Graduate students are considered to be full time if they are carrying 12 graduate units. When a course program contains both graduate and undergraduate courses, the table on this page is used to calculate the appropriate course load.

**Part-Time Study and Reduced Fees**

The regulations regarding a reduction in fees for attending part-time is set by the Office of the President. It is only approved for students who cannot attend full-time for reasons of occupation (full-time employment outside the university), unusual family responsibilities, or poor health. Students may not be advanced to candidacy for the PhD and can only enroll in 6 units or less. Employees may not apply for this reduction in fees unless they do not meet the requirements of the Employee Reduced Fee Program. International students should be aware that federal regulations governing student visa status require full-time attendance. University financial aid is not available for students taking less than six units of course work. Eligibility for deferment of student loan repayment obligations may be in jeopardy as well. Students should consult the Student Business Office of the University where they incurred their debt for specific information.

The application must be submitted to the Graduate Division two weeks before fees are due unless students want to pay their full fees first. If full fees are paid first, a refund will be processed. In no event may the student turn in a petition after the third week of the quarter.

**Transfer of Credit**

A maximum of 8 quarter units from institutions outside the University of California may be counted towards the master’s degree at UCR. All transfer work must have been completed in graduate standing with a minimum grade of “B.” Units cannot be transferred if the student earned a degree. These units may not be used to reduce the minimum number of graduate level units required (24 units required for the thesis plan and 18 units required for the comprehensive exam plan).

Department and Graduate Division approval must be obtained before these units can be accepted for credit. Units are transferred as “Satisfactory” (S) with no grade point value.

Since doctoral students do not have a strict unit requirement they do not need to transfer in units.

Students may apply summer sessions course work from any UC campus toward their graduate degree requirements if they have the prior approval of their departments and of the Graduate Dean.

Units from another UC campus may be used to satisfy one of the three quarters of the residence requirement and may be counted for up to one-half of the total units required for the UCR master’s degree. Department and Graduate Division approval must be obtained before such units can be accepted for credit. Units cannot be transferred if the student has earned a degree from that campus.

In addition, students may transfer up to 8 units of concurrent enrollment credit. Concurrent enrollment means that a student took regularly scheduled UCR classes but was not an admitted student and paid for the class through UCR Extension. Students must have taken these units before their enrollment as graduate students. Matriculated graduate students (including students on leave of absence) may not enroll in course work through Extension without the Graduate Dean’s approval. Graduate students who withdraw before completing their program objectives, then take courses through Extension are required to wait one year before applying courses to their degrees. Grades from UCR Extension courses will be recorded on student transcripts.

**Backdating**

UCR graduate students may use, with the approval of their Graduate Advisor, any relevant 200-level course(s) taken during a UCR bachelor’s program toward a graduate degree at UCR, excluding any 200-level course(s) approved to count for bachelor’s degree, unit, or GPA requirements. Alternatively, the Graduate Advisor may approve waiving degree requirements based on 200-level courses taken as a UCR undergraduate and require the student to complete minimum unit requirements while enrolled in a graduate program.

**Substituting and Waiving Course Work**

All substitutions or waivers of degree requirements must be reviewed by the Graduate Adviser and approved by the Graduate Dean. Waiver of course work will not reduce the minimum number of units required for a master’s degree.
Colleges and Academic Programs

College of Humanities, Arts, and Social Sciences

Student Academic Affairs
3400 Humanities and Social Sciences
University of California, Riverside
Riverside, CA 92521
(951) 827-3683; fax (951) 827-5836
chass.ucr.edu

The degree programs in the College of Humanities, Arts, and Social Sciences are designed to introduce students to both the breadth and depth of the university’s curriculum. This is accomplished by combining a wide distribution of courses that explore the diversity of human knowledge. In the upper-division curriculum, students are relatively free to concentrate in depth in their major field of interest.

Majors

A major is a coordinated group of upper-division courses (courses numbered 100-199) in a field of specialization. The major may be a program of upper-division courses within a single department (departmental major), a group of related courses involving a number of departments (interdisciplinary major), or a group of courses chosen to meet a special interest (Humanities, Arts, and Social Sciences individual major).

Before enrolling in certain upper-division courses, students may not be required to gain appropriate knowledge by completing specific prerequisite courses. With the assistance of a departmental advisor, students are expected to select lower-division courses that prepare them for the advanced studies they propose to follow.

Choosing a Major, Undeclared Majors

While freshmen may choose an academic major on entering UCR, those who are unsure about specific academic goals may request to be admitted as undeclared. These students often take introductory courses in the natural sciences, social sciences, humanities, and fine arts while searching for an area that most excites their interest. Undeclared majors are encouraged to meet with an advisor in the Student Academic Affairs Office about their selection of courses.

Students with 90 or more units toward a degree must declare a major. To declare a major, students must obtain approval from the department offering the major and from the Student Academic Affairs office. Students who do not declare a major by 90 or more units may have a hold placed on their registration.

If undeclared majors feel that their interests lie primarily in the areas of the natural sciences, mathematics, and statistics, or the agricultural sciences, advising can be obtained in the College of Natural and Agricultural Sciences. Those interested in engineering or computer science and engineering can be advised in the Bourns College of Engineering. The college does not allow students to work toward admission into the College of Natural and Agricultural Sciences or the Bourns College of Engineering. They should make progress toward a CHASS major, unless they are pursuing double majors or baccalaureates.

Double Majors

Students can declare a second major within the College of Humanities, Arts, and Social Sciences or a second major in a department or program of another college. Changes of major are not permitted while on academic probation or during the final senior year (135 units or more). Both majors must be completed within the maximum limit of 216 units, and approval must be obtained from advisors in both departments or programs. In such cases, all course requirements must be completed for each of the two majors chosen. One of the two majors must be designated as the primary major for the purpose of satisfying breadth or general education requirements. No more than 8 upper-division units may count for both majors simultaneously.

A declaration of two majors in different colleges must be signed by the deans of the colleges concerned and filed by the student with the college of the principal major. If the two majors lead to different degrees (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements for both majors must be met.

Students wishing to declare a second major must present an outline to the Student Academic Affairs Office, indicating which major will be used to satisfy breadth requirements and any overlap courses between the two majors.

Interdisciplinary, Individual Majors

Humanities, Arts, and Social Sciences Interdisciplinary Major offers courses of broad interest, and students with interests not readily satisfied by existing departments and programs may develop individual majors under the direction of special faculty sponsors. The consent of the Humanities, Arts, and Social Sciences Interdisciplinary Program Committee and the associate dean are required. The title of the major will be entered on the official degree list and on the official transcript. Diplomas will read “Humanities, Arts, and Social Sciences Interdisciplinary” with the individual field of concentration specified.

Liberal Studies Major Students planning to become elementary school teachers should consider declaring the Liberal Studies Major. The lower-division core of courses prepares students with subject matter preparation in the required subjects of the California Department of Education K-6 Frameworks. The upper-division requirements allow students to build upon their strengths and interests and at the same time provide them with a connection to the core Education courses.

This major achieves the goal of a rigorous major while providing prospective teachers with the broad undergraduate education required for elementary school teaching. See information on these programs in the Programs and Courses section of this catalog. Several of the college’s regular major programs have an interdisciplinary emphasis that allows examination of a particular problem, theme, or area from a variety of perspectives.
### College of Humanities, Arts, and Social Sciences
#### Undergraduate Majors and Options

<table>
<thead>
<tr>
<th>Major/Minor</th>
<th>Degree(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Studies (major with Art History, B.A.; Economics, B.A.; History, B.A.; Political Science, B.A.; and Sociology, B.A., B.S.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>African American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Anthropology (also major with Law and Society, B.A.)</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Art (Studio)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Art History (also major with Administrative Studies, B.A., and Religious Studies, B.A.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Asian American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Asian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Business Economics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chicano Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>B.A.</td>
</tr>
<tr>
<td>Dance</td>
<td>B.A.</td>
</tr>
<tr>
<td>Economics (also majors with Administrative Studies, B.A., and Law and Society, B.A.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>English</td>
<td>B.A.</td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Gender and Sexuality Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Global Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>History (also majors with Administrative Studies, B.A., and Law and Society, B.A.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Humanities, Arts, and Social Sciences Interdisciplinary</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Arabic</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Chinese</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Comparative Ancient Civilizations</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Comparative Literature</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/French</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Germanic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Japanese</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Languages/Languages</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Russian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Latin American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Law and Society (major with Anthropology, B.A.; Economics, B.A.; History, B.A.; Philosophy, B.A.; Political Science, B.A.; Psychology, B.A.; and Sociology, B.A., B.S.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Liberal Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Linguistics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Middle East and Islamic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Media and Cultural Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Music</td>
<td>B.A.</td>
</tr>
<tr>
<td>Music and Culture</td>
<td>B.A.</td>
</tr>
<tr>
<td>Native American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Philosophy (also major with Law and Society, B.A.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Political Science (also majors with Administrative Studies, B.A.; International Affairs, B.A.; Law and Society, B.A.; and Public Service, B.A.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Psychology (also major with Law and Society, B.A.)</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Public Policy</td>
<td>B.A.</td>
</tr>
<tr>
<td>Religious Studies (also major with Art History, B.A.)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Sociology (also majors with Administrative Studies, B.A., B.S.; and Law and Society, B.A., B.S.)</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Southeast Asian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Sustainability Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Spanish</td>
<td>B.A.</td>
</tr>
<tr>
<td>Theatre, Film and Digital Production</td>
<td>B.A.</td>
</tr>
</tbody>
</table>

1 Only offered as a major combined with other programs.
2 New student registration in this program is not open at present.

### Disciplinary Minors

<table>
<thead>
<tr>
<th>Minor</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Anthropology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Art History</td>
<td>B.A.</td>
</tr>
<tr>
<td>Asian American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chicano Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>B.A.</td>
</tr>
<tr>
<td>Dance</td>
<td>B.A.</td>
</tr>
<tr>
<td>Economics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Ethnic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Gender and Sexuality Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>History</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Arabic</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Chinese</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Comparative Ancient Civilizations</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Comparative Literature</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/French</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Germanic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Japanese</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Languages/Languages</td>
<td>B.A.</td>
</tr>
<tr>
<td>Languages and Literatures/Russian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Latin American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Germanic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Italian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Japanese</td>
<td>B.A.</td>
</tr>
<tr>
<td>Korean</td>
<td>B.A.</td>
</tr>
<tr>
<td>Russian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Southeast Asian</td>
<td>B.A.</td>
</tr>
<tr>
<td>Music</td>
<td>B.A.</td>
</tr>
<tr>
<td>Native American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Philosophy</td>
<td>B.A.</td>
</tr>
<tr>
<td>Political Science</td>
<td>B.A.</td>
</tr>
<tr>
<td>Psychology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Religious Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Sociology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Spanish</td>
<td>B.A.</td>
</tr>
<tr>
<td>Theatre, Film and Digital Production</td>
<td>B.A.</td>
</tr>
</tbody>
</table>

### Interdisciplinary Minors

<table>
<thead>
<tr>
<th>Minor</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chicano Bilingual-Bicultural Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Global Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>International Relations</td>
<td>B.A.</td>
</tr>
<tr>
<td>Journalism</td>
<td>B.A.</td>
</tr>
<tr>
<td>Labor Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Latin American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Law and Society</td>
<td>B.A.</td>
</tr>
<tr>
<td>Lesbian, Gay, Bisexual, Intersex, and Transgender Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Marxist Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Media and Cultural Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Middle East and Islamic Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Peace and Conflict Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Public Policy</td>
<td>B.A.</td>
</tr>
<tr>
<td>Science Fiction and Technoculture Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Southeast Asian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Urban Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Western American Studies</td>
<td>B.A.</td>
</tr>
</tbody>
</table>

The disciplinary and interdisciplinary minor requirements of Asian Studies and Latin American Studies are described in the Programs and Courses section under the appropriate department or program. For a description of the other interdisciplinary minors, see individual listings in the Programs and Courses section.

### Internships, Independent Projects and Student Research

The Humanities, Arts, and Social Sciences student can often practice the subject, as well as read about it. Many undergraduates have the opportunity to work with a faculty member on a research project, and many departments offer field work and internship courses. In these courses, students combine several hours per week of experience in an agency or firm with study of related academic materials and participation in a seminar, where formal knowledge and practical experience are related to one another. Internship experiences are regularly available in settings such as public and business administration, politics, environmental protection, social welfare, criminal justice, clinical and other psychology programs, museums and archival installations, newspapers, and art galleries.

Normally, each local internship does not count for more than 4 or 5 units in a single term, larger numbers of units being reserved for quarter-away internships. Petitions for credit beyond 5 units in a single quarter for a
local internship must have the sponsoring agency's approval and a written justification by the student's faculty sponsor. All such requests require the associate dean's approval.

A maximum of 16 units of credit toward the bachelor's degree may be obtained through internship courses, with a maximum of 12 units of internship scheduled in a single quarter for quarter-away situations. Students who are on academic probation may not enroll in internship courses.

Transfer of Majors, Changing Majors
College of Humanities, Arts and Social Sciences. Admission is selective based on GPA in all transferable coursework with a minimum GPA of 2.4. Neuroscience and Psychology applicants must have a minimum GPA of 2.7 in all transferable college coursework. Psychology applicants must also have a minimum of one UC transferable mathematics course equivalent to Math 004 or higher. For further information call Student Academic Affairs at (951) 827-3683.

Minors
The College of Humanities, Arts, and Social Sciences offers minor programs; however, no student is required to take a minor. Minors are not degree-granting majors; they are sequences of supplemental courses designed to enhance work in certain areas. Any minor may be taken jointly with any departmental or interdepartmental major. Minors in the college shall consist of not fewer than 16 nor more than 28 units of organized upper-division course work. No overlap may occur among courses used to satisfy upper-division course requirements for a major and a minor. A GPA of at least 2.00 is required in upper-division courses in the field of the minor.

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation by completing a petition with the Student Affairs Office in the College of Humanities, Arts, and Social Sciences, the College of Natural and Agricultural Sciences, or the Bourns College of Engineering, depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

University Honors Program
For a description of the University Honors Program, see Educational Opportunities in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section.

Undergraduate Pre-Business Program
Pre-Business is a two-year program that prepares students to apply to the Business Administration major. Students who elect Pre-Business are advised in the College of Humanities, Arts, and Social Sciences during their freshman and sophomore years. Students who elect Pre-Business must gain admission to Business Administration by the time they have earned 90 units.

Degree Requirements
Students in the College of Humanities, Arts, and Social Sciences must meet three levels of requirements for the Bachelor of Arts or Bachelor of Science degree: general university requirements, college requirements, and major requirements.

General University Requirements
General university requirements are listed at the beginning of the Undergraduate Studies section. In addition, the College of Humanities, Arts, and Social Sciences has the following requirements and limitations.

Unit Requirements
Students must satisfactorily complete for credit a minimum of 180 units for the bachelor's degree. A maximum of 216 units is allowed. After having credit for 216 units, students are not permitted to continue except in cases approved by the associate dean in which specific academic or professional reasons are involved.

Credit Limitations
Transfer students with credit from other institutions (advanced standing credit), receive a transfer profile from the Office of Undergraduate Admissions. The Student Academic Affairs Office evaluates the course work, indicating how the transferrable credits are applied toward the degree. However, the following credit limitations may reduce the total number of units which apply toward the degree in the College of Humanities, Arts, and Social Sciences. Students should meet with an academic advisor in their major for questions regarding transfer credits.

The following credit limitations apply for all students enrolled in the college:
1. After completing 105 quarter units at a community college, students are not allowed further units for courses completed at a community college.
2. No more than 6 units in physical education activity courses may be applied toward the 180-unit requirement for the bachelor's degree.
3. No 400 series courses and not more than three courses in the 300 series of courses may be counted toward the 180 unit requirement for the bachelor's degree.
4. No more than 5 units of credit may be taken per quarter in special studies courses. See specific restrictions under each departmental listing regarding credit toward the major in special studies courses.

<table>
<thead>
<tr>
<th>College of Humanities, Arts, and Social Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breadth Requirement Unit Summary</strong></td>
</tr>
<tr>
<td><strong>For the B.A.</strong></td>
</tr>
<tr>
<td>English Composition</td>
</tr>
<tr>
<td>Humanities</td>
</tr>
<tr>
<td>Social Sciences</td>
</tr>
<tr>
<td>Ethnicity (4 units)</td>
</tr>
<tr>
<td>Foreign Language (level 4)</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
</tr>
<tr>
<td>Total Units</td>
</tr>
<tr>
<td><strong>For the B.S.</strong></td>
</tr>
<tr>
<td>English Composition</td>
</tr>
<tr>
<td>Humanities</td>
</tr>
<tr>
<td>Social Sciences</td>
</tr>
<tr>
<td>Ethnicity (4 units)</td>
</tr>
<tr>
<td>Foreign Language (level 3)</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
</tr>
<tr>
<td>Total Units</td>
</tr>
</tbody>
</table>

College Breadth Requirements
The Student Academic Affairs Office, in consultation with the Executive Committee of the College of Humanities, Arts, and Social Sciences, determines which courses apply to the following requirements. It is the student's responsibility to verify those courses that fulfill these subject requirements. To search for courses that meet specific breadth requirements, visit registrar.ucr.edu.

Courses taken in the department or program of a student's major (including courses cross-listed with the major) may not be applied toward the breadth requirements except for History majors in connection with the World History requirement, English majors in connection with the English
Composition requirement, Ethnic Studies majors in connection with the Ethnicity requirement, and foreign language majors in connection with the Foreign Language requirement. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements.

Students who elect a double major may apply courses in one of the majors toward satisfaction of the breadth requirements.

For the following requirements, a course is defined as a block of instruction which carries credit of 4 or more units.

No course may be applied to more than one breadth requirement, with the exception of the course taken to meet the Ethnicity requirement. Internship and independent studies courses may not be used to satisfy breadth requirements.

Courses offered by or cross-listed with Business Administration, Education, and Physical Education may not be used to satisfy breadth requirements.

**English Composition**

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college level instruction in English Composition with no grade lower than “C.” Courses in the Writing Across the Curriculum (WAC) program and other alternatives approved by the Academic Senate designates as alternatives to English 1C may be applied toward satisfaction of the third quarter of the writing requirement if students earn a “C” or higher.

Students should enroll in an English composition course each quarter they are registered at UCR until the sequence of preliminary Entry Level Writing courses, if needed, and ENGL 001A, ENGL 001B, ENGL 001C (or an alternative designated by the Academic Senate) is completed with satisfactory GPA.

Transfer students who have credit for one semester of English Composition from another institution are required to take two additional quarters, i.e., ENGL 001B and ENGL 001C.

Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and ENGL 001C.

Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C.

**Humanities: 20 units**

For the **B.A. degree**

1. One course in World History (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)

2. One course in the Fine Arts (Art, Art History, Dance, Media and Cultural Studies, Music, Theatre, Film and Digital Production, Creative Writing courses in poetry, fiction, or playwriting)

3. Two courses from among the following:
   a) Literature (offered by the departments of English, Comparative Literature and Foreign Languages, Hispanic Studies)
   b) Philosophy
   c) Religious Studies

4. One additional course from the following:
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or higher (Courses used in fulfillment of the foreign language requirement may not be used to meet this requirement.)
   c) A humanities course offered by Ethnic Studies; Creative Writing (courses in journalism); Humanities, Arts, and Social Sciences Interdisciplinary; Latin American Studies; Linguistics; or Women’s Studies

**For the B.S. degree**

1. One course in World History (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)

2. One course from the following:
   a) Fine arts (Art, Art History, Dance, Media and Cultural Studies, Music, Theatre, Film and Digital Production, Creative Writing courses in poetry, fiction, or playwriting)
   b) Literature (taken in the departments of English, Comparative Literature and Foreign Languages, or Hispanic Studies)
   c) Philosophy
   d) Religious Studies

3. Three additional courses from the following:
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above (Courses used in fulfillment of the foreign language requirement may not be used to meet this requirement.)
   c) Humanities courses offered by Ethnic Studies; Creative Writing (courses in journalism); Humanities, Arts, and Social Sciences Interdisciplinary; Latin American Studies; Linguistics; or Women’s Studies

**Social Sciences: 16 units**

1. One course in Economics or Political Science

2. One course in Anthropology, Psychology, or Sociology

3. Two additional social science-related courses from Comparative Ancient Civilizations, Ethnic Studies; Environmental Sciences; Geography (cultural geography courses); Human Development; Humanities, Arts, and Social Sciences Interdisciplinary; Women’s Studies; or one of the disciplines in 1. or 2. above

**Ethnicity: 4 units**

One course focusing on the general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies.

Refer to the Programs and Courses section for the courses that fulfill the Ethnicity requirement.

**Foreign Language**

Courses in American Sign Language may be used to meet this requirement.

For the **B.A. degree: course level 4 or equivalent**

This requirement may be satisfied by students (except for foreign language majors who satisfy the spirit of the language requirement by majoring in one or more languages) by completing the fourth-quarter level or its equivalent in one language at UCR (or at another college or university) with a minimum grade of “C” or by demonstrating proficiency at the fourth-quarter level on a foreign language placement exam offered by one of the foreign language departments at UCR. This test does not yield unit credit; it only determines whether the Foreign Language requirement has been met, or in which course of the language sequence a student should enroll. The placement exam may be taken only once in each subject during a student’s UCR career. Students continuing with the same foreign language they completed in high school must take a placement exam (visit place menttest.ucr.edu for dates and locations). Credit will be allowed only at the course level for which they qualify according to the placement exam.
student's major department or in the college's Student Academic Affairs Office, 3400 Humanities and Social Sciences Building.

**Academic Advising**

It is the student's responsibility to meet all graduation requirements: general university, college, and major.

Students with declared majors receive academic advising through their major department. Major advisors are available within each department or program (see a list of departmental staff for academic affairs at chassstudentaffairs.ucr.edu). All departments assign an academic advisor to each major and may require an advisor's approval before enrolling, submitting an academic petition, or making a change in the class schedule. Entering students who have not yet selected a major field of study should contact the Student Academic Affairs Office.

Undeclared and Pre-Business students are advised through the Student Academic Affairs Office. A staff of academic advisors is readily available to assist with questions pertaining to academic regulations and procedures, selection of courses which satisfy breadth requirements, major options, and alternatives. Students who need to confer with an advisor about overall degree requirements, academic difficulty, program planning, or assistance in selecting a major need to schedule an appointment with their advisor.

**Course Enrollment**

Students are required to register and enroll by the due date by the campus (visit registrar.ucr.edu for details).

The recommended study load for undergraduate students is 15 to 16 units per quarter. This is the average quarterly load to ensure steady progress for graduation in four years. The minimal program for an undergraduate student to be considered full time is three courses (12 units) per quarter. The normal progress for an undergraduate student is four courses (16 units) per quarter.

A class schedule of fewer than 12 units must be approved by the associate dean (visit registrar.ucr.edu for details). The college has established enrollment limits beyond which students require academic advisor approval. The limits are as follows: students in good academic standing, 20 units; students on academic probation, 17 units; students on subject-to-dismissal status, 15 units. Students on probation may not take courses on an “S/NC” basis.

After the second week of instruction, students may request changes by petition during a specified period. Petitions must usually be approved by the advisor and also, in the case of adds, by the instructor concerned. Changes to grading basis need advisor approval after the second week of classes. The associate dean must approve any changes in the class schedule requested after the regular petition period.

Courses (including Special Studies courses) can be added through the third week of instruction. Courses dropped after the second week of instruction will appear on the record with a “W” notation, signifying withdrawal. Students can withdraw from courses through the sixth week of instruction. The grading basis for a course can be changed through the eighth week of instruction. After the third week of instruction, a fee is required to file the petition to change the class schedule.

**Enrollment on Satisfactory/No Credit Basis**

Undergraduate students in good academic standing may receive credit for courses undertaken and graded “S” up to a limit of one-third of the total units undertaken and passed on the Riverside campus at the time the degree is awarded. Normally, this means no more than 4 units of “S/NC” per quarter. The total also includes courses graded only “S/NC.” Courses that are required in, or prerequisite to, a major may not be taken on a “S/NC” basis unless approved by the chair of the major department. Students on special status or limited status may take courses on a “S/NC” basis only with the approval of the associate dean.

A student may elect “S/NC” or delete “S/NC” from a course by filing a petition (enrollment adjustment form) with the Registrar. The deadline is the end of the eighth week of instruction and is listed each quarter at registrar.ucr.edu. This deadline is strictly enforced.

Regulations governing the “S/NC” option are described under Credit and Grades in the Policies and Regulations section of this catalog.

---

**Natural Sciences and Mathematics: 20 units**

1. One course in Mathematics, Statistics, or Computer Science
2. One course in Biological Sciences (Biochemistry, Biology, Botany and Plant Sciences, Entomology, Nematology, or Plant Pathology)
3. One course in Physical Sciences (Chemistry, Physics, Earth Sciences, excluding cultural Geography courses)
4. Two additional courses from the areas listed above or in physical and/or biological science courses offered in the Department of Environmental Sciences

**Major Requirements**

Detailed requirements for each major can be found under the department or program listing in the Programs and Courses section of this catalog.

A major in the College of Humanities, Arts, and Social Sciences shall consist of not fewer than 36 upper-division units. All courses applied toward the major and preparation for the major must be taken for a letter grade unless otherwise approved by the department chair. A 2.00 GPA in upper-division courses in the major is required for graduation. Once enrolled on this campus, students must complete all courses designated for a major in regular or summer sessions at UCR; exceptions to this policy must be approved by the department chair and by the associate dean.

Candidates for the B.A. degree may not receive more than 80 units of credit toward the degree for work taken in the major discipline (i.e., students must take at least 100 units outside the major discipline). Music and Dance majors may count a maximum of 102 units of music course work toward the B.A. degree (i.e., students must take at least 78 units outside the Music or Dance major).

Candidates for the B.S. degree may not receive more than 108 units of credit toward the degree for work taken in the major discipline (i.e., students must take at least 72 units outside the major discipline).

To receive the bachelor's degree, transfer students must complete a minimum of 16 upper-division units in the major on the Riverside campus. Students who have been away from the university for several terms should consult with their major departmental advisor about the requirements under which they may graduate. See the Catalog Rights Policy for Undergraduate Degrees in the Policies and Regulations section of this catalog.
Repetition of Courses
See Repetition of Courses in the Policies and Regulations section.

Part-time Study
For details, see Part-Time Study under the Finances and Registration.

Petitions
A petition is a form representing a student’s need or desire to be excepted from any standard rule or regulation in the university. It is the only way to obtain formal approval from the department, the college or school, the Registrar, or whomever has authority over a particular request. Some petitions carry a small fee; others are free.

An approved petition for a waiver or substitution in degree requirements represents an agreement between the student, the college or school, and in some cases, the department chair, granting the student an exception from the existing regulations.

Petitions are also used at UCR to change college or major, enroll in fewer units than regulations permit, make late changes to a class schedule, obtain credit by examination, concurrent enrollment, or withdraw from the university. Petitions for most of these exceptions are available in the Student Academic Affairs Office. Please note that petitions for retroactive actions more than one year old will not be approved.

Credit by Examination
To earn credit for a course by examination without formal enrollment in that course, students must be in residence and in good academic standing.

Before the examination may be given, arrangements and approval for examination for degree credit must be made with the instructor appointed to give the examination, a faculty advisor (if the major department requires it), and the associate dean. Petitions must be filed with the Office of the Registrar no later than the third week of instruction. Credit by examination is not allowed for English Composition courses.

The results of all examinations for degree credit are entered on students’ records as though they had actually taken the courses of instruction. There is a $5 service charge for each petition. The credit by examination procedure may not be used as a means of improving a previous grade.

Undergraduate Credit for Graduate Courses
Students who have a GPA of at least 3.00 in all courses taken in the university or have shown exceptional ability in a special field may take a graduate course for undergraduate credit with the permission of the instructor concerned. Students must have completed at least 18 upper-division quarter units basic to the subject matter of the course.

Expected Progress for Undergraduate Students
At the close of each quarter, the courses, units, grades, and grade points earned are added to the student’s cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration. Students can access their advisory degree check through rweb.ucr.edu.

Applying for Graduation
Submit your application via R’Web by the appropriate deadline. The application process is a two-step process with an initial submission via R’Web and a secondary submission through the College of Humanities, Arts and Social Sciences Application for Graduation. Instructions are provided at the end of your R’Web application.

Students should review their remaining requirements through rweb.ucr.edu each quarter. They should also contact their academic advisor in their major department or program two quarters before expected graduation to confirm remaining requirements. Completion of the degree depends upon completion of any work in progress. During the graduation quarter, any changes made to a student’s schedule after the third week of instruction should be immediately reported to the academic advisor.

If for any reason a student does not meet the requirements for graduation after filing the application, another application must be filed for the appropriate quarter. Students graduating in absentia after an absence of one or more quarters must apply for readmission to the university and file an application for graduation.

All course work, whether taken at UCR or elsewhere, must be completed by the last day of UCR’s finals week during the quarter of graduation (no GDs or Incomplete grades). Incomplete, IE, IP or GD grades on the transcript will stop the processing of the degree.

Once the application for graduation is filed, the student’s name will be entered on the appropriate degree list. Students who need to amend the prospective quarter of graduation and who have submitted an application for graduation petition must notify the Student Academic Affairs Office, in writing, as soon as possible.

Withdrawals
Students may withdraw from the university prior to the end of instruction, for serious personal reasons, with the approval of the associate dean. Students can initiate the withdrawal process online by going to myforms.ucr.edu.

Preparing for the Professions
The wide variety of majors and programs available in the College of Humanities, Arts, and Social Sciences provides an excellent background and preparation for immediate entry into the job market or for graduate and professional schools. Some of these are listed below; however, students are urged to see their faculty advisor or a counselor in the Career Center for further information.

The Arts
Undergraduate majors in the arts at UCR are designed to provide a solid liberal arts education at the same time as they provide essential training in the practical techniques of the specific art field involved. This means that arts majors provide a broad educational background, on a par with the other majors in the college, which prepares each student for effective participation in any job market where educational breadth is important.

Through the thorough practical training in each art field, an increasing number of UCR students are finding attractive career opportunities in the visual arts, writing, dance, music, and theater arts. Not that it has become any easier to practice as an artist or performer; these remain options best followed by the most talented and determined. However, the opportunities in many arts-related fields are increasing as the role of the arts continues to expand. Such opportunities include positions in teaching, music and dance therapy, graphics, theater management, costume design, performing arts management, fine arts publication, the recording industry, the arts, and criticism. Moreover, new professions, which will open yet wider vistas in coming years, are evolving for those trained in the arts.

UCR students who graduate with a major in one of the arts have consistently gained admission to graduate schools at outstanding universities, conservatories, and professional schools throughout the country.

At UCR, students may major in Art, Art History, Creative Writing, Dance, Media and Cultural Studies, Music, or Theatre, Film and Digital Production. At the graduate level, the M.A. degree is offered in Art History and in Music. M.F.A. degrees include Experimental Choreography, Visual Art, and Creative Writing and Writing for the Performing Arts. A Ph.D. is offered in Critical Dance Studies.

The Chancellor provides performance awards for excellence in the arts for students who have already achieved high proficiency upon entry into the university and who will continue to practice their art forms while students at UCR. For further information, contact the departments of Art; Dance; Music; Theatre; Film and Digital Production; and Creative Writing.

The Gluck Fellows Program of the Arts at UCR provides Gluck Faculty, Graduate, and Undergraduate Fellows the opportunity to bring their respective art forms to elementary, middle, and high school students and nursing home residents who have little or no access to the arts. The departments of Art; Art History; Creative Writing; Dance; Music; and Theatre, Film and Digital Production as well as the Sweeney Art Gallery and UCR/California Museum of Photography participate in the Gluck Fellows Program of the Arts. Students interested in the Gluck Fellows Program of the Arts should check with individual departments.
Business  While no specific major is required for admission to most
graduate schools of administration or management, the undergraduate
programs in Business Economics and the various majors offered in
combination with Administrative Studies provide excellent preparation. At
UCR, the curriculum in these majors stresses the principles of managerial
decision making and methods of gathering and analyzing the diverse data
on which decisions must be based.

It is also important to note that other majors in the liberal arts can serve
as effective preparation for entry into the worlds of management and
business. Any major curriculum that includes substantial emphasis on
oral and written expression and analytic and critical thinking can serve
this purpose, particularly if accompanied by a suitable cluster of courses
in business and management topics. Internships, which are available in
business and industry settings, can assist in clarifying educational and
personal goals, allowing exploration of alternative career options, and
providing the opportunity to apply academic background to a practical,
real world experience.

Students who wish to pursue a graduate degree in the Business
Administration field may wish to consider UCR’s School of Business.

Law  Most law schools require a baccalaureate degree. Law schools do
not require a uniform prelaw course of study or a specific college major;
backgrounds in the physical sciences are as acceptable as those in
the social sciences and humanities. However, law schools in general
do recommend that the prelaw student attempt to reach several goals
during the undergraduate years: an understanding of the development
of social, political, and economic institutions; an ability to communicate
well, both orally and in writing; the capacity to think clearly, carefully, and
independently; and a habit of disciplined study. Therefore, there is no
specific, formal prelaw curriculum that a student must take.

Most law schools require applicants to take the Law School Admission
Test, administered regionally by the Educational Testing Service. The test
is administered at UCR on three occasions during the year. Applications
for and information about this test may be obtained in the Department of
Political Science.

Students who are considering applying to law schools are strongly urged
to consult with the prelaw advisor in the Department of Political Science,
2224 Watkins Hall.

Librarianships  All library schools accredited by the American Library
Association require a baccalaureate degree for admission and usually
a reading knowledge of one or two languages other than English. A
broad general background, supported by the ability to read rapidly and
intelligently, is helpful. The knowledge, in depth, of the literature of some
subject area is especially advantageous. All subject fields, including
the biological and natural sciences, the humanities, and the social sciences
may prepare a student for graduate study in librarianship.

In addition to career opportunities in public, school, and academic
libraries, special librarians may work in government agencies, and in
commercial and industrial firms, such as pharmaceutical companies,
banks, and advertising agencies.

Museums, Archives, and Historic Preservation  The American Association
of Museums and The Society of American Archivists have designated the
master’s degree as the professional degree level for careers in museums
and archives. The Public History Program M.A. (Department of History)
provides professional education and training for these careers, as well as
for careers in general historic preservation and public history.

The UCR/California Museum of Photography is of significant value to those
interested in photographic history and museum practices, as well as to
those with creative interests in photography.

Public Administration  Government agencies offer many administrative
career options including jobs in personnel, budget administration, labor
relations, program analysis and public information. These types of
positions may require a bachelor’s or a master’s degree or a combination
of degrees plus experience. Students interested in a career in public
information are encouraged to acquire a broad liberal arts education at
the undergraduate level. An undergraduate major in any of the social
sciences provides appropriate preparation for graduate work in public
administration. Special attention is called to the majors in Political Science/
Administrative Studies, Political Science/International Affairs, and Political
Science/Public Service.

At UCR, students may gain valuable experience in government agencies
through the Academic Internship Program. In addition to numerous local
internship settings, there are quarter-away internships available in several
Sacramento and Washington, D.C. offices. See the Career Center in the
Services for Students section of this catalog.

UC Center at Sacramento  offers student internship opportunities. Students
live in UC housing, near the state Capitol, and intern from 24 to 33 hours
per week with members of the state legislature, government offices, or
nonprofit agencies. See UC Center at Sacramento in the Introducing UC
Riverside section of this catalog.

The UCR Washington Academic Program provides undergraduate students
with a multidimensional educational experience in Washington, D.C.
Students undertake academic pursuits as well as cultural and social
activities. The program combines course work with field research and
internship experience. See UCR Washington Academic Program in the
Introducing UC Riverside section of this catalog.

Social Welfare  Full professional training usually consists of two years of
graduate training leading to the degree of Master of Social Work.

Students planning to seek employment in social welfare after completing
the baccalaureate degree should prepare in the fields of psychology
(particularly child and adolescent psychology and the study of personality),
sociology (with emphasis on society and personality, social thought and
social organization), economics, political science, anthropology, and
statistical and research methods in the social sciences. Students who
plan to enter a professional school of social work following undergraduate
training should consult with an advisor at UCR for the best selection
of classes.

Career opportunities for students with the B.A. or B.S. degree include
positions as deputy probation officer, social worker, group counselor,
corrections officer, substance abuse counselor, and community relations
worker. Internships provide useful experience as part of the undergraduate
program in preparation for such careers.

Teaching Credential Programs  Students planning a career as a teacher may
wish to consider one of the majors that offers a subject-matter preparation
program.

Specific details and counseling are available at individual department
offices and the Graduate School of Education and at education.ucr.edu.

Students who are considering working toward any teaching credential
should attend one of the credential information seminars offered by the
Teacher Education Services Office (1124 Sproul) for advice in planning an
academic program.
Students who place in but do not plan to complete a college-level intermediate algebra course by the end of their first quarter of enrollment at UC Riverside, should file a Change of Major Petition to an appropriate, non-Calculus-requiring major in the College of Humanities, Arts, and Social Sciences (CHASS) or petition the Divisional Dean of CNAS Student Affairs to remain in CNAS under special circumstances. Students who pass the IAW college-level intermediate algebra course at a level deemed satisfactory for CNAS students, will be advised to enroll in Math 006A for the following quarter at UC Riverside.

Transfer Students: Students are selected primarily on the basis of academic preparation, as assessed by their GPA in academic coursework and strength of preparation for the intended major. Admission is selective based on the GPA in all transferable coursework with a minimum GPA of 2.7 and completion of required major preparatory coursework. Students should visit assist.org for updated and comprehensive major preparation requirements.

The Intersegmental General Education Transfer Curriculum (IGETC) is not accepted for students planning to transfer to the College of Natural and Agricultural Sciences. Although courses taken to satisfy the IGETC may be applied to the college's breadth pattern, students should concentrate on completing transferable mathematics and science courses.

Choosing a Major, Undeclared Majors

Although freshmen may choose an academic major on entering UCR, those who are unsure about specific academic goals may request to be admitted to the college as an undeclared student, choosing one of three options in this category.

1. Undeclared — Life Sciences, for students interested in Biochemistry; Biology; Cell, Molecular and Developmental Biology; Entomology; Microbiology; Neuroscience; or Plant Biology.
2. Undeclared — Mathematic Science, for students interested in Mathematics or Statistics, or Mathematics for Teachers of Secondary School.
3. Undeclared — Physical Sciences, for students interested in Chemistry, Earth Sciences, Environmental Sciences, or Physics.

Students who follow the recommended program for any of the three undeclared options will be prepared to enter a wide variety of science majors. Even if their plans change several quarters later, they will have avoided academic difficulty by planning a sensible, basic preliminary strategy. Individuals entering as students in one of the three undeclared options are advised through the college's Undergraduate Academic Advising Center by both professional academic advisors and faculty mentors from diverse science departments. Actual admission into degree programs is predicated upon successful completion of courses with satisfactory grades. Transfer into another college requires performance judged to be satisfactory by that college.

All students with 90 or more units toward a degree are expected to declare a major. To declare a major, obtain approval from the college's Undergraduate Academic Advising Center by filing a Change of Major Petition. Students are expected to declare a major by the beginning of their junior year (completion of 90 units). Students who fail to declare a major by this time will not be permitted to register until an approved declaration of major has been submitted to the Divisional Dean of CNAS Student Affairs at the CNAS Undergraduate Academic Advising Center.

If students in one of the three undeclared options feel their interests lie primarily in the areas of humanities or social sciences, advising can be obtained in the College of Humanities, Arts, and Social Sciences, (951) 827-3683. Students interested in engineering or computer science and engineering can be advised in the Bourns College of Engineering, (951) 827-3647.

Double Majors

A declaration of a second major must be filed at the college's Undergraduate Academic Advising Center at least two quarters before graduation and approved by both academic major advisors and the Divisional Dean of CNAS Student Affairs. At the time of filing, a student must have completed 120 units, with at least 18 upper-division units in the primary major and at least 8 upper-division units in the secondary major. Of the required upper-division units, a minimum of 24 (no more than 4 of...
which can be 190-199 courses) must be unique to each major. To declare a second major, a student must have a cumulative GPA of 2.7 or higher and an upper-division major GPA of 2.7 or higher in each major. A student may elect a second major in a department or interdepartmental group of another college. A declaration of such a second major must be signed by the appropriate deans of both colleges and filed by the student with the primary college. A student must meet requirements of both primary and secondary majors and the college requirements of the primary major if they are both in the same baccalaureate class. If the two majors lead to different degrees (B.S. and B.A.), that fact is noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements for both majors must be met. Information on how to file for double majors may be obtained from the college’s Undergraduate Academic Advising Center.

### Changing Majors

Students may change majors if they are in good standing and not expected to exceed the unit limitation of 216 units toward the degree. Students can petition to change their major within the college or transfer from another college to the College of Natural and Agricultural Sciences. Students interested in transferring to the College of Natural and Agricultural Sciences should consult with an advisor in the CNAS Undergraduate Academic Advising Center regarding specific prerequisite courses. Students will be reviewed for course coverage and GPA for the new major. Major changes to CNAS or within CNAS are approved by the Divisional Dean of CNAS Student Affairs.

Students who fail to attain a GPA of 2.00 (“C”) in preparation for the major or major courses may be denied the privilege of entering or continuing in that major.

### Minors

Each minor in the College of Natural and Agricultural Sciences consists of not fewer than 20 nor more than 28 units of organized, upper-division courses. No more than 4 units of 190-199 courses may be used in fulfilling the upper-division unit requirement for a minor. Of the specified upper-division units, a minimum of 16 must be unique to the minor and may not be used to satisfy major requirements. The CNAS Undergraduate Academic Advising Center is responsible for student and administrative issues pertaining to the minors offered by CNAS. Minors offered by other colleges are administered by the department, program, or interdisciplinary program offering the minor. Students must file a declaration of a minor by filing a petition with the college’s Undergraduate Academic Advising Center at least two quarters before graduation and must be in good academic standing at the time of filing. A minor requires the signature of the Academic Advisor that supervises the minor and the signature of the Divisional Dean of CNAS Student Affairs.

### University Honors Program

For a description of the University Honors Program, see Educational Opportunities in the section Introducing UC Riverside. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section.

### Financial Assistance

The College of Natural and Agricultural Sciences maintains funds for undergraduate scholarships. Application materials and information are available in the college’s Undergraduate Academic Advising Center. Visit [cnasstudent.ucr.edu](http://cnasstudent.ucr.edu) or e-mail cnasstudent@ucr.edu.

### Freshman Advising Seminars

Freshman Advising Seminars are designed to introduce students to a wide variety of topics in the College of Natural and Agricultural Sciences, including major selection, curriculum planning, career options and goals in the sciences, opportunities for undergraduate research, development of learning and study skills, ethics in research and education, and an introduction to the faculty in the college. Each quarter’s offerings are listed at [registrar.ucr.edu](http://registrar.ucr.edu) under NASC 091 and NASC 093. Topics vary from quarter to quarter.

### College of Natural and Agricultural Sciences Undergraduate Majors and Options

<table>
<thead>
<tr>
<th>Department/Program</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry</td>
<td>B.A.</td>
</tr>
<tr>
<td>Biology emphasis</td>
<td></td>
</tr>
<tr>
<td>Chemistry emphasis</td>
<td>B.A.</td>
</tr>
<tr>
<td>Medical Sciences emphasis</td>
<td>B.A.</td>
</tr>
<tr>
<td>Biological Sciences(^1)</td>
<td>B.S.</td>
</tr>
<tr>
<td>Bioinformatics and Genomics track</td>
<td>B.S.</td>
</tr>
<tr>
<td>Biology track</td>
<td></td>
</tr>
<tr>
<td>Cell, Molecular, and Developmental Biology track</td>
<td>B.S.</td>
</tr>
<tr>
<td>Medical Biology track</td>
<td>B.S.</td>
</tr>
<tr>
<td>Microbiology track</td>
<td>B.S.</td>
</tr>
<tr>
<td>Plant Biology track</td>
<td>B.S.</td>
</tr>
<tr>
<td>Biology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Cell, Molecular, and Developmental Biology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chemistry</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chemical Physics option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Environmental Chemistry option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td></td>
</tr>
<tr>
<td>Geology</td>
<td></td>
</tr>
<tr>
<td>General Geology option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Geobiology option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Geophysics option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Global Climate Change option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Geophysics</td>
<td></td>
</tr>
<tr>
<td>Entomology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td></td>
</tr>
<tr>
<td>Environmental Toxicology option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Natural Science option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Social Science option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Environmental Sciences (joint with California State University, Fresno)(^1)</td>
<td>B.S.</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>Pure Mathematics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Applied Mathematics</td>
<td></td>
</tr>
<tr>
<td>Biology option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chemistry option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Economics option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Environmental Sciences option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Physics option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Statistics option</td>
<td>B.A.</td>
</tr>
<tr>
<td>Computational Mathematics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Mathematics for Secondary School Teachers</td>
<td>B.S.</td>
</tr>
<tr>
<td>Microbiology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>B.A.</td>
</tr>
<tr>
<td>Physics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Applied Physics and Engineering</td>
<td></td>
</tr>
<tr>
<td>Biophysics option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Physics Education</td>
<td>B.S.</td>
</tr>
<tr>
<td>Plant Biology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Statistics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Statistical Computing option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Quantitative Management option</td>
<td>B.S.</td>
</tr>
</tbody>
</table>

### Disciplinary Minors

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Statistics</td>
<td>Global Climate Change</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Entomology</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Environmental Sciences</td>
<td>Physics</td>
</tr>
<tr>
<td>Geology</td>
<td>Plant Biology</td>
</tr>
</tbody>
</table>

\(^1\) New student registration in this program is not open at present.
The seminars have no prerequisites, and freshmen are given enrollment priority. Each seminar is limited to 24 students to encourage discussion and carries 1 or 2 units of academic credit, although units are not applied toward major requirements. The seminars are graded on an “S/NC” basis.

Degree Requirements

Students in the College of Natural and Agricultural Sciences must meet three levels of requirements for the B.A. or B.S. degree: general university requirements, college requirements, and major requirements.

General University Requirements

General university requirements are listed at the beginning of the Undergraduate Studies section. For information on university regulations see the Policies and Regulations section of this catalog.

In addition to the above general university requirements, the College of Natural and Agricultural Sciences has the following unit requirement.

Unit Requirement

Students are not normally expected to take significantly more than 180 units to obtain the bachelor's degree. After earning credit for 216 units, a student will not be permitted to continue except by approval of the Divisional Dean of CNAS Student Affairs when specific academic or professional reasons are involved.

The following credit limitations apply for all students enrolled in the college:

1. After completing 105 quarter units at a community college, students are not allowed further units for courses completed at a community college.

2. No more than 6 units in physical education activity courses may be applied toward the bachelor's degree.

3. Enrollment in more than 8 units of graduate courses requires submission of a petition and approval by the Divisional Dean of CNAS Student Affairs. No more than three courses in the 300 series of courses may be applied toward the bachelor's degree. Credit is not granted for 400 series courses taken in UC Extension.

College Policy for the Intersegmental General Education Transfer Curriculum

The Intersegmental General Education Transfer Curriculum is not accepted for students planning to transfer to the College of Natural and Agricultural Sciences. It does not adequately cover the lower-division mathematics and science prerequisites required for majors in this college.

College Breadth Requirements

For the following requirements, a course is defined as a block of instruction that carries credit of 4 or more units. Courses taken in the department or program of a student's major (including courses cross-listed with the major) may not be applied toward the breadth requirements except for Biology majors in connection with the Biological Sciences requirement. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements.

Some majors in the college may have specific course requirements for meeting the following breadth requirements. Check under individual major requirements in the Programs and Courses section of this catalog.

Requirements are for both the B.A. and the B.S. degrees unless specified separately.

Humanities

For the B.A. degree: 20 units

1. One course in World History (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)

2. One course in the fine arts (Art; Art History; Creative Writing courses in poetry, fiction, or playwriting; Dance; Media and Cultural Studies; Music; Theatre or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences)

3. Two courses from among the following:
   a) Literature taken in the departments or programs in Comparative Literature and Foreign Languages, English, Media and Cultural Studies, Hispanic Studies, or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences.
   b) Philosophy, taken in the Department of Philosophy, or from among courses within this discipline as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
   c) Religious Studies, taken in the Department of Religious Studies, or from among courses within this discipline as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences

4. One additional course from the following:
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 4 or above
   c) A humanities course offered by Ethnic Studies; Comparative Ancient Civilizations; Creative Writing (courses in journalism); Humanities, Arts, and Social Sciences; Latin American Studies; Linguistics; Media and Cultural Studies; or Women's Studies

No course used to satisfy the English Composition requirement will apply toward Humanities credit.

No more than two courses in performance may be counted toward the Humanities requirement.

English Composition

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college-level instruction in English Composition, with no grade lower than C. Courses in the Writing Across the Curriculum (WAC) program and other alternatives approved by the Academic Senate as alternatives to the sequence's third-quarter course, English 001C, may be applied toward satisfaction of the third quarter requirement if a student's college permits its majors to substitute such a course for 001C, and if students have first passed English 001B with a “C” or higher. The grade in the alternative course must be no lower than a “C.” Individual colleges may set a higher GPA requirement in English 001A and/or 001B as a prerequisite to take Senate-approved alternatives to English 001C.
Transfer students who have taken one semester of English Composition at another college or university are required to take ENGL 001B and ENGL 001C, with the option of taking a course in the WAC program and other alternatives to English 001C approved by the Academic Senate if a student's college permits its majors to substitute such a course for 001C.

Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and ENGL 001C.

Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C.

For the B.S. degree: 12 units

1. One course in world history (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)
2. One course from among the following:
   a) Fine arts (Art; Art History; Creative Writing courses in poetry, fiction, or playwriting; Dance; Media and Cultural Studies; Music; Theatre or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences)
   b) Literature taken in the departments or programs in Comparative Literature and Foreign Languages, English, Hispanic Studies, Media and Cultural Studies or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
   c) Philosophy, taken in the Department of Philosophy, or from among courses within this discipline as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
   d) Religious Studies, taken in the Department of Religious Studies, or from among courses within this discipline as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
3. One additional course chosen from the following:
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above
   c) Humanities courses offered by Ethnic Studies; Comparative Ancient Civilizations; Creative Writing (courses in journalism); Humanities, Arts, and Social Sciences; Latin American Studies; Linguistics; Media and Cultural Studies; or Women’s Studies

No course used to satisfy the English Composition requirement will apply toward Humanities credit.

No more than one course in performance may be counted toward the Humanities requirement.

Social Sciences

For the B.A. degree: 16 units

1. One course must be taken in the departments of Economics or Political Science or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
2. One course must be taken in the departments of Anthropology, Psychology, or Sociology, or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
3. Social science courses offered by Ethnic Studies; Environmental Sciences; Geography (cultural geography courses); Human Development; Humanities, Arts, and Social Sciences; Women’s Studies, or one of the disciplines in 1. or 2. above

For the B.S. degree: 12 units

1. One course must be taken in the departments of Economics or Political Science or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
2. One course must be taken in the departments of Anthropology, Psychology, or Sociology, or from among courses within these disciplines as designated by the Executive Committee of the College of Humanities, Arts, and Social Sciences
3. Social science courses offered by Ethnic Studies; Environmental Sciences; Geography (cultural geography courses); Human Development; Humanities, Arts, and Social Sciences; Women’s Studies, or one of the disciplines in 1. or 2. above
4. Two additional courses from areas (2) or (3) above or in physical and/or biological science courses offered in the Department of Environmental Sciences

This requirement may automatically be satisfied by lower-division requirements for the major.

Additional Courses: 16 units

For the B.S. degree: An additional 16 units of substantive course work in
the student’s chosen major or fields related to the major is required. The additional course work is specified by the major department.

Major Requirements
Detailed requirements for each major are found under the department listings in the Programs and Courses section of this catalog.

A major in the College of Natural and Agricultural Sciences shall consist of not fewer than 36 nor more than 60 upper-division units. No more than 9 units of courses in the 190-199 series may be counted in fulfilling the upper-division units needed for the major.

By the beginning of the junior year, students must consult with their advisor and choose a major. A GPA of at least 2.00 (C) in the upper-division courses taken in the major field is required for graduation.

Life Sciences Core Curriculum
A lower-division core curriculum prepares students for a wide variety of majors, including Biochemistry, Biology, Cell, Molecular, and Developmental Biology; Entomology; Microbiology; Neuroscience; and Plant Biology. Students complete a uniform core curriculum prior to advancing to upper-division courses. The curriculum is Introductory Biology (1 year, including laboratory), General Chemistry including laboratory (1 year), Organic Chemistry (1 year), Calculus (2 quarters), Physics including laboratory (1 year), Statistics (1 quarter), and Introductory Biochemistry (1 quarter). No more than 12 units of upper-division life sciences courses not being used to satisfy the core may be taken prior to completion of the core.

College Policies and Procedures
For detailed information on UCR policies and regulations see the Policies and Regulations section of this catalog.

College Regulations
Detailed information and specifics with regard to the college regulations governing undergraduate student status as approved by the faculty and contained in the Manual of the Riverside Division of the Academic Senate may be obtained from a faculty advisor or the college’s Undergraduate Academic Advising Center.

Student Responsibility
Students are responsible for meeting deadline dates regarding enrollment, add/drop, change of grading basis, credit by examination, withdrawal, applications for graduation, declaration of candidacy, and other actions. The deadline dates are listed at registrar.ucr.edu and must be observed. Academic advising can be obtained in the college’s Undergraduate Academic Advising Center, 1223 Pierce Hall.

Faculty Mentors
All students who declare a major upon entrance to the College of Natural and Agricultural Sciences are assigned to a department or interdepartmental faculty oversight committee granting the degree for that major or area of specialization. For assignment of faculty mentors, new students should report to the Undergraduate Academic Advising Center. Students in one of three undeclared options in the college are also advised in the college’s Undergraduate Academic Advising Center.

Professional Academic Advisors
Students should keep in touch with their professional academic advisor housed in the Undergraduate Academic Advising Center on all academic matters, including choice of courses, consideration of a major, and requirements for graduation. Before consulting the academic advisor, students should formulate a tentative program according to their interests and needs and should be familiar with general university, college, and major requirements.

It is important that each student keep in mind that the advisor serves to assist students but does not administer the student’s program. Students must be responsible for ensuring that they meet all requirements for graduation.

Course Enrollment
Before each quarter, students advance enroll in all courses they plan to take. Every student’s course schedule must be approved by the student’s academic advisor. Students are expected to register and enroll by the date set by the campus (visit registrar.ucr.edu for details).

Since the college expects all students to make regular progress toward their degrees, class schedules of less than 12 units must be approved by the Divisional Dean of CNAS Student Affairs. Repeated courses are considered part of the total unit load.

Students on probation may not register for more than 15 units in a quarter without consent of the Divisional Dean of CNAS Student Affairs. No student may enroll in less than 8 units (two classes).

During the first two weeks of the quarter, students make course enrollment changes via rweb.ucr.edu, and approvals by academic advisors and instructors are generally not required. After the second week of instruction ends, students must file an enrollment adjustment form online at myforms.ucr.edu to make changes. With the approval of their academic advisor and the course instructor, students may add courses to their class schedule up to noon on the end of the third week of classes. With the approval of their academic advisor, students may withdraw from a course up to noon on the end of the sixth week or change the grading basis up to noon on the end of the eighth week. For courses dropped after the second week, a “W” appears on the transcript, indicating withdrawal. Students may withdraw from all their courses up until the end of the tenth week of instruction. Students exercising this option will receive “W’s” in all their courses for that quarter.

Enrollment on a Satisfactory/No Credit Basis
Students in this college who are not on probation may take nonmajor courses on an “S/NC” basis and other courses graded only on an “S/NC” basis, provided they do not exceed one third of the total units undertaken and passed (graded “S”) on the UCR campus at the time the degree is awarded.

Courses required for the major and lower-division mathematics or science courses that are prerequisites to major courses cannot be taken on an “S/NC” basis. A student may elect “S/NC” or delete “S/NC” from a course during the R’Web enrollment period or later in the quarter by filing an enrollment adjustment form online at myforms.ucr.edu. The deadline is noon on the end of the eighth week of instruction and is listed each quarter at registrar.ucr.edu.

Regulations governing the “S/NC” option are described under Credit and Grades in the Policies and Regulations section of this catalog.

Credit by Examination
A student may petition for the privilege of examination for degree credit without formal enrollment in a particular course but must be in residence and not on academic probation. Arrangements for examination for degree credit must be made with the student’s faculty mentor. Approvals of the faculty mentor, the Divisional Dean of CNAS Student Affairs of the college, and the instructor who is agreeing to give the examination are necessary before the examination may be given. The results of all examinations for degree credit are entered on the student’s record as though the student had actually taken the courses of instruction.

Undergraduate Credit for Graduate Courses
Upper-division students with a UCR cumulative GPA of 3.00 or above may take a graduate course for undergraduate credit with the permission of the faculty advisor and the instructor concerned. Enrollment in more than 8 units of graduate coursework requires Divisional Dean of CNAS Student Affairs approval. See the CNAS Undergraduate Advising Center for more information.
Expected Progress for Undergraduate Students

At the close of each quarter, the courses, units, grades, and grade points earned are added to the student’s cumulative university record. This record summarizes progress toward a degree. UCR requires all undergraduate students to make Expected Progress each academic year. A full-time undergraduate student is considered to be making Expected Progress towards a baccalaureate degree if the student:

- Passes at least 45 units each academic year
- Declares a major by the time the student earns 90 units
- Follows a program of study consistent with the student’s declared major

Students who have not earned a minimum of 37 units each academic year, have not declared a major by the time they earn 90 units, or are not following a program of study consistent with the student’s declared major are not considered to be making Expected Progress towards a baccalaureate degree.

Students who fail to make Expected Progress may be ineligible for continued registration. Continued registration will be at the discretion of the Divisional Dean of CNSA Student Affairs.

Students can access their advisory degree check through rweb.ucr.edu.

Declaration of Candidacy

Applications for graduation are available online at cnasgradapp.ucr.edu and must be filed by the deadline established for the quarter in which graduation is expected. The deadline for filing applications for graduation is listed at registrar.ucr.edu each quarter. If it is necessary to amend the prospective date of graduation during the quarter in which graduation is expected, the student must notify the college’s Undergraduate Academic Advising Center, in writing, as soon as possible.

Applications are not accepted after the deadline established for the quarter in which the student intends to graduate. If for any reason the student does not meet the requirements for graduation after announcing candidacy, or fails to meet the deadline for filing, a new application must be filed for the subsequent quarter.

Students graduating in absentia after an absence of one or more quarters must apply for readmission to the university and file an Application for Graduation with the college Undergraduate Academic Advising Center.

Preprofessional Academic Preparation

Undergraduate academic preparation for several professional careers can be acquired in the College of Natural and Agricultural Sciences. Brief explanations of preprofessional academic programs follow.

Forestry Any Life Science major at UCR will be good preparation for students who wish to transfer to UC Berkeley’s College of Natural Resources, forestry program. For more information on this program, please see https://nature.berkeley.edu/sites/default/files/FNR%20Major%20Snapshot.pdf .

Medical Technology Training for Clinical Laboratory Scientist Prospective licensed clinical laboratory scientists should obtain a bachelor’s degree in either biochemistry; biology; cell, molecular and developmental biology; and microbiology and complete any other requirements necessary. Students must apply independently to any of the state-approved programs in clinical laboratory science offered at various universities and hospitals. Following successful completion of this training and testing by the state of California the student is eligible to become a licensed clinical laboratory scientist. Prerequisites for entry change periodically, so interested students should obtain current information from the Health Professions Advising Center at hpac.ucr.edu . The state Department of Health also provides information on careers in this field.

Medicine and Dentistry Although the specific requirements of all medical and dental schools cannot be listed here, the general requirements are discussed below to indicate the various preprofessional programs available at UCR.

More than 90 percent of the students admitted to medical schools in the United States have attained the B.A. or B.S. degree, and a large proportion of those admitted to dental schools have three or more years of undergraduate work.

Leaders in medical and dental education urge prospective students to arrange their programs to obtain a broad general education, since the subject matter of the humanities and social sciences is not offered by the professional schools. It is recommended that students preparing to seek admission to medical or dental school obtain a bachelor’s degree, to which all of UCR’s preprofessional programs lead.

A student may satisfy the requirements for admission to medical or dental school in one of the following ways:

1. Completing any UCR Life Science major
2. Completing the major in Chemistry
3. Majoring in any department but fulfilling concurrently the specific course requirements of medical or dental schools

Most medical and dental schools recommend that the courses shown above be taken in a preprofessional degree program. These courses should include laboratories.

The Thomas Haider Program at the UCR School of Medicine Students in any major at UCR are eligible to complete admission requirements and apply for up to 24 positions reserved for UCR students in the UCR School of Medicine. Students eligible to apply to this unique pathway into the UCR medical school, called the Thomas Haider Program at the UCR School of Medicine, are those who attend UCR for at least six consecutive quarters and complete their bachelor’s degree at UCR. Information on this program and general admission to the UCR medical school is provided at medschool.ucr.edu, in the school’s section of this catalog, in the medical school Student Affairs Office (1682A School of Medicine Education Building, (951) 827-4334), and at orientation meetings held at UCR.

### Course Work for Medicine and Dentistry

<table>
<thead>
<tr>
<th>Course Work</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>General chemistry</td>
<td>1</td>
</tr>
<tr>
<td>Organic chemistry</td>
<td>1</td>
</tr>
<tr>
<td>Physics</td>
<td>1</td>
</tr>
<tr>
<td>General biology</td>
<td>1</td>
</tr>
<tr>
<td>Upper-division biochemistry</td>
<td></td>
</tr>
<tr>
<td>Upper-division genetics</td>
<td></td>
</tr>
<tr>
<td>Mathematics through integral calculus</td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
</tr>
</tbody>
</table>

Other Health Professions In addition to those described above, UCR offers the preprofessional requirements for entrance to other health professional schools, including optometry, pharmacy, podiatry, nursing, physical therapy, and physician assistant, among others. Information about these can be obtained from the Health Professions Advising Center (HPAC), hpac.ucr.edu, or the Career Center (Vetech Student Center).

Teaching The California Commission on Teacher Credentialing has established guidelines and standards that prepare students for teaching credentials. For a description of how students can prepare for the multiple-subject (elementary) and single subject (secondary) credentials, refer to individual departments in the Programs and Courses section of this catalog.

After earning the bachelor’s degree, the prospective teacher registers for an additional year of training in education theory and practice needed to obtain a teaching credential. Anyone considering obtaining a teaching credential should attend one of the credential information seminars offered by the Teacher Education Services Office, 1124 Sproul Hall, and consult with an advisor early in the planning of an academic program.

California Teach-Science/Mathematics Initiative (CaTEACH-SMI) Students with a talent for science, math or engineering can translate that ability into preparing for a teaching career in California through the California Teach-
Science/Mathematics Initiative (CaTEACH-SMI). Students who partner with CaTEACH-SMI at UCR can complete a science, engineering, or mathematics degree and become eligible for an intern teaching credential in just four years. Beginning with the freshman year, students intern in a local primary or secondary classroom with a mentor teacher. At UCR, they can meet other CaTEACH-SMI students and their UCR peer mentor at the program’s Resource Center, where students can receive credential advising. The CaTEACH-SMI Resource Center also provides future STEM teachers with material and financial resources, such as the SMI & Alpha Center Apprentice Programs and the NSF Noyce Scholarship Program. For more information contact smi@ucr.edu, visit the Resource Center at 1315 Pierce Hall, smi.ucr.edu, or facebook.com/ScienceMathInitiativeAtUcr.

The Prepare to Teach Program is a preprofessional program open to undergraduates from all majors who are interested in teaching in California elementary schools. Through this program, prospective elementary school teachers gain early field experience in the schools and learn more about the profession. Advising includes information on state requirements that are best met before graduation. For more information, contact the Office of Interdisciplinary Programs; 3116 Interdisciplinary Building South; or call (951) 827-2743.

Veterinary Medicine The course work at UCR is designed to prepare students to meet the requirements for admission to California’s veterinary programs, the School of Veterinary Medicine at UC Davis, and the Western University of Health Sciences in Pomona. Students should consult the Health Professions Advising Center (visit hpac.ucr.edu), the UC Davis General Catalog, or the Western University Web site westernu.edu/veterinary/home.xml for additional details.
The Marlan and Rosemary Bourns College of Engineering

Office of Student Academic Affairs
A159C Bourns Hall
University of California, Riverside
Riverside, CA 92521-0144
(951) 827-ENGR (3647); student.engr.ucr.edu/

The Marlan and Rosemary Bourns College of Engineering emphasizes fundamental disciplines of engineering and computer science and engineering, introducing students to the new technologies necessary for today's highly technical environments.

The vision of the Bourns College of Engineering is to become a nationally recognized leader in engineering research and education. Its mission is to:

- Produce engineers with the educational foundation and the adaptive skills necessary to serve rapidly evolving technology industries
- Conduct nationally recognized engineering research focused on providing a technical edge for the United States
- Contribute to knowledge in both fundamental and applied areas of engineering
- Provide diverse curricula that will instill in our students the imagination, talents, creativity, and skills necessary for the varied and rapidly changing requirements of modern life and to enable them to serve in a wide variety of other fields that require leadership, teamwork, decision making, and problem-solving capabilities
- Be a catalyst for industrial growth in the Inland Empire region of Southern California

The majors offered by the college are based on the needs of the practicing professional and are founded on a solid core of mathematics and the sciences. Breadth in the educational experience is represented by requirements in arts, humanities, and social sciences and by emphasis on oral and written communication skills. The principles and practice of engineering and computer science and engineering are provided in lecture and related laboratory courses. All students must choose a set of technical electives, emphasizing synthesis and design, to complete their undergraduate programs.

Majors

A major is a coordinated group of upper-division courses (courses numbered 100–199) in a field of specialization. The major may be a group of upper-division courses within a single department or program, or a group of related courses from several departments or programs. Before enrolling in upper-division courses, students may be required to gain appropriate knowledge by completing specific prerequisite courses.

With the assistance of a departmental advisor, students are expected to select lower-division courses which prepare them for the advanced studies they propose to follow.

Change of Major or Double Majors

A student in good standing may request to change from one major to another by filing a Major Change Petition with the Office of Student Academic Affairs.

A student in good standing may elect to take a second major within the college. The student must file a declaration of a second major with the Office of Student Affairs. A course used to satisfy the requirements for one major may be used to fulfill the requirements of a second major as well. However, of the required upper-division units, a minimum of 24 must be unique to each major, and both majors must be completed within the maximum unit cap of the primary Engineering major.

A student in good standing may elect to take a second major in another college. A declaration of such a second major must be signed by the deans of both colleges and filed by the student with the primary college.

A student will meet requirements of both primary and secondary majors and the college requirements of the primary major, if they are both in the same baccalaureate class. If the two majors lead to different degree designations (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a double major program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements of both majors must be met. A course used to satisfy the requirements for one major may be used to fulfill the requirements for a second major as well. However, of the required upper-division units, a minimum of 24 must be unique to each major, and both majors must be completed within the maximum unit cap of the primary Engineering major. A student who has declared a double major may graduate in one major upon the completion of all requirements for that major but may not continue in the university for completion of the second major. For details, please contact the Office of Student Academic Affairs.

Minors

The Bourns College of Engineering currently has a minor in Computer Science. Minors in the college shall consist of not fewer than 20 nor more than 28 units of organized upper-division courses. No more than 4 units of 190–199 courses may be used in fulfilling the upper-division unit requirement for a minor. Overlap may occur between the upper-division course requirements of the major and the minor only to the extent permitted by the department, programs, or interdisciplinary committee offering the minor, or the college of the minor. Courses used, or prerequisite to those used, in fulfilling the minor may be taken on an “S/NC” basis only on approval of the dean. The department, program, or interdisciplinary committee offering the minor is responsible for student and administrative issues pertaining to the minor. Students must file a declaration of a minor at least two quarters before graduation and must be in good academic standing at the time of filing. A minor requires the signature of the department chair or chair of the faculty committee which supervises the minor and the signature of the dean of the college. A GPA of at least 2.00 in upper-division courses in the field of the minor is a graduation requirement. When all other requirements for graduation have been met, the student will be graduated without the minor if the minimum GPA in the minor field has not been met.

University Honors Program

For a description of the University Honors Program, see Educational Op-
opportunities section in the section Introducing UC Riverside. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section of this catalog.

Admission to Majors

Admission of Majors Prospective Bourns College of Engineering students must complete high school programs that meet UC requirements as described in the Undergraduate Admission section of this catalog.

### Course Work

<table>
<thead>
<tr>
<th>Course Work</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>2</td>
</tr>
<tr>
<td>Plane Geometry</td>
<td>1</td>
</tr>
<tr>
<td>Trigonometry (often contained in Precalculus or Algebra II, strongly suggested)</td>
<td>1/2</td>
</tr>
<tr>
<td>Chemistry or Physics, with laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

In addition, appropriate high school mathematics and science course work should include the following:

A supplemental screening process for majors in the Bourns College of Engineering places emphasis on the GPA earned in college preparatory course work, especially mathematics and science, and on aptitude test scores. Qualification for first-year calculus is also expected. UC-eligible students not qualifying for the preferred major are considered for admission to their alternate major.

Application should be made during the priority filing period (November 1–30).

Transfer Students All transfer students must meet the UC requirements for admission as described in the Undergraduate Admission section of this catalog. The Bourns College of Engineering accepts completion of IGETC as satisfying the majority of the college’s breadth requirements for transfer students. Some additional breadth coursework may be required after enrollment at Bourns. For more information on BCOE breadth requirements, please contact the Office of Student Academic Affairs.

However, prospective applicants are strongly encouraged to focus instead on preparatory course work for their desired major, such as mathematics, science, and other technical preparatory course work, rather than on IGETC completion. Strong technical preparation is essential for success in the admissions process, and subsequently, in all coursework at Bourns.

Students intending to transfer to engineering majors are expected to complete the equivalent of UCR course work required in the first two years of the programs and to apply for transfer starting with their junior year. Specific information on transfer requirements may be obtained from the Office of Student Academic Affairs, (951) 827-ENGR (3647).

Financial Assistance The Bourns College of Engineering awards several scholarships to its students each year from funds provided by corporate and private sponsors. Other scholarships are available. Further information may be obtained by calling the Office of Student Academic Affairs, (951) 827-ENGR (3647).

Special Facilities See Research Opportunities in the section About UC Riverside in this catalog for a detailed description of the following centers:

- Center for Bioengineering Research
- Center for Environmental Research and Technology
- Center for Nanoscale Science and Engineering
- Center for Research in Intelligent Systems (including the Visualization and Intelligent Systems Laboratory)
- Center for Ubiquitous Communication by Light
- So Cal Research Initiative for Solar Energy
- Winston Chung Global Energy Center

**Degree Requirements**

Students in the Bourns College of Engineering must meet three levels of requirements for the Bachelor of Science degree: general university requirements, college requirements, and major requirements.

### General University Requirements

General university requirements are listed at the beginning of the Undergraduate Studies section. For other UCR regulations including repetition of courses, concurrent enrollment, scholarship regulations, and incomplete (I) grades, see the Policies and Regulations section of this catalog.

In addition to the above general university requirements, the Bourns College of Engineering has the following unit requirement.

**Unit Requirement**

Most of the majors in this college require more than the nominal university requirement of 180 units for graduation. No more than 6 units of physical education activity may be counted toward this requirement. However, after having credit for 216 units or 120 percent of the units required for the major, a student is not permitted to continue except by approval of the dean when specific academic or professional reasons are involved.

**College Breadth Requirements**

All undergraduate students in the Bourns College of Engineering are required to satisfy the Campus Graduation Requirements mandated by the Academic Senate under Regulation R6. Detailed requirements are available in the Office of Student Academic Affairs. Internships and independent study courses may not be used to satisfy breadth.

#### Breadth Requirement Unit Summary

<table>
<thead>
<tr>
<th>For the B.S.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition</td>
<td>Varies</td>
</tr>
<tr>
<td>Humanities</td>
<td>12</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>12</td>
</tr>
<tr>
<td>Ethnicity (4 units)</td>
<td>-</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>44 plus English Composition</td>
</tr>
</tbody>
</table>

1 The 4-unit ethnicity requirement can be applied to the Humanities or Social Science requirement, depending on content.

For the following requirements, a course is defined as a block of instruction that carries credit of 4 or more units.

To provide depth in satisfying breadth in the humanities and social sciences, at least two of the humanities and/or social science courses must be upper division.

### English Composition

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college-level instruction in English Composition with no grade lower than “C.” UCR’s sequence is ENGL 001A, ENGL 001B, and one of ENGL 001C or ENGL 01SC, or an approved alternative under Writing Across the Curriculum. Transfer students who have credit for one semester of English Composition from another institution must take two additional quarters (i.e., ENGL 001B and either ENGL 001C or ENGL 01SC).

Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and either ENGL 001C or ENGL 01SC or an approved alternative under Writing Across the Curriculum. Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C or ENGL 01SC or an approved alternative under Writing Across the Curriculum.

Students should enroll in an English composition course each quarter.
they are registered at UCR until the sequence of preliminary Entry Level Writing courses, if needed, and ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC or an approved alternative under Writing Across the Curriculum is completed with a satisfactory GPA. A student may not receive baccalaureate credit for any work in English Composition taken prior to completing the Entry Level Writing requirement.

Humanities: 12 units
Courses used to fulfill the Humanities requirements must be selected from an approved list available in the Office of Student Academic Affairs.

1. One course in World History
2. One course in one of the areas of Fine Arts, Literature, Philosophy, or Religious Studies
3. One additional course chosen from a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above
   c) Humanities courses offered by Ethnic Studies, Creative Writing (courses in journalism), Humanities and Social Sciences, Latin American Studies, Linguistics, or Women’s Studies

No course used to satisfy the English Composition requirement can be applied toward Humanities credit. A list of approved courses is available in the Office of Student Academic Affairs.

Social Sciences: 12 units
Courses used to fulfill the Social Sciences requirements must be selected from an approved list available in the Office of Student Academic Affairs.

1. One course from Economics or Political Science
2. One course from Anthropology, Psychology, or Sociology
3. One additional social science course offered by Ethnic Studies, Geography (cultural geography courses), Human Development, or Women’s Studies, or one of the disciplines in 1. or 2. above.

At least two of the humanities and/or social science courses must be upper-division. The list of approved courses is available in the Office of Student Academic Affairs.

Ethnicity: 4 units
Courses used to fulfill the Ethnic Studies requirement must be selected from an approved list available in the Office of Student Academic Affairs.

One course dealing with general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies. The list of approved courses is available in the Office of Student Academic Affairs.

Major Requirements
Detailed requirements for each major are found under the department listings in the Programs and Courses section of this catalog, and are available from the Office of Student Academic Affairs, (951) 827-ENGR (3647). A GPA of at least 2.00 (“C”) in upper-division courses taken in the major field is required for graduation. Not more than 9 units of courses in the 190-199 series may be counted in fulfilling the upper-division units needed for the major.

College Policies and Procedures
For detailed information on UCR policies and regulations see the Policies and Regulations section of this catalog.

College Regulations
Detailed information and specifics with regard to the college regulations governing undergraduate student status as approved by the faculty and contained in the Manual of the Riverside Division of the Academic Senate can be obtained from the Dean’s Office.

Student Responsibility
Students are responsible for meeting deadline dates regarding enrollment, add/drop, change of grading basis, credit by examination, withdrawal, declaration of candidacy, and other procedures. The dates are at registrar.ucr.edu and must be observed. Students are responsible for ensuring that they meet all requirements for graduation and that they attend the undergraduate faculty advisor’s annual forum. Students are also responsible for obtaining their grades, selecting an appropriate collection of courses, and confirming their enrollment by relevant deadlines. Academic advising can be obtained in the Office of Student Academic Affairs.

Faculty Advisors
All Bourns College of Engineering students are advised on a regular basis. In addition, each department designates a faculty undergraduate advisor who is the primary contact in the student’s areas of academic interest. Faculty advisors assist students in their undergraduate careers, as appropriate, and are also mentors in the student’s areas of interest.

Course Enrollment
Students should plan their program of study carefully, in consultation with an academic advisor. Class schedules of fewer than 12 units must have the approval of the Divisional dean of the college.

Students who have not met the Entry Level Writing Requirement must enroll in an Entry Level Writing or qualifier course, as determined by their placement, during their first quarter of residency.

Students must attend class meetings. Students who do not attend in accordance with any published requirement listed at registrar.ucr.edu or on a course syllabus may be dropped from the course.

Students may add or drop a course via R’Web through the second week of instruction. Beginning the third week of instruction, students must file an Enrollment Adjustment Form to make changes and obtain required approvals. During the third week of classes, students may, with the consent of the instructor and the approval of their academic advisor, add a course. Students may drop a course until the end of the sixth week of instruction, but courses dropped after the second week of instruction require an academic advisor’s signature and result in a “W” (for withdrawal) noted on the transcript. Changes in enrollment after deadlines published at registrar.ucr.edu require the approval of the associate dean of the college.

A student on probation may enroll for more than 13 quarter units only with the consent of the associate dean of the college.

With the approval of the associate dean, students may withdraw from the university at any time prior to the end of instruction.

Any changes in a student’s class schedule not covered by the above regulations must have the approval of the associate dean.
Enrollment on a Satisfactory/No Credit Basis

A student in good standing may enroll and receive credit for courses graded “S.” However, the “S/NC” grading system cannot be used for any course that is used to fulfill major or breadth requirements, except for any required course which is restricted to “S/NC” grading and up to 8 units of courses in the humanities and social sciences. Exceptions to this policy may be granted, upon petition, by the student’s advisor and the Executive Committee.

Students may change their grading basis in a course from letter grading to “S/NC” (or vice versa) up to the end of the eighth week of instruction. Regulations governing the “S/NC” option are described under Credit and Grades in the Policies and Regulations section of this catalog.

Credit by Examination

A student may petition for the privilege of examination for degree credit without formal enrollment in a particular course, but must be in residence and not on academic probation. Arrangements for examination for degree credit must be made with the student’s advisor. Approvals of the advisor, the dean of the college, and the instructor who is agreeing to give the examination are necessary before the examination may be given. The results of all examinations for degree credit are entered on the student’s record as if the student had actually taken the courses of instruction.

Expected Progress for Undergraduate Students

At the close of each quarter, the courses, units, grades, and grade points earned are added to the student’s cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration. Students can access their advisory degree check through rweb.ucr.edu.

Declaration of Candidacy

Applications for graduation are available in the Office of Student Academic Affairs and must be filed by the deadline established for the quarter in which graduation is intended. The deadline for filing applications for graduation is listed at registrar.ucr.edu each quarter. Applications are not accepted after the deadline established for the quarter. If for any reason a student does not meet the requirements for graduation after announcing candidacy, or if a student fails to meet the deadline for filing, an application must be filed for a subsequent quarter.

California Teach Science/Mathematics Initiative (CaTEACH-SMI)

California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities, such as the SMI & Alpha Center Apprentice Programs, to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources which includes the NSF Noyce Scholarship Program, to promote planning and professional development towards a science/mathematics education career.

For more information about the CaTEACH-SMI program, please visit smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at facebook.com/ScienceMathInitiativeAtUcr.
The School of Business Administration

Student Affairs:
Graduate Programs:
The A. Gary Anderson Graduate School of Management:
102 Anderson Hall, South
(951) 827-6200; fax: (951) 827-2055
Undergraduate Programs:
Undergraduate Business Programs Office:
2340 Olmsted Hall
(951) 827-4551; fax: (951) 827-5061
SoB.ucr.edu

Mission Statement
The school is dedicated to the pursuit of excellence in substantive scholarly research enhancing the world’s base of knowledge about organizations, their environments, and their management, and to the transmission of this knowledge through quality educational programs to students, alumni, business managers, and the public.

The School
The School of Business (SoB) emphasizes growing strengths in the areas of marketing, supply chain management, accounting, and finance. The school resides in a 30,000-square-foot home featuring state-of-the-art research and teaching facilities.

The SoB Microcomputer Facility offers software packages in statistics, databases, spreadsheets, financial planning, management science, econometrics, graphics, word processing, and Internet connections. The facility is used for teaching, class demonstrations, theses, and research projects. Students learn computing skills in SoB courses with special computing requirements, and in optional seminars.

The UCR Library, with more than 2 million bound volumes, 13,000 serials, and 1.6 million microforms, including extensive literature in the management field, provides substantial support for student and faculty research.

Student evaluations of courses are an important part of the evaluation of curriculum and faculty performance.

Undergraduate Program in Business Administration
The School of Business offers an upper-division major in Business Administration intended for students who seek a professional education in the functional fields of private sector management. Students who are admitted into the Pre-Business program during their freshman and sophomore years receive advising through the College of Humanities, Arts, and Social Sciences (CHASS). After admission to the major, students are advised by the SoB Undergraduate Business Programs Office. In addition to administering the program, SoB also teaches courses in the functional areas of management such as finance, accounting, human resources management, marketing, operations and supply chain management, and management information systems. The B.S. degree in Business Administration is awarded by The School of Business. SoB policies, as detailed below, align with those of the College of Humanities, Arts, and Social Sciences.

Majors
A major is a coordinated group of upper-division courses (courses numbered 100-199) in a field of specialization. The major may be a program of upper-division courses within a single department (departmental major), a group of related courses involving a number of departments (interdisciplinary major), or a group of courses chosen to meet a special interest.

Before enrolling in certain upper-division courses, students may be required to gain appropriate knowledge by completing specific prerequisite courses. With the assistance of a departmental advisor, students are expected to select lower-division courses that prepare them for the advanced studies they propose to follow.

Choosing a Major, Undeclared Majors
While freshmen may choose an academic major on entering UCR, those who are unsure about specific academic goals may request to be admitted to CHASS as undeclared. These students often take introductory courses in the natural sciences, social sciences, humanities, and fine arts while searching for an area that most excites their interest. Undeclared majors are encouraged to meet with an advisor in the Student Academic Affairs Office in CHASS about their selection of courses.

Students with 90 or more units toward a degree must declare a major. To declare a major, students must obtain approval from the Student Academic Affairs Office by filing a Petition for Declaration of Major. Students who do not declare a major by 90 or more units may have a hold placed on their registration.

Double Majors
Students can declare a second major in a department or program of another college. Changes are not permitted while on academic probation or during the final senior year (135 units or more). Both majors must be completed within the maximum limit of 216 units, and approval must be obtained from advisors in both departments or programs. In such cases, all course requirements must be completed for each of the two majors chosen. One of the two majors must be designated as the primary major for the purpose of satisfying breadth or general education requirements. No more than 8 upper-division units may count for both majors simultaneously.

A declaration of two majors in different colleges must be signed by the deans of the colleges concerned and filed by the student with the college of the principal major. If the two majors lead to different degrees (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements for both majors must be met.

Students wishing to declare a second major must present an outline to the SoB Undergraduate Business Programs Office, indicating which major will be used to satisfy breadth requirements and any overlap courses between the two majors.

Internships, Independent Projects and Student Research
The School of Business student can often practice the subject, as well as read about it. Many undergraduates have the opportunity to work with a faculty member on a research project, and many departments offer field work and internship courses. In these courses, students combine several hours per week of experience in an agency or firm with study of related academic materials and participation in a seminar, where formal knowledge and practical experience are related to one another.

Normally, each local internship does not count for more than 4 or 5 units in a single term, larger numbers of units being reserved for quarter-away internships. Petitions for credit beyond 5 units in a single quarter for a local internship must have the sponsoring agency’s approval and a written justification by the student’s faculty sponsor. All such requests require the associate dean’s approval.

A maximum of 16 units of credit toward the bachelor’s degree may be obtained through internship courses, with a maximum of 12 units of internship scheduled in a single quarter for quarter-away situations. Students who are on academic probation may not enroll in internship courses.

Transfer of Majors, Changing Majors
Students in good academic standing can petition to transfer from another college to The School of Business. The petition must be approved by the Undergraduate Business Programs Office before the change can be processed by the Office of the Registrar. Changes are not permitted while on probation or during the final senior year (135 units or more).

Students who fail to attain a GPA of 2.00 (“C”) in preparation for the major or courses required for the major may be denied the privilege of entering...
or continuing in that major.

**Minor in Business Administration**

The School of Business offers a minor; however, no student is required to take a minor. Minors are not degree-granting majors; they are sequences of supplemental courses designed to enhance work in certain areas. Any minor may be taken jointly with any departmental or interdepartmental major. Minors in the college shall consist of not fewer than 16 nor more than 28 units of organized upper-division course work. No overlap may occur among courses used to satisfy upper-division course requirements for a major and a minor. A GPA of at least 2.00 is required in upper-division courses in the field of the minor.

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation by completing a petition with the Student Affairs Office in the College of Humanities, Arts, and Social Sciences, the College of Natural and Agricultural Sciences, the Bourns College of Engineering, or the School of Business, depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

**University Honors Program**

For a description of the University Honors Program, see Educational Opportunities in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section.

**Undergraduate Pre-Business Program**

Pre-Business is a two-year program that prepares students to apply to the Business Administration major. Students who elect Pre-Business are advised in the College of Humanities, Arts, and Social Sciences during their freshman and sophomore years. Students who elect Pre-Business must gain admission to Business Administration by the time they have earned 90 units.

**Degree Requirements**

Students in The School of Business must meet three levels of requirements for the Bachelor of Science degree: general university requirements, college requirements, and major requirements.

**General University Requirements**

General university requirements are listed at the beginning of the Undergraduate Studies section. In addition, The School of Business has the following requirements and limitations.

**Unit Requirements**

Students must satisfactorily complete for credit a minimum of 180 units for the bachelor's degree. A maximum of 216 units is allowed. After having credit for 216 units, students are not permitted to continue except in cases approved by the associate dean in which specific academic or professional reasons are involved.

**Credit Limitations**

Transfer students with credit from other institutions (advanced standing credit), receive a transfer profile from the Office of Undergraduate Admissions. The Undergraduate Business Programs Office evaluates the course work, indicating how the transferable credits are applied toward the degree. However, the following credit limitations may reduce the total number of units which apply toward the degree in The School of Business. Students should meet with an academic advisor in their major for questions regarding transfer credits.

The following credit limitations apply for all students enrolled in the college:

1. After completing 105 quarter units at a community college, students are not allowed further units for courses completed at a community college.
2. No more than 6 units in physical education activity courses may be applied toward the 180-unit requirement for the bachelor's degree.
3. No 400 series courses and not more than three courses in the 300 series of courses may be counted toward the 180 unit requirement for the bachelor's degree.
4. No more than 5 units of credit may be taken per quarter in special studies courses. See specific restrictions under each departmental listing regarding credit toward the major in special studies courses.

**College Breadth Requirements**

The Undergraduate Business Programs Office, in consultation with the Executive Committee of the School of Business, determines which courses apply to the following requirements. It is the student’s responsibility to verify those courses that fulfill these subject requirements. To search for courses that meet specific breadth requirements, visit registrar.ucr.edu.

Courses taken in the department or program of a student’s major (including courses cross-listed with the major) may not be applied toward the breadth requirements. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements. Students who elect a double major may apply courses in one of the majors toward satisfaction of the breadth requirements.

For the following requirements, a course is defined as a block of instruction which carries credit of 4 or more units.

No course may be applied to more than one breadth requirement, with the exception of the course taken to meet the Ethnicity requirement. Internship and independent studies courses may not be used to satisfy breadth requirements.

**The School of Business Administration**

**Breadth Requirement Unit Summary**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition</td>
<td>Varies</td>
</tr>
<tr>
<td>Humanities</td>
<td>20</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>16</td>
</tr>
<tr>
<td>Ethnicity (4 units)</td>
<td>—</td>
</tr>
<tr>
<td>Foreign Language (level 3)</td>
<td>12</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
<td>20</td>
</tr>
<tr>
<td>Total Units</td>
<td>68 plus English Composition</td>
</tr>
</tbody>
</table>

**English Composition**

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college level instruction in English Composition with no grade lower than “C.” Students should enroll in an English composition course each quarter they are registered at the University of California, Riverside (UCR) until the sequence of Preliminary Entry Level Writing courses, if needed, and ENGL 001A, ENGL 001B, ENGL 001C is completed with satisfactory GPA.

Transfer students who have credit for one semester of English Composition from another institution are required to take two additional quarters, i.e., ENGL 001B and ENGL 001C.

Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and ENGL 001C.

Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C.

In lieu of ENGL 001C, students can complete their last quarter of the English Composition requirement by earning a “C” or better in BUS 100W.
(As a prerequisite to either course, students must earn a "C" or better in ENGL 001B.)

**Humanities: 20 units**

For the B.S. degree

1. One course in World History (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)

2. One course from the following:
   a. Fine arts (Art, Art History, Dance, Media and Cultural Studies, Music, Theatre, Creative Writing courses in poetry, fiction, or playwriting)
   b. Literature (taken in the departments of English, Comparative Literature and Foreign Languages, or Hispanic Studies)
   c. Philosophy
   d. Religious Studies

3. Three additional courses from the following:
   a. History, the Fine Arts, Literature, Philosophy, Religious Studies
   b. A foreign language at level 3 or above (Courses used in fulfillment of the foreign language requirement may not be used to meet this requirement.)
   c. Humanities courses offered by Ethnic Studies; Creative Writing (courses in journalism); Humanities, Arts, and Social Sciences Interdisciplinary; Latin American Studies; Linguistics; or Women's Studies

**Social Sciences: 16 units**

1. One course in Economics or Political Science

2. One course in Anthropology, Psychology, or Sociology

3. Two additional social science-related courses from Comparative Ancient Civilizations, Ethnic Studies; Environmental Sciences; Geography (cultural geography courses); Human Development; Humanities, Arts, and Social Sciences Interdisciplinary; Women's Studies; or one of the disciplines in 1. or 2. above.

**Ethnicity: 4 units**

One course focusing on the general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies.

Refer to the Programs and Courses section for the courses that fulfill the Ethnicity requirement.

**Foreign Language**

Courses in American Sign Language may be used to meet this requirement.

For the B.S. degree: course level 3 or equivalent

This requirement may be satisfied by students (except for foreign language majors who satisfy the spirit of the language requirement by majoring in one or more languages) by completing the third-quarter level or its equivalent in one language at UCR (or at another college or university) with a minimum grade of "C" or by demonstrating proficiency at the third-quarter level on a foreign language placement exam offered by one of the foreign language departments at UCR. This test does not yield unit credit; it only determines whether the Foreign Language requirement has been met, or in which course of the language sequence a student should enroll. The placement exam may be taken only once in each subject during a student's UCR career. Students continuing with the same foreign language they completed in high school must take a placement exam (visit placementtest.ucr.edu for dates and locations). Credit will be allowed only at the course level for which they qualify according to the placement exam.

**Natural Sciences and Mathematics: 20 units**

1. One course in Mathematics, Statistics, or Computer Science

2. One course in Biological Sciences (Biochemistry, Biology, Botany and Plant Sciences, Entomology, Nematology, or Plant Pathology)

3. One course in Physical Sciences (Chemistry, Physics, Earth Sciences, excluding cultural Geography courses)

4. Two additional courses from the areas listed above or in physical and/or biological science courses offered in the Department of Environmental Sciences

**Major Requirements**

Detailed requirements for the Business Administration major can be found under the department or program listing in the Programs and Courses section of this catalog.

A major in The School of Business shall consist of not fewer than 36 upper-division units. All courses applied toward the major and preparation for the major must be taken for a letter grade unless otherwise approved by the department chair. A 2.00 GPA in upper-division courses in the major is required for graduation. Once enrolled on this campus, students must complete all courses designated for a major in regular or summer sessions at UCR; exceptions to this policy must be approved by the department chair and by the associate dean.

Candidates for the B.S. degree may not receive more than 108 units of credit toward the degree for work taken in the major discipline (i.e., students must take at least 72 units outside the major discipline).

To receive the bachelor’s degree, transfer students must complete a minimum of 16 upper-division units in the major on the Riverside campus.

Students who have been away from the university for several terms should consult with their major departmental advisor about the requirements under which they may graduate. See the Catalog Rights Policy for Undergraduate Degrees in the Policies and Regulations section of this catalog.

**College Policies and Procedures**

For more information on UCR policies and regulations see the Policies and Regulations section of this catalog.

**College Regulations**

Refer to The School of Business Web site at SoB.ucr.edu for more information on college policies and procedures.

**Student Responsibility**

Students are responsible for meeting deadline dates regarding enrollment, add/drop/withdrawal, change of grading basis, credit by examination, declaration of candidacy, and other actions. The dates are online at registrar.ucr.edu and must be observed. Advising can be obtained in the Undergraduate Business Programs Office, 2340 Olmsted Hall.

**Academic Advising**

It is the student’s responsibility to meet all graduation requirements: general university, college, and major. Pre-Business students are advised in CHASS Student Affairs (see a list of departmental staff for academic affairs at chassstudentaffairs.ucr.edu). As Pre-Business students are accepted into the Business Administration program, they are advised by academic advisors in the Office of Undergraduate Business Programs (see a list of departmental staff for academic affairs at SoB.ucr.edu).

Undeclared students are also advised through the Student Academic Affairs Office in CHASS. A staff of academic advisors is readily available to assist with questions pertaining to academic regulations and procedures, selection of courses which satisfy breadth requirements, major options, and alternatives. Students who need to confer with an advisor about overall degree requirements, academic difficulty, program planning, or assistance in selecting a major need to schedule an appointment with their advisor.
Course Enrollment
Students are required to register and enroll by the date set by the campus (visit registrar.ucr.edu for details).

The recommended study load for undergraduate students is 15 to 16 units per quarter. This is the average quarterly load to ensure steady progress for graduation in four years. The minimal program for an undergraduate student to be considered full time is three courses (12 units) per quarter. The normal progress for an undergraduate student is four courses (16 units) per quarter.

A class schedule of fewer than 12 units must be approved by the associate dean (visit registrar.ucr.edu for details). The college has established enrollment limits beyond which students require academic advisor approval. The limits are as follows: students in good academic standing, 20 units; students on academic probation, 17 units; students on subject-to-dismissal status, 15 units. Students on probation may not take courses on an “S/NC” basis.

After the second week of instruction, students may request changes by petition during a specified period. Petitions must usually be approved by the advisor and also, in the case of adds, by the instructor concerned. Changes to grading basis need advisor approval after the second week of classes. The associate dean must approve any changes in the class schedule requested after the regular petition period.

Courses (including Special Studies courses) can be added through the third week of instruction. Courses dropped after the second week of instruction will appear on the record with a “W” notation, signifying withdrawal. Students can withdraw from courses through the sixth week of instruction. The grading basis for a course can be changed through the eighth week of instruction. After the third week of instruction, a fee is required to file the petition to change the class schedule.

Enrollment on Satisfactory/No Credit Basis
Undergraduate students in good academic standing may receive credit for courses undertaken and graded “S” up to a limit of one-third of the total units undertaken and passed on the Riverside campus at the time the degree is awarded. Normally, this means no more than 4 units of “S/NC” per quarter. The total also includes courses graded only “S/NC.” Courses that are required in, or prerequisite to, a major may not be taken on a “S/NC” basis unless approved by the chair of the major department. Students on special status or limited status may take courses on a “S/NC” basis only with the approval of the associate dean.

A student may elect “S/NC” or delete “S/NC” from a course by filing a petition (enrollment adjustment form) with the Registrar. The deadline is the end of the eighth week of instruction and is listed each quarter at registrar.ucr.edu. This deadline is strictly enforced.

Regulations governing the “S/NC” option are described under Credit and Grades in the Policies and Regulations section of this catalog.

Repetition of Courses
See Repetition of Courses in the Policies and Regulations section.

Part-time Study
For details, see Part-Time Study under the Finances and Registration.

Petitions
A petition is a form representing a student’s need or desire to be excepted from any standard rule or regulation in the university. It is the only way to obtain formal approval from the department, the college or school, the Registrar, or whomever has authority over a particular request. Some petitions carry a small fee; others are free.

An approved petition for a waiver or substitution in degree requirements represents an agreement between the student, the college or school, and in some cases, the department chair, granting the student an exception from the existing regulations.

Petitions are also used at UCR to change college or major, enroll in fewer units than regulations permit, make late changes to a class schedule, obtain credit by examination, concurrent enrollment, or withdraw from the university. Petitions for most of these exceptions are available in the Office of Undergraduate Business Programs in Olmsted 2340, and Pre-Business and undeclared students can obtain these petitions in the Student Academic Affairs Office in CHASS. Please note that petitions for retroactive actions more than one year old will not be approved.

Credit by Examination
To earn credit for a course by examination without formal enrollment in that course, students must be in residence and in good academic standing.

Before the examination may be given, arrangements and approval for examination for degree credit must be made with the instructor appointed to give the examination, a faculty advisor (if the major department requires it), and the associate dean. Petitions must be filed with the Office of the Registrar no later than the third week of instruction. Credit by examination is not allowed for English Composition courses.

The results of all examinations for degree credit are entered on students’ records as though they had actually taken the courses of instruction. There is a $5 service charge for each petition. The credit by examination procedure may not be used as a means of improving a previous grade.

Undergraduate Credit for Graduate Courses
Students who have a GPA of at least 3.00 in all courses taken in the university or have shown exceptional ability in a special field may take a graduate course for undergraduate credit with the permission of the instructor concerned. Students must have completed at least 18 upper-division quarter units basic to the subject matter of the course.

Expected Progress for Undergraduate Students
At the close of each quarter, the courses, units, grades, and grade points earned are added to the student’s cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration. Students can access their advisory degree check through rweb.ucr.edu.

Applying for Graduation
To graduate from UCR, undergraduate students must file an application for graduation. The application must be submitted by 4 p.m. of the deadline date listed at registrar.ucr.edu. Applications are not accepted after the deadline established for the quarter.

Students should review their remaining requirements through rweb.ucr.edu each quarter. They should also contact their academic advisor two quarters before expected graduation to confirm remaining requirements. Completion of the degree depends upon completion of any work in progress. During the graduation quarter, any changes made to a student’s schedule after the third week of instruction should be immediately reported to the academic advisor.

If for any reason a student does not meet the requirements for graduation after filing the application, another application must be filed for the appropriate quarter. Students graduating in absentia after an absence of one or more quarters must apply for readmission to the university and file an application for graduation.

All course work, whether taken at UCR or elsewhere, must be completed by the last day of UCR’s finals week during the quarter of graduation (no GDs or Incomplete grades). Incomplete, IE, IP or GD grades on the transcript will stop the processing of the degree.

Once the application for graduation is filed, the student’s name will be entered on the appropriate degree list. Students who need to amend the prospective quarter of graduation and who have submitted an application for graduation petition must notify the Undergraduate Business Programs Office, in writing, as soon as possible.

Withdrawals
Students may withdraw from the university prior to the end of instruction, for serious personal reasons, with the approval of the associate dean. Forms are available in the Undergraduate Business Programs Office.
The A. Gary Anderson Graduate School of Management

Master of Business Administration Program | Through The A. Gary Anderson Graduate School of Management, the SoB offers a professional graduate program leading to the Master of Business Administration (M.B.A.) degree. The M.B.A. curriculum prepares students to excel in a competitive environment marked by unprecedented challenges and technological advances. Communication and computer skills are incorporated into a global approach to both the art and science of management. Most elective courses are seminar size and encourage participative learning. Computers and software are used extensively for teaching and effective management decision making. An internship program assists students in obtaining experience in their professional fields. The mixture of career professionals and recent baccalaureate graduates provides a stimulating and well-rounded classroom environment.

The M.B.A. curriculum balances the art and science of management, with a particular emphasis on managing through information, and recognizes the global context of management. The curriculum also emphasizes growing strengths in marketing, accounting, and finance. The first-year core courses of the two-year M.B.A. program provide a strong integrated foundation in the common body of knowledge for management. Thereafter, students take 28 to 36 units of electives offered in various fields, and complete a required internship, capstone course, and a thesis or case analysis.

The FLEX M.B.A. program provides an M.B.A. experience tailored according to one’s schedule. It allows flexibility and convenience in attaining one of the most sought-after degrees. The FLEX M.B.A. is the program of choice for a broad swath of students. Among them might be full-time students who want to earn an M.B.A. on a fast track or who seek to take longer with their studies, international students looking for an M.B.A. at a top university, working professionals seeking a graduate degree without interrupting their careers, or individuals who need to accommodate responsibilities at home and with family as they pursue their academic goals.

The M.Fin. program addresses the substantial unmet demand for trained finance professionals. The program is best suited for students with a sufficient quantitative background to enable successful completion of the program. The program provides a comprehensive overview of the entire field of finance, with an emphasis on empirical methods and applications. The full-time, one-year program will enable graduates to gain the specialized expertise required for professional advancement, and prepare students who seek to pursue professional certifications in finance.

The M.P.Ac. program provides emerging professional accountants and auditors with advanced education in audit and assurance, taxation, accounting information systems and ethics. Accountants and auditors help to ensure that public, private and not for profit entities are run efficiently. Accountants and auditors analyze, verify and communicate financial information for various entities. They may also be involved with budget analysis, tax analysis, management consulting, financial and investment planning, information technology consulting as well as a broad array of assurance services. The M.P.Ac. degree is offered as a one year program (48 units) for graduates with a baccalaureate degree with a concentration in accounting. Other students without the equivalent of a baccalaureate degree with a concentration or major in accounting may be admitted to the program with the understanding that additional coursework may be required to earn the M.P.Ac. degree. Candidates will be admitted for the fall quarter only.

The Ph.D. Program in Management offers the Doctor of Philosophy Degree (Ph.D.). Concentrations are offered in five major field areas: Accounting; Finance; Marketing; Operations; and Strategic Management and Organizations. The Ph.D. Program in Management trains doctoral students in the design and execution of original research in Management. Admissions

Admission requirements for the programs are similar to requirements for the Graduate Division. In addition to transcripts, applicants should submit test scores from the Graduate Management Admissions Test (GMAT) or General Record Examination (GRE), and three letters of recommendation from persons knowledgeable about the applicant’s academic ability and potential for success in the program.

The Graduate School of Education

Student Affairs

Graduate Programs
1207 Sproul Hall
(951) 827-4633; fax (951) 827-3942
education.ucr.edu

Teacher Education Programs
1124 Sproul Hall
(951) 827-5225; fax (951) 827-3942
education.ucr.edu

Undergraduate Programs
1207 Sproul Hall
(951) 827-8580; fax (951) 827-3942
education.ucr.edu

The School

Since its founding in 1969, the Graduate School of Education (GSOE) at UCR, has consistently delivered cutting edge master’s, doctoral and teacher credentialing programs that prepare students to become outstanding classroom educators, researchers, and educational leaders. Our inland Southern California communities, with their growing population, diversity, and economic disparity, provide excellent opportunities to research important educational problems and develop effective solutions. Our faculty includes scholars in a wide range of areas including autism, learning disability research, education policy, reading development and disabilities, diversity and equity, and assessment and evaluation, and access to higher education.

The Graduate School of Education integrates the themes of Learning and Cognition, Social and Cognitive Development within the educational context, Language and Literacy, and Educational Policy. We use these themes to enrich students within a variety of degree programs including the B.A. in Education, Society, and Human Development, the minor in Education, the Teaching Credential, the Master of Arts, the Master of Education, and the Ph.D. in Education environments, both in and out of the classroom, enhance the well-being of those who participate in them. The Graduate School of Education focuses on the goal of enhancing the learning environment for all within all contexts.

Undergraduate Programs

The Graduate School of Education (GSOE) offer a B.A. in Education, Society, and Human Development. The major builds a theoretical foundation, presents applied understandings in the study of education, and explores the varied contexts of learning over the life course. Program faculty bring multiple disciplinary perspectives to their research and courses, including cognitive sciences, developmental psychology, understanding of the exceptional child, applied behavior analysis, the relationship between education, society and culture, educational policy and leadership, measurement and assessment, and issues in higher education.

The B.A. in Education, Society, and Human Development does not teach a student how to be a teacher. (See Graduate School of Education section on Teaching Credentials and Masters programs.) Students interested in teaching at the elementary or secondary level will benefit from completing the major because they will be exposed to critical theories that investigate how education has been used to create, maintain, and reinforce social stratification. Students will develop a historical and contemporary awareness of different learning settings, and gain a strong foundation in human development, assessment and interventions in the education context. Students who are interested in teaching elementary, middle, or high schools should consult an Education Student Affairs Counselor about combining an appropriate major and minor or completing a double major in order to develop appropriate expertise in the subject they plan to teach.
Major
A major is a coordinated group of upper-division courses (courses numbered 100-199) in a field of specialization. The major may be a program of upper-division courses within a single department (departmental major), a group of related courses involving a number of departments (interdisciplinary major), or a group of courses chosen to meet a special interest.

Before enrolling in certain upper-division courses, students may be required to gain appropriate knowledge by completing specific prerequisite courses. With the assistance of a departmental advisor, students are expected to select lower-division courses that prepare them for the advanced studies they propose to follow.

Minor in Education
The Graduate School of Education (GSOE) offers a minor in Education; however no student is required to take a minor. Minors are not degree-granting majors; they are sequences of supplemental courses designed to enhance work in certain areas. Any minor may be taken jointly with any departmental or interdepartmental major. The minor in the School shall consist of not fewer than 16 nor more than 24 units of organized upper-division course work. No overlap may occur among courses used to satisfy upper-division course requirements for a major and a minor. A GPA of at least 2.00 is required in upper-division courses in the field of the minor.

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation by completing a petition with the Student Affairs Office in the College of Humanities, Arts, and Social Sciences, the College of Natural and Agricultural Sciences, the Bourns College of Engineering, the Graduate School of Education, or the School of Business Administration, depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

Choosing a Major, Undeclared Majors
While freshmen may choose an academic major on entering UCR, those who are unsure about specific academic goals may request to be admitted to CHASS as undeclared. These students often take introductory courses in the natural sciences, social sciences, humanities, and fine arts while searching for an area that most excites their interest. Undeclared majors are encouraged to meet with an advisor in the Student Academic Affairs Office in CHASS or CNAS about their selection of courses. Students are encouraged to attend a major change workshop hosted by their college. Students with 90 or more units toward a degree must declare a major.

To declare a major, students must obtain approval from the Student Academic Affairs Office by filing a Petition for Declaration of Major. Students who do not declare a major by 90 or more units may have a hold placed on their registration.

Double Majors
Students can declare a second major in a department or program of another college or school. Changes are not permitted while on academic probation or during the final senior year (135 units or more). Both majors must be completed within the maximum limit of 216 units, and approval must be obtained from advisors in both departments or programs. In such cases, all course requirements must be completed for each of the two majors chosen. One of the two majors must be designated as the primary major for the purpose of satisfying breadth or general education requirements. No more than 8 units of organized upper-division courses may count for both majors simultaneously.

A declaration of two majors in different colleges must be signed by the deans of the colleges concerned and filed by the student with the college of the principal major. If the two majors lead to different degrees (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements for both majors must be met.

Students wishing to declare a second major must present an outline to the GSOE Undergraduate Programs Office, indicating which major will be used to satisfy breadth requirements and any overlap courses between the two majors.

Overlap Restrictions
Double Majors: In fulfilling degree requirements for multiple majors, a maximum of 8 units may overlap between two majors.

Major and Minor Requirements: Students may not receive both the major in Education, Society, and Human Development and a minor in Education. In fulfilling requirements for a minor, a maximum of 8 units may overlap between a major in Education, Society, and Human Development and a minor from another department.

Transfer of Majors, Changing Majors
Students in good academic standing can petition to transfer from another college to The Graduate School of Education. The petition must be approved by the GSOE Undergraduate Programs Office before the change can be processed by the Office of the Registrar. Changes are not permitted while on probation or during the final senior year (135 units or more).

University Honors Program
For a description of the University Honors Program, see Educational Opportunities in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Programs and Courses section.

Degree Requirements
Students in the Graduate School of Education must meet three levels of requirements for the Bachelor of Arts degree: general university requirements, college requirements, and major requirements.

If you have questions contact your major department and academic advisor. It is your responsibility to be aware of all University, College, and major graduation requirements and to satisfactorily complete those requirements.

Obtaining a Bachelor’s Degree
To complete the Bachelor of Arts (B.A.):

• Fulfill General University requirements in Entry Level Writing Requirement and American History and Institutions.

• Complete 180 units (but not exceed 216 units), which 35 of the last 45 must be in residence in the student’s college with at least a “C” average (2.0) in overall coursework.

• Fulfill campus-wide English Composition requirement and College of Humanities, Arts, and Social Sciences (CHASS) “breadth requirements” for the B.A. degree.

• Complete the specified requirements in the major, with at least a “C” average (2.00) for upper-division courses in the major discipline.

General University Requirements
General university requirements are listed at the beginning of the Undergraduate Studies section.

Unit Requirements
Students must satisfactorily complete for credit a minimum of 180 units for the bachelor’s degree. A maximum of 216 units is allowed. After having credit for 216 units, students are not permitted to continue except in cases approved by the associate dean in which specific academic or professional reasons are involved.

Major Requirements
Detailed requirements for the Education, Society, and Human Development major can be found under the department or program listing in the Programs and Courses section of this catalog.

College Policies and Procedures
For more information on UCR policies and regulations see the Policies and Regulations section of this catalog.
Student Responsibility
Students are responsible for meeting deadline dates regarding enrollment, add/drop/withdrawal, change of grading basis, credit by examination, declaration of candidacy, and other actions. The dates are online at registrar.ucr.edu and must be observed. Advising can be obtained in the GSOE Undergraduate Programs Office.

Academic Advising
It is the student’s responsibility to meet all graduation requirements: general university, college, and major. A staff of academic advisors is readily available to assist with questions pertaining to academic regulations and procedures, selection of courses which satisfy breadth requirements, major options, and alternatives. Students who need to confer with an advisor about overall degree requirements, academic difficulty, program planning, or assistance in selecting a major need to schedule an appointment with their advisor.

Course Enrollment
Students are required to register and enroll by the date set by the campus visit registrar.ucr.edu for details. The recommended study load for undergraduate students is 15 to 16 units per quarter. This is the average quarterly load to ensure steady progress for graduation in four years. The minimal program for an undergraduate student to be considered full time is three courses (12 units) per quarter. The normal progress for an undergraduate student is four courses (16 units) per quarter.

A class schedule of fewer than 12 units must be approved by the associate dean (visit registrar.ucr.edu for details). The university has established enrollment limits beyond which students require academic advisor approval. The limits are as follows: students in good academic standing, 20 units; students on academic probation, 17 units; students on subject-to-dismissal status, 15 units. Students on probation may not take courses on an “S/NC” basis.

After the second week of instruction, students may request changes by petition during a specified period. Petitions must usually be approved by the advisor and also, in the case of adds, by the instructor concerned. Changes to grading basis need advisor approval after the second week of classes. The associate dean must approve any changes in the class schedule requested after the regular petition period.

Courses (including Special Studies courses) can be added through the third week of instruction. Courses dropped after the second week of instruction will appear on the record with a “W” notation, signifying withdrawal. Students can withdraw from courses through the sixth week of instruction. The grading basis for a course can be changed through the eighth week of instruction. After the third week of instruction, a fee is required to file the petition to change the class schedule.

Repetition of Courses
See Repetition of Courses in the Policies and Regulations section.

Part-time Study
For details, see Part-Time Study under the Finances and Registration.

Petitions
A petition is a form representing a student’s need or desire to be accepted from any standard rule or regulation in the university. It is the only way to obtain formal approval from the department, the college or school, the Registrar, or whomever has authority over a particular request. Some petitions carry a small fee; others are free.

An approved petition for a waiver or substitution in degree requirements represents an agreement between the student, the college or school, and in some cases, the department chair, granting the student an exception from the existing regulations.

Petitions are also used at UCR to change college or major, enroll in fewer units than regulations permit, make late changes to a class schedule, obtain credit by examination, concurrent enrollment, or withdraw from the university. Petitions for most of these exceptions are available in the GSOE Undergraduate Programs Office. Please note that petitions for retroactive actions more than one year old will not be approved.

Credit by Examination
To earn credit for a course by examination without formal enrollment in that course, students must be in residence and in good academic standing.

Before the examination may be given, arrangements and approval for examination for degree credit must be made with the instructor appointed to give the examination, a faculty advisor (if the major department requires it), and the associate dean. Petitions must be filed with the Office of the Registrar no later than the third week of instruction. Credit by examination is not allowed for English Composition courses.

The results of all examinations for degree credit are entered on students’ records as though they had actually taken the courses of instruction. There is a $5 service charge for each petition. The credit by examination procedure may not be used as a means of improving a previous grade.

Enrollment on Satisfactory/No Credit Basis
Undergraduate students in good academic standing may receive credit for courses undertaken and graded “S” up to a limit of one-third of the total units undertaken and passed on the Riverside campus at the time the degree is awarded. Normally, this means no more than 4 units of “S/NC” per quarter. The total also includes courses graded only “S/NC.” Courses that are required in, or prerequisite to, a major may not be taken on a “S/NC” basis unless approved by the chair of the major department. Students on special status or limited status may take courses on a “S/NC” basis only with the approval of the associate dean.

A student may elect “S/NC” or delete “S/NC” from a course by filing a petition (enrollment adjustment form) with the Registrar. The deadline is the end of the eighth week of instruction and is listed each quarter at registrar.ucr.edu. This deadline is strictly enforced.

Regulations governing the “S/NC” option are described under Credit and Grades in the Policies and Regulations section of this catalog.

Undergraduate Credit for Graduate Courses
Students who have a GPA of at least 3.00 in all courses taken in the university or have shown exceptional ability in a special field may take a graduate course for undergraduate credit with the permission of the instructor concerned. Students must have completed at least 18 upper division quarter units basic to the subject matter of the course.

Expected Progress for Undergraduate Students
At the close of each quarter, the courses, units, grades, and grade points earned are added to the student’s cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration. Students can access their advisory degree check through rweb.ucr.edu.

Applying for Graduation
To graduate from UCR, undergraduate students must file an application for graduation. The application must be submitted by 4 p.m. of the deadline date listed at registrar.ucr.edu. Applications are not accepted after the deadline established for the quarter.

Students should review their remaining requirements through rweb.ucr.edu each quarter. They should also contact their academic advisor two quarters before expected graduation to confirm remaining requirements.

Completion of the degree depends upon completion of any work in progress. During the graduation quarter, any changes made to a student’s schedule after the third week of instruction should be immediately reported to the academic advisor.

If for any reason a student does not meet the requirements for graduation after filing the application, another application must be filed for the appropriate quarter. Students graduating in absentia after an absence of one or more quarters must apply for readmission to the university and file an application for graduation.

All course work, whether taken at UCR or elsewhere, must be completed.
by the last day of UCR’s finals week during the quarter of graduation (no
GDs or Incomplete grades). Incomplete, IE, IP or GD grades on the tran-
script will stop the processing of the degree.

Once the application for graduation is filed, the student’s name will be
entered on the appropriate degree list. Students who need to amend the
prospective quarter of graduation and who have submitted an application
for graduation petition must notify the GSOE Undergraduate Education
Programs Office, in writing, as soon as possible.

Withdrawals

Students may withdraw from the university prior to the end of instruction,
for serious personal reasons, with the approval of the associate dean.
Forms are available in the GSOE Undergraduate Education Programs Of-

Graduate Degrees and Credentials

The Graduate School of Education (GSOE) offers credential programs for
students preparing for careers in elementary, middle school, and high
school teaching; and teaching in classrooms for individuals with mild/mod-
erate and moderate/severe disabilities. The programs prepare students to
teach English learners and students from diverse backgrounds.

The School offers a Master of Education (M.Ed.) degree with a General
Education Teaching Emphasis. This is for qualified students earning a
Multiple Subject or Single Subject credential and is generally completed in
one academic year and a summer term. A combined M.Ed. and credential
in the area of Special Education is also available to qualified candidates.
In addition, M.Ed. emphases in Applied Behavioral Analysis, Diversity and
Equity, Higher Education Administration and Policy, and Teaching English to
Speakers of Other Languages (TESOL) are also offered. The School also
offers M.A. programs in Education, Society, and Culture, Educational Psy-
chology, Research Evaluation, Measurement and Statistics (REMS), and
Special Education and Autism. Ph.D. programs in Education, Society and
Culture; Education Policy Analysis and Leadership; Educational Psychology
(with both General and Quantitative Methodology Specializations); Higher
Education Administration and Policy (M.Ed. and Ph.D.); School Psychology
and Special Education. The M.A. in School Psychology may be awarded
only to students matriculating in the School of Education Ph.D. programs.
The Ph.D. in School Psychology is offered in combination with a Pupil
Personnel Services Credential for School Psychology.

Graduate Study

Curricula are offered through the Graduate School of Education for the M.A.,
M.Ed. and Ph.D. degrees. These programs require broad training in
education and in a cognate field of study. Further information can be found
under Education and Credential Programs in the Programs and Courses
section of this catalog or visit education.ucr.edu.

Teaching Credential Programs

Students planning to become teachers can pursue the following teaching-
credential programs in GSOE:

1. Multiple Subject (elementary school), in addition, students may add:

   • Bilingual emphasis in Spanish. Requires passage of the Spanish
     Proficiency Test and coursework in Latino American literature, Latin
     American culture and history, and bilingual/bicultural education.
     Students must also complete EDUC 176.

2. Single Subject (specified subject(s) at the middle school and high
   school level).

3. Education Specialist (special education) in the following specializations:

   • Mild/Moderate Disabilities: authorizes service for mild to moderate
     mental retardation; attention deficit and attention deficit hyperactivity
     disorders; serious emotional disturbance; and includes specific
     learning disabilities.

   • Moderate/Severe Disabilities: authorizes autism, deaf-blindness,
     moderate to severe mental retardation, multiple disabilities, and serious
     emotional disturbance.

Admission

Admission to Teacher Education Programs is required in order
to complete the professional and graduate level courses. The admis-
sion requirements vary depending on the credential specialization but at
minimum students need a 3.0 GPA (calculated on the last two years of un-
dergraduate studies), passage of the basic skills requirement, and subject
matter competency. Students who want to be considered for an intern pro-
gram or the M.Ed. General Education Teaching Emphasis have additional
requirements. More information is available at education.ucr.edu.

California Teach-Science/Mathematics Initiative (CaTEACH-SMI)

California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of
addressing the critical need for highly qualified K-12 science and
mathematics teachers in California. With an economy increasingly reliant
on science, technology, engineering, and mathematics (STEM) and the
anticipated large scale retirement of qualified teachers, this is an essential
time to explore and prepare for a career in teaching science or
mathematics. CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities to explore STEM teaching as a career option.
Through CaTEACH-SMI, students receive advising and mentoring to
prepare for entrance into an intern teaching credential program while dili-
gently coordinating with academic advisors to ensure completion of STEM
degree requirements. The CaTEACH-SMI Resource Center provides future
STEM teachers with material and financial resources to promote planning
and professional development towards a science/mathematics education
career.

For more information about the CaTEACH-SMI program, please visit
smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at
facebook.com/ScienceMathInitiativeAtUcr.

The School of Medicine

Medical Student Affairs:
1682A School of Medicine Education Building
(951) 827-7353; fax: (951) 827-5504
medadmissions@ucr.edu; medschool.ucr.edu
Ph.D. Program in Biomedical Sciences
1682 School of Medicine Education Building
(951) 827-4540  medschool.ucr.edu/graduate
Mission Statement

The mission of the UCR School of Medicine is to improve the health of the people of California and, especially, to serve inland Southern California by
training a diverse workforce of physicians and by developing innovative
research and health care delivery programs that will improve the health of
the medically underserved in the region and become models to be
emulated throughout the state and nation.

The School

The UCR School of Medicine, the first new public medical school to be
developed in California in more than 40 years, is expressly designed to
meet the physician workforce needs in inland Southern California and to
improve the health of people living in the region. The school’s community-
based model provides medical students with clinical experiences in a
variety of healthcare settings with diverse patient populations.

The M.D. curriculum offers a program that trains physicians who will
be more attuned to the needs of increasingly diverse and underserved
patient populations, with emphasis on culturally competent medical care.
The Thomas Haider Program at the UCR School of Medicine maintains a
unique pathway into medical school for UCR students, with up to 24 seats
filled by students who attend UCR for at least six consecutive quarters and
complete their bachelor’s degree at UCR. medschool.ucr.edu/admissions

Together with affiliated medical centers in the community, the school is
building a range of residency training programs to provide the post-M.D.
education required for physicians to become fully independent, licensed
and board certified. New and developing residency training programs
in affiliation with area medical centers currently includes the specialties
of general internal medicine, family medicine, general pediatrics, OB/
GYN, psychiatry, general surgery, child and adolescent psychiatry and
cardiovascular medicine. medschool.ucr.edu/gme
Graduate Study and Research

The long-standing Ph.D. Program in Biomedical Sciences provides a unique integration of systems and disease-based medical curriculum with experimental applications to biomedical research problems. The program aims to train independent research scientists to bridge the wide gulfs that currently exist between basic science research and clinical medicine. medschool.ucr.edu/graduate

Biomedical sciences faculty in the school have robust research programs in such areas as neurodevelopmental, neuroinflammatory and neurodegenerative disorders, traumatic brain injury, parasitic infections, intestinal bowl disease, metabolic and neuroendocrine control of fertility, tumor cell biology, vaccine development, and immune responses to viral infections. This outstanding base is being expanded with additional faculty in the biomedical sciences and clinical sciences with the goals of establishing new translational/clinical research programs and building research expertise in population-based health outcomes, prevention and wellness, health services and health disparities.

The BREATHE Center at the University of California, Riverside School of Medicine is a multidisciplinary collaborative for studies Bridging Regional Ecology, Aerosolized Toxins, and Health Effects. Research efforts among the collaborative include regional climate modeling, culture and policy studies on air quality and health, environmental justice and health disparities, and the health impacts of aerosolized particles including dusts, soil microbes, allergic pollens from invasive species, and pollutants. breathe.ucr.edu

The Center for Giall-Neuronal Interactions (CGNI) in UCR’s School of Medicine brings together researchers with very diverse expertise to foster innovative and collaborative research on problems of brain and spinal cord health and disease. Together, faculty, fellows and students seek to define molecular mechanisms required for optimal brain and spinal cord function as well as for prevention and therapeutic intervention of neurodevelopmental, neurologic and neurodegenerative diseases. Ongoing research includes programs on Alzheimer’s disease, autism spectrum disorders, cognitive disorders, epilepsy, stroke, glioblastoma, infections of the brain, multiple sclerosis, neuroinflammatory disorders, phantom limb syndrome, substance abuse and traumatic brain injury. cgni.ucr.edu

The Center for Healthy Communities (CHC) serves to use innovative community-based research and to promote the health of communities in inland Southern California. CHC is building bridges with community groups and interdisciplinarian health-field faculty to promote the health of the culturally and economically diverse population surrounding UCR, particularly the medically underserved. healthycommunities.ucr.edu

The Center for Molecular and Translational Medicine provides a forum to accelerate and enhance collaboration among faculty whose research is devoted to the translation of basic sciences into potential therapeutics, medical devices or diagnostics. With this initiative, UC Riverside and the School of Medicine commit to devote resources to assist in the development of novel treatments. The translation of basic laboratory discoveries into potential therapies, however, requires a multitude of efforts and expertise that no individual laboratory or funding source can, in isolation, fulfill. Potentially effective therapeutic strategies often never reach the patients due to the lack proper support necessary to channel basic laboratory pre-clinical studies through the complex and rigorous testing of experimental therapeutics. It is envisioned that the Center would either directly support or catalyze funding initiatives to advance the most promising innovations in drug targeting approaches and agents into early stage clinical experimental therapeutics, therefore actively assisting in the first steps toward their development. molmed.ucr.edu

Student Pipeline Programs and Advising

The School of Medicine has expanded its student pipeline programs that together provide a continuum of student enrichment and academic support activities for students from the middle school level to postbaccalaureate level. Specific programs include Medical Leaders of Tomorrow, Future Physician Leaders, Health Sciences Partnership, Community College Outreach, FastStart, Medical Scholars Program, and the Premedical Postbaccalaureate Program. medschool.ucr.edu/pipeline_programs.html

The Health Professions Advising Center (HPAC), a unit of Undergraduate Education, is a resource available to all UCR undergraduate students and alumni interested in careers in the health professions, including medicine, dentistry, nursing, optometry, pharmacy, physical therapy, veterinary medicine and public health. Professional staff and peer mentors are available to guide students in planning pre-health professions coursework, gaining health-related experiences and completing service work. A variety of workshops on such topics as the application process and personal statement writing are also offered. hpac.ucr.edu

Facilities

In addition to the School of Medicine Research Building and School of Medicine Education Building, the school's faculty, students and staff carry out their educational, research and administrative functions in Webber Hall, in Pierce Hall and in several clinical locations within Riverside and San Bernardino counties.

The School of Public Policy

4133 CHASS Interdisciplinary South
(951) 827-2310; spp@ucr.edu; spp.ucr.edu

The School

The School of Public Policy (SPP) brings together faculty and students from a variety of disciplines to:

- train students in rigorous policy analysis skills, allowing them to pursue careers in government and the not-for-profit sector
- facilitate research by multidisciplinary teams at UCR on policy problems affecting the region, state, nation, and the world
- initiate and maintain a policy dialogue with regional, state, and national policy makers.

Mission Statement

The mission of the UCR School of Public Policy is to train a new generation of forward-thinking public policy leaders equipped to address the complex, interrelated challenges of poverty, disease, illiteracy, climate change, energy security, pollution and more. Their training will be informed by a diverse, interdisciplinary curriculum that emphasizes evidence-based policy research as well as cross-learning from both international and domestic problem-solving experiences, and a rich internship program that emphasizes experiential learning.

Distinctions

UCR is only the third UC to have a School of Public Policy and the only UC in the ten-campus University of California system to offer an undergraduate degree in public policy. The UCR School of Public Policy is distinctive in its focus on addressing the big policy challenges facing California and, in particular, the Inland Region. Our “think globally, act locally” approach places an emphasis on applying policy lessons learnt from other parts of the nation and the world to solving California’s problems. The School of Public Policy brings together the national and international strengths of policy faculty from across the disciplines at UCR to create an exceptional educational experience for our students.

Internship Program

Under the leadership of former Riverside Mayor Ron Loveridge, the school has partnered with local and regional public agencies to provide students with first-rate internship experiences. The program prepares a generation of interns to become tomorrow's policy leaders.

Graduate Study

The flagship program of the School of Public Policy is the Master of Public Policy (MPP) program. The MPP requires a minimum of three four-unit courses per quarter for a total of 72 units of graduate courses. Find out more at spp.ucr.edu
The value of each course in quarter units is indicated for each term by a number in parentheses following the title. Departments may indicate the term in which they expect to offer the course by the use of: “F” (fall), “W” (winter), “S” (spring), “Summer.” The Schedule of Classes, at http://registrar.ucr.edu/registrar/schedule-of-classes/index.html, published several weeks before each term commences, lists the courses that will actually be offered for that term, along with their class hours and locations.

The class type, such as lecture or laboratory, and number of hours per week are listed in the first line of the description.

The letters “A,” “B,” “C,” and “D” are used with the course numbers to indicate sequential order, they do not necessarily indicate that an earlier quarter in the sequence is a prerequisite to the later quarters; the prerequisites (if any) of a given course are stated in the description of that course. The letter designation “Z” immediately following a course number for example, HIST 191E, HIST 191F, or HIST 191G, may be repeated for credit unless otherwise indicated in the course description. The letters “E” through “Z” have no sequential implications. The letters “H”, “L”, or “P” immediately following a course number usually have special designations: “H” for an honors course, “L” for a laboratory course (usually in the sciences), and “P” for a proseminar. A grade is assigned by the instructor.

The letters “A,” “B,” “C,” and “D” are used with the course numbers to indicate sequential order, they do not necessarily indicate that an earlier quarter in the sequence is a prerequisite to the later quarters; the prerequisites (if any) of a given course are stated in the description of that course. The letter designation “Z” immediately following a course number for example, HIST 191E, HIST 191F, or HIST 191G, may be repeated for credit unless otherwise indicated in the course description. The letters “E” through “Z” have no sequential implications. The letters “H”, “L”, or “P” immediately following a course number usually have special designations: “H” for an honors course, “L” for a laboratory course (usually in the sciences), and “P” for a proseminar. A grade is assigned by the instructor.

The admissibility of undergraduate to graduate courses is limited to upper-division students who have an overall scholarship average not lower than “B”; these limits are imposed by the rules of the Graduate Division. Students desiring such credit should consult with their graduate advisors and the Graduate Division before undertaking such circumstances. Students desiring such credit should consult with their graduate advisors and the Graduate Division before undertaking such circumstances.

UC Extension Courses

Students may earn credit toward bachelor’s and master’s degrees at the UC through University Extension. Acceptance of such credit is based on requirements of a particular college, division or department. Generally, preference is given to credits from courses numbered 001–099 and 100–199, prefixed by XR, XL, XI, XB, etc., indicating that such courses are intended to replicate regular offerings of a campus of the UC. Also, courses organized by University Extension, numbered 001–099 and 100–199, prefixed only with an X, are acceptable.

Extension credits are treated like transfer units from approved colleges. They apply toward unit requirements for a degree, but they do not count toward the requirements for residence. Resident students in the university must have advance approval from the appropriate dean for enrollment in UC Extension courses.

Credit earned in graduate University Extension courses is not automatically applicable toward requirements for a master’s degree or university-recommended teaching credential and is permitted only in unusual circumstances. Students desiring such credit should consult with their graduate advisors and the Graduate Division before undertaking such courses.
Anthropology

Subject abbreviation: ANTH

College of Humanities, Arts, and Social Sciences

Travis Stanton, Ph.D. Chair
Department Office, 1334 Watkins Hall
(951) 827-5524; anthroplogy.ucr.edu

Professors
Yoelado Moses, Ph.D.
Sally Allen Ness, Ph.D.
Susan Ossman, Ph.D.
Karl A. Taube, Ph.D.
Joao Vargas, Ph.D.

Professors Emeriti
Eugene N. Anderson, Ph.D.
Wendy Ashmore, Ph.D.
Alan R. Beals, Ph.D.
Sylvia M. Broadbent, Ph.D.
Scott L. Fedick, Ph.D.
Alan G. Fix, Ph.D.
David B. Kronenfeld, Ph.D.
Martin Orans, Ph.D.
Thomas C. Patterson, Ph.D.
Anne Sutherland, Ph.D.
R. E. Taylor, Jr., Ph.D.
Carlos G. Vélez-Ibáñez, Ph.D.
Christine Ward Gailey, Ph.D.
Philip J. Wilke, Ph.D.

Associate Professors
Derick Fay, Ph.D.
Sang-Hee Lee, Ph.D.
Christina Schwenkel, Ph.D.
Travis Stanton, Ph.D.

Assistant Professor
Sara K. Becker, Ph.D.
Anthony Jerry, Ph.D.
Hyejung Nah, Ph.D.
Worku Nida, Ph.D.
Kenichiro Tsukamoto, Ph.D.

Majors

Anthropologists study the diverse groups of people that understand and live in various settings ranging from urban environments to rural villages all over the world. They are interested in such questions as: What does it mean to be human? What activities define the social life of groups and how are they related? How do the members of groups communicate? What is the material evidence for their social and biological history? What are the historical, social, political, economic, cultural, and environmental forces that have helped to shape the experiences of particular groups of people, both in the past and in the contemporary world? And, how do human societies change and why? Anthropologists apply this knowledge for the benefit of the peoples whose communities they study.

Anthropology includes four broad subfields:
1. Sociocultural anthropology, the comparative study of communities in their local and global contexts
2. Archaeology, the investigation of past societies through their material and written remains
3. Biological anthropology, which focuses on the evolution of human beings as a species and the interaction of human biological variability with culture
4. Linguistic anthropology, which explores the interconnections of language, culture, thought, and social structure

Career Opportunities

Anthropology prepares students for dealing with the challenges of an increasingly international economy, transnationally connected communities, and multicultural citizenship. Besides helping students hone and refine analytical skills and critical thinking, anthropology helps them recognize the impact of cultural dynamics on interpersonal communication and on the social structures that affect everyone’s daily lives. Anthropology majors interested in pursuing graduate studies are excellent candidates for programs in anthropology, business, law, journalism, medicine, social work, urban planning, and almost any other profession that calls for working with people from a variety of backgrounds and in a number of different settings.

The skills and knowledge learned as an undergraduate anthropology major help students understand the connections between people. Anthropology majors who are not planning to pursue graduate or professional studies immediately can forge careers as teachers at the primary and secondary levels; interviewers; recruiters in executive and specialized employment agencies; staff and managers in various local, state, and federal governmental agencies as well as in a variety of national and international non-governmental organizations and community development organizations; archaeological field or laboratory technicians; intercultural communications professionals in hospitals and other organizations; or union organizers.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The Department of Anthropology offers the B.A. and B.S. degrees in Anthropology and the B.A. degree in Anthropology/Law and Society. The B.S. program is intended for those planning professional careers in anthropology or in the related fields mentioned above. The B.A. programs are intended for those desiring a broad liberal arts curriculum.

Anthropology Major

The major requirements for the B.A. and B.S. degrees in Anthropology are as follows:

1. Lower-division requirements (four courses at least 16 units)
   a) ANTH 001, ANTH001H, or ANTH01W, ANTH 002, ANTH 005, and ANTH 007 with a grade of C- or better in each

2. Upper-division requirements
   a) One theoretical/history course ANTH 100
   b) One methods course; ANTH 165E, ANTH 165F, ANTH 165G, or ANTH 165J
   c) One regional course; ANTH 115E-Z or ANTH 140E-Z
   d) At least one upper-division course in each of the subdisciplines of anthropology:
      (1) Archaeology
      (2) Biological anthropology
      (3) Cultural and social anthropology
      (4) Linguistic anthropology
   e) Two courses (at least 8 units) of upper-division Anthropology for the B.A.; three courses (at least 12 units) for the B.S.

Note: Students are strongly urged to take the lower-division requirements in the first two years of university study. Students intending to major in anthropology should work closely with a faculty advisor in planning their programs.

Anthropology/Law and Society Major

The Law and Society major is open to undergraduate students with junior standing who have completed LWSO 100 with a grade of “C” or higher. The major requirements for the B.A. degree in Anthropology/Law and Society are as follows:

1. Anthropology requirements
   All requirements for the B.A. in Anthropology. See Anthropology Major above for specific requirements.

2. Law and Society requirements (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100 (with a grade of “C” or better)
   c) One course chosen from POSC 114, PSYC 012, SOC 004 (or equivalent course in research methods)
   d) Three courses chosen from ANTH 127, ECON 119, HISE 153, PHIL 165, POSC 167, PSYC 175, SOC 159
   e) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, LWSO 175 (E-Z), PHIL 164, POSC 111, POSC 166, POSC 186, SOC 147, SOC 149, SOC 180
   f) LWSO 193, Senior Seminar

Note: For sections 2.d) and 2.e) combined, not more than two courses may be taken from the same department. In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (Anthropology requirements and Law and Society requirements).

Minor

The Department of Anthropology offers a minor in Anthropology which consists of six upper-division courses (at least 24 units) and appropriate prerequisites as needed.

The courses are to be selected as follows:
1. Two upper-division courses in cultural anthropology from ANTH 102/AHS 102,
ANTH 121, ANTH 122, ANTH 124, ANTH 125, ANTH 127, ANTH 131, ANTH 132, ANTH 134, ANTH 135, ANTH 137, ANTH 138, ANTH 139, ANTH 144, ANTH 149/WMST 149, ANTH 160, ANTH 162, ANTH 163, ANTH 173 (ANTH 001 is the normal lower-division prerequisite for these courses.)

2. Two upper-division courses from any one of the following subdisciplinary areas: (These courses normally entail an appropriate lower-division course in the given subdiscipline.)
   a) Archaeology
      (1) Prerequisite: ANTH 003 or ANTH 005
         (2) Courses: ANTH 110, ANTH 111, ANTH 113, ANTH 117A, ANTH 117B, ANTH 118, ANTH 172, ANTH 178/WMST 178
   b) Physical/Biological Anthropology
      (1) Prerequisite: ANTH 002
         (2) Courses: ANTH 107, ANTH 129, ANTH 146/PSYC 146, ANTH 150, ANTH 158, ANTH 159
   c) Linguistic Anthropology
      (1) Prerequisite: LING 020
      (2) Courses: ANTH 120, ANTH 123, ANTH 167/LING 167

3. One area course from ANTH 115 (E-Z), ANTH 140 (E-Z), ANTH 161/LNST 161, ANTH 164/LNST 164/WMST 164, ANTH 168/ETST 148/LNST 168, ANTH 186/LNST 166

4. One methodological course from ANTH 112, ANTH 114A, ANTH 116, ANTH 155, ANTH 171, ANTH 180A, ANTH 183, ANTH 185

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113. See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program

The Department of Anthropology offers the M.A., M.S., and Ph.D. degrees in Anthropology.

Doctoral Degree

The graduate program transforms scholars into professional anthropologists who will variously engage in research, teaching, policy-related and/or administrative activities that benefit the people with whom they work. The program focuses on how people living in various settings participate in and adapt to processes of change and transformation, both historically and in the contemporary world. The faculty is committed to an integrated, socially engaged concept of the discipline. The traditional subfields — sociocultural anthropology, biological anthropology, archaeology, and linguistics — are crosscut by a series of concentrations that constitute areas of strength. The most developed concentrations are (1) the applied anthropology of transnational processes (inequality, migration) and the border and binational communities associated with globalization and the internalization of capital; (2) the archaeology of Mesoamerica and Western North America; (3) cultural and political ecology. The department has close working relationships with other programs on campus.

The department is dedicated to educating the next generation of professional anthropologists. The faculty consists of active research scholars with solid records of publication, conducting original research, obtaining extramural grants, and placing graduate students in regional, national, and international labor markets. Aware of the current structures of employment, faculty prepare students to pursue both academic and nonacademic careers.

Admission

Applicants must supply GRE General Test scores, official transcripts from all institutions attended since high school, three letters of recommendation, a writing sample, and a personal statement specifying why they wish to undertake and complete graduate training at the UCR Department of Anthropology.

Course Requirements

During their first year, students complete the two quarter seminar sequence ANTH 200A and ANTH 200B (Core Theory in Anthropology). Students must acquire a basic understanding of three of the four subfields (sociocultural anthropology, biological anthropology, archaeology, and linguistics). To fulfill the breadth requirement, students must take at least one graduate course in each of two subfields outside the student’s major focus.

Language Requirement

Students must demonstrate at least a reading knowledge in one language other than English. In some cases, the student’s advisor may require knowledge of a second language. The choice of language(s) and the method of demonstrating competence should be determined in consultation with the student’s advisor. All students must file a Statement of Plan to Fulfill the Language Requirement by the end of the second quarter of their first year in residency. This includes students who are fully bilingual or whose primary language is not English. Competency may be demonstrated by the following:

1. Placing higher than level 3 in the Language Placement Examination,
2. Receiving a grade of at least “B” or “S” in a reading skills course or level 3 traditional language course, or
3. Alternative certification

In addition, students who plan to conduct fieldwork in a non-English setting must acquire conversational skills in the appropriate language before commencing fieldwork. Because language acquisition is a slow process, students are encouraged to begin language training early in their graduate program.

Methodological Skills Requirement

Students must demonstrate competency in a qualitative or quantitative methodological skill such as GIS, lithic analysis, statistics, or hieroglyphic analysis. The choice of methodological skill should be determined in consultation with the student’s advisor. All students must file a Statement of Plan to Fulfill the Methodological Skills Requirement by the end of the second quarter of their first year in residency.

Master’s Examination

Students take the master’s examination during the week of winter-quarter examinations of their first year. The examination is based on the material covered in the ANTH 200A and ANTH 200B sequence and is required of all students, including those holding a master’s degree from another institution. Depending on the student’s performance on the test, the faculty will recommend one of the following:

1. Pass with Distinction or High Pass Automatic continuation in the Ph.D. program and award of the master’s degree under Graduate Division Plan II.
2. Pass Awarding of the master’s degree under Graduate Division Plan II, but a successful retake (Pass with Distinction or High Pass) is required to continue in the Ph.D. program.
3. Fail Master’s degree not awarded, but one retake within six months is allowed for potential awarding of the master’s degree under Graduate Division Plan II.

The Preliminary Research Statement is designed to present the research orientation for an intended dissertation topic and to explain how the student intends to develop and pursue the area of research. The statement should present a comprehensive plan of study and a timeline covering the remainder of the student’s graduate career, and outline intended areas, theories, and methods. It should be considered a precursor to the materials developed later in the research proposal and the written qualifying examination. Designating a dissertation committee is part of completing the statement.

The Written Qualifying Examination is a research paper written during a specified two-week period. The examination question is generated by the faculty advisor in consultation with the student and the dissertation committee, and must be approved by the department before the student can begin the examination.

The Research Proposal prepares students to undertake dissertation research and provides, in part, the basis for the oral qualifying examination. The length and format of the
proposal should be similar to that of a proposal for a major funding agency.

Students must give a Public Oral Presentation to the department, at the James Young Colloquium, or at a national or international meeting. This presentation is intended to provide the student with experience in presenting research papers in a public context.

The Oral Qualifying Examination involves a demonstration of general competence in anthropology, combined with an extended discussion of the proposed dissertation research (preparation, methodology, significance, etc.).

Once students have satisfactorily fulfilled the courses requirement (including breadth requirement), language requirement, methodological skills requirement, master’s examination, preliminary research statement, written qualifying examination, research proposal, public presentation, and oral qualifying examination, they are advanced to candidacy for the Ph.D. and formally begin research for the dissertation.

Dissertation and Final Oral Examination (Dissertation Defense) After advancement to candidacy, students complete a dissertation representing original research within their field of specialization. Dissertations generally require a year of field research followed by an additional year of data analysis and write-up. After completing the dissertation (or a substantial portion of it), students present an oral, public defense of the dissertation.

Professional Development Requirement All students must complete professional development training by the end of their 9th quarter. This is fulfilled by taking ANTH 210B before taking their Ph.D. Oral Exam.

Master’s Degree

The M.A. degree in Anthropology is normally awarded as part of the Ph.D. program, rather than as a separate degree objective.

Plan II (Comprehensive Examination) Candidates complete 36 units, of which at least 18 must be 200-series courses and must include the ANTH 200A and ANTH 200B sequence, and pass a written comprehensive examination prepared by a departmental committee.

M.A. in Anthropology and Education

The M.A. is offered in cooperation with the Graduate School of Education; see the listing under Education or inquire at either office for further information.

M.S. Degree

Plan I (Thesis) Candidates must complete 56 units, of which at least 24 must be 200-series courses; courses for the area of specialization as specified by the department; and an acceptable thesis.

Lower-Division Courses

ANTH 1 Cultural Anthropology (4) Lecture, 3 hours; discussion, 1 hour. Explores the basic contributions of anthropology to the understanding of human behavior and culture and the explanation of similarities and differences among human societies. Addresses the relevance of materials drawn from tribal and peasant culture to problems of the modern world. Stresses the application of anthropological methods to research problems. Credit is awarded for only one of ANTH 001 or ANTH 001H or ANTH 01W.

ANTH 01H Honors Cultural Anthropology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ANTH 001. Explores the basic contributions of anthropology to the understanding of human behavior and culture and the explanation of similarities and differences among human societies. Addresses the relevance of materials drawn from tribal and peasant culture to problems of the modern world. Stresses the application of anthropological methods to research problems. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ANTH 001 or ANTH 001H or ANTH 01W.

ANTH 001W Cultural Anthropology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. Explores the basic contributions of anthropology to the understanding of human behavior and culture and the explanation of similarities and differences among human societies. Addresses the relevance of materials drawn from tribal and peasant culture to problems of the modern world. Stresses the application of anthropological methods to research problems. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Credit is awarded for only one of ANTH 001 or ANTH 001H or ANTH 01W.

ANTH 2 Biological Anthropology (5) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. A survey of past and contemporary human variation and evolution considered from the perspective of the fossil record, inferences from nonhuman primate biology and social behavior, and the forces of evolution.

ANTH 3 World Prehistory (4) Lecture, 3 hours; discussion, 1 hour. Examines the cultural history of human-kind, from the beginning of tool-using behavior in the Old World to the rise of complex social and political systems (civilizations) in both the Old and New World.

ANTH 5 Introduction to Archaeology (5) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. A general introduction to the aims and methods of archaeology, in the field and in the laboratory. Briefly surveys world prehistory as revealed by these methods.

ANTH 6 Introduction to World Music (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of people, identity, and music making. Includes listening to music from many cultural contexts. Also covers a variety of scholarly topics in world music. Cross-listed with MUS 006.

ANTH 7 Introduction to Linguistic Anthropology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. Introduces linguistic anthropological understanding of how language not only reflects but also refracts and shapes our social, political, cultural, and moral realities, values, and interests. Examines linguistic anthropological theories, ethnographies and methodologies to explore how, to what extent, and why language is unexpectedly cultural, social, and political.

ANTH 10 Mysteries of the Ancient Maya (4) Lecture, 3 hours; outside research, 3 hours. An introduction to all aspects of the ancient Maya civilization of southern Mexico and Central America. The course will explore Maya origins, political organization, agriculture, art, religion, architecture, hieroglyphic writing, and the unexplained collapse of the civilization.

ANTH 12 Great Discoveries in Archaeology (4) Lecture, 3 hours; extra reading and written exercises, 3 hours. Introduces the methods and goals of archaeology through examples of “great discoveries” that have altered our understanding of the past. Explores discoveries from around the world, including such well-known examples as King Tut’s tomb, Pompeii, and the lost cities of the ancient Maya. Also covers lesser-known recent finds and the application of modern scientific technology.

ANTH 20 Culture, Health, and Healing (4) Lecture, 3 hours; consultation, 1 hour. Surveys health, disease, curing, and nutrition in a cross-cultural perspective. Covers how different cultures consider disease, health maintenance, and healing; how traditional beliefs about health and nutrition arise; and what we can and cannot learn from traditional health-seeking practices.

ANTH 27 Art of Pre-Columbian America (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. A survey course that provides a background to the ancient art of Mexico, Central America, and the Andean region of western South America. Discusses art of pre-Columbian America according to the three broad cultural regions of Mesoamerica, the lower part of central and southwestern South America, and the Andean area. Cross-listed with AHS 027 and LNST 027.

Upper-Division Courses

ANTH 100 History of Anthropological Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. A survey of the history of theory in anthropology and the development of the discipline. Focuses on useful ideas from these theories and methods anthropologists have developed to study other societies.

ANTH 101 Contemporary Anthropological Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Explores the core ideas in modern anthropology about culture and society. Covers basic issues of contemporary theory since the 1980s. Explores the new methodologies and application of theory to ethnography.

ANTH 103 Introduction to Visual Anthropology (4) Seminar, 3 hours; individual study, 3 hours; outside research and projects, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. An introduction to the field of visual anthropology. Examines the similarities and differences between ethnographic film, critical studies, and written ethnographies. Explores the politics of representing other cultures visually. Cross-listed with MCS 103.

ANTH 104 Bioarcheology (4) Lecture, 2 hours; practicum, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 with a grade of “D-” or better. Introduces the study of bioarchaeology in order to explore human skeletal remains from archaeological settings. Topics include the history and ethics of studying human remains, mortuary archaeology, methodological shifts in skeletal research, and interpretation of human skeletons using various methods.

ANTH 105 Organizations as Cultural Systems (4) Lecture, 6 hours; extra reading and written exercises, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of culture in the formation and management of complex bureaucratic organizations. Compares different types of organizations and organizational cultures, the impact of the cultural environment, and problems posed by rapid cultural change. Offered in summer only. Cross-listed with BUS 158.

ANTH 106 Gender and Genocide (4) Lecture, 3 hours; individual study, 2 hours; term paper, 1 hour. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S, or consent of instructor.

ANTH 107 Evolution of the Capacity for Culture (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or ANTH 002 or ANTH 003 or relevant preparation in psychology or biology or consent of instructor. An examination of the evolution of the biological and social capacities that have made culture the central attribute of the human species. Topics include the evolution of human diet, tool-making, the family and kinship, and language.

ANTH 108 Anthropology of Global Media (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the global production, transmission, and consumption of mass media in diverse national and transnational contexts. Includes debates over the power of media; construction of knowledge of others; affective responses to images of violence; practices of self-representation in which consumers accept, reject and negotiate media messages.

ANTH 109 Women, Politics, and Social Movements: Global Perspectives (4) Lecture, 5 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to Third World women’s politics. Covers women’s politics from a global perspective emphasizing South Asia, sub-Saharan Africa, and the Caribbean. Cross-listed with GSST 109.

ANTH 110 Prehistoric Agriculture (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A cross-cultural perspective on prehistoric agriculture as resource management, economic system, and political tool. Archaeological methods and theory of reconstructing agricultural systems and their role in prehistoric societies.

ANTH 111 Peopling of the New World (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Consideration of the archaeological, biological, linguistic, and dating evidence documenting the nature and timing of the earliest documentation of human occupation to the Spanish conquest of the Inca. Topics include origins of food production, early ceremonial architecture, preceramic textiles, the Nasca lines, and the spiritual, mythological, and Inca architecture. Discussion of major sites and their architecture, ceramics, sculpture, and other archaeological remains.

ANTH 115X Ancient Oaxaca (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W; ANTH 003 or ANTH 005 or consent of instructor. A survey of prehistoric cultures of California from the earliest settlement to the historic period.

ANTH 115R Archaeology of Eastern Mesoamerica (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. An introduction to the archaeology and culture history in the New World nuclear area of Western Mesoamerica from the occupation of this area before 10,000 years ago to the arrival of Spanish Europeans in A.D. 1519.

ANTH 115S Archaeology of Western Mesoamerica (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. A survey of prehistoric cultures of the American Southwest from earliest settlement to the historic period.

ANTH 115U Andean Prehistory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. A survey of prehistoric cultures of the American Southwestern from earliest settlement to the historic period.

ANTH 115V Ancient Oaxaca (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W; ANTH 003 or ANTH 005; or consent of instructor. Explores current understandings about ancient Zapotec, Mixtec, and neighboring cultures in Oaxaca, Mexico, the location of the earliest Mesoamerican state and one of its earliest cities.

ANTH 117 Anthropology of Cities (4) Lecture, 3 hours; field, 1 hour; extra reading, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines theoretical and methodological debates in the anthropological study of cities and urban life. Uses ethnographic case studies in Asia, Africa, and Latin America to explore cultural practices and representations of urban space, and struggles over rights to the city. Topics include urban inequality, ecology, housing, planning, and redevelopement.

ANTH 118 Origins of Cities (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W; ANTH 003 or ANTH 005; or consent of instructor. Explores the origins of cities and the process of urbanization around the globe. Examines the rise of urbanism in both the Old and New Worlds to investigate how and why cities emerged and consolidated.

ANTH 119 The Anthropology of Tourism (4) Lecture, 3 hours; extra reading, 1 hour; field, 1 hour; term paper, 1 hour. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Surveys the central problems and issues in the anthropological study of tourism. Main topics include the place of tourism in the global economy, the impact of tourism on cultural identity and culture change, environmental issues in tourism development, and tourism as a form of cross-cultural communication. Credit is awarded for only one of ANTH 119 or ANTH 280.

ANTH 120 Language and Culture (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W, LING 020, upper-division standing or consent of instructor. Covers the interrelations among language, culture, and habitual behavior; the classification of languages, and anthropological uses of linguistic evidence.

ANTH 121 Anthropological Theories of the Arts (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Covers the anthropological theories of the arts emphasizing folk and traditional forms. Features oral and written literature and discusses theories of musical, visual, and other arts.

ANTH 122 Economic Anthropology (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Examines the social and cultural dimensions of production, exchange, saving, borrowing, and consumption. Topics covered include rationality and economicizing, reciprocity, gender and household decision-making, and neoliberalism.

ANTH 123 Linguistic Anthropology (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Covers anthropological theories of the arts emphasizing folk and traditional forms. Features oral and written literature and discusses theories of musical, visual, and other arts.

ANTH 124 Ritual and Religion (4) Lecture, 3 hours. The elements and forms of religious belief and behavior; functions of ritual in society. Cross-cultural comparisons.

ANTH 125 Kinship Organization (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. An introduction to theories of social organization through consideration of relationships among kin.

ANTH 126 Southeast Asian Performance (4) Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the roles and genres of expressive culture in Southeast Asia, including dance, music, theater, film, and digital culture. Performance is discussed as both a time-honored and a contemporary medium for cultural production, from the courts to everyday experience. Cross-listed with AST 123, DNCE 123, MUS 123, and SEAS 123.

ANTH 127 Political Anthropology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Examines different overt and covert means by which power and social differentiation are produced, perpetuated, and challenged in societies across the world. Studies the politics of culture, ethnicity, nationalism, and gender. Credit is awarded for only one of ANTH 127 or ANTH 127S.

ANTH 127S Political Anthropology (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Examines different overt and covert means by which power and social differentiation are produced, perpetuated, and challenged in societies across the world. Studies the politics of culture, ethnicity, nationalism, and gender. Credit is awarded for only one of ANTH 127 or ANTH 127S.

ANTH 128 Performing Arts of Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in four major geocultural regions of Asia: Central, East, South and Southeast.
No Western music training is required. Course is repeatable to a maximum of 8 units. Cross-listed with AST 128, DNE 128, and TFDP 176.

ANTH 130 Ancient Pottery Analysis (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 005 or consent of instructor. An extensive review of the techniques used by archaeologists to study ceramic artifacts, one of the most common archaeological remains found in many Holocene sites throughout the world. Critically explores the use of typology, attribute analysis, experimental archaeology, petroglyphy, source analysis, residue analysis, and ceramic ethnoarchaeology.

ANTH 131 Applied Anthropology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Applies anthropology to current issues such as community development, education, health, public administration, and conflict.

ANTH 132 Cultural Ecology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Introduces people's relationships to their total environment. Explores strategies for managing the environment and its resources, the effects of the environment on human society, the impact of human management on the ecosystem, and ways in which human groups view their surroundings.

ANTH 133 Anthropology and International Development (4) Lecture, 3 hours; outside research, 2 hours; written work, 1 hour. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Analyzes the concept of development by examining major theories and approaches in the anthropological study of international development. Focuses on the relationship between anthropology and the development industry. Topics include ethical issues in development anthropology, causes of failure and success in development interventions, and transformations in development theory and practice.

ANTH 136 Anthropological Perspectives on Gender in Southeast Asia (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the intersections of gender, power, and sexuality in post-colonial Southeast Asia. Revisits early ethnographic claims of gender equality. Addresses current anthropological literature on the effects of colonialism, capitalism, and globalization on gender roles and relations within national and transnational contexts. Cross-listed with SEAS 136.

ANTH 137 Anthropology: The American Tradition (4) Lecture, 3 hours; outside research, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces the historical development of anthropological thought in the United States as a means of understanding modern social and state formation. Clarifies various intellectual currents in contemporary anthropology and their relationships to intellectual and social developments in the broader society.

ANTH 139 Change and Development (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or ANTH 003 or ANTH 005; upper-division standing or consent of instructor. Examines alternative theories of society, change, and development. Major differences as well as similarities in the forms of language, social organization, religion, and material culture occurring in the Greater Southwest will be defined and described. The peoples of the Greater Southwest are considered, not only in terms of their past, but also through a diachronic perspective, from the prehistoric past through the Spanish colonial era to the present.

ANTH 140E Ethnology of the Greater Southwest (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the many varied native cultures of Greater Southwest. Major differences as well as similarities in the forms of language, social organization, religion, and material culture occurring in the Greater Southwest will be defined and described. The peoples of the Greater Southwest are considered, not only in terms of their past, but also through a diachronic perspective, from the prehistoric past through the Spanish colonial era to the present.

ANTH 140G Anthropological Perspectives in Africa (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A number of African cultures are carefully examined in terms of three or four anthropological topics, such as: subsistence patterns, social organization, and religious systems. The treatment of these cultures follows a brief overview of the geography, history, and linguistic patterns of Africa.

ANTH 140-I Cultures of Southeast Asia (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or equivalent. Anthropological interpretations of culture and society in southeast Asia including Indonesia. Topics include prehistory, ethnic groups, social organization and structure, human ecology, and folk and high culture.

ANTH 140P Cultures of the Pacific (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001W or consent of instructor. Overview of the cultures and contemporary issues facing the people of Melanesia, Micronesia, and Polynesia. Examines the contribution of Oceanic studies to anthropological theories of kinship and exchange, gender, development studies, and indigenous knowledge systems. Emphasizes how Pacific Islanders draw on their cultural heritage emerging from formal colonialism to establish new island nations.

ANTH 140S The Peoples of Mexico in Historical and Global Perspective (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001W or consent of instructor. Discussion of the cultures and societies of Mexico in historical and global perspective. Emphasis on agrarian communities and the contributions of Mesoamerican ethnography to general anthropological theory.

ANTH 143 Gender, Race, and Medicine (4) Lecture, 3 hours; written work, 1 hour; extra reading, 1 hour; individual study, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the relationship between Western medicine and women, racial minorities, and non-Western cultures. Examines how gender ideology, racial inequity, and colonialism shape the medical representation of bodies, sexuality, and pathology. Examines how patients have renegotiated their relationships with medicine through health movements and alternative healing practices. Cross-listed with GSST 185.

ANTH 145 Sexualities and Culture (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S; or consent of instructor. Examines the field of sexuality studies using a comparative, cross-cultural approach. Emphasizes the relationship between culture, history, and political economy in the emergence of sexual practices and sexualized identities. Examines theories of sexuality and identity focusing on violence, human rights, and political agency. Cross-listed with GSST 103.

ANTH 146 Primate Social Behavior (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ANTH 002 or PSYC 002. Considers social organization and behavior in monkeys and apes, with emphasis on the adaptive aspects of social patterns and the relevance of primate studies to human evolution. Cross-listed with PSYC 146.

ANTH 147 Reproduction: Policies, Politics, and Practices (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines reproductive policies, politics, and practices from a cross-cultural and historical perspective. Discusses political and economic processes and sociocultural dynamic control; sex preference; infanticide and neonatal neglect; adoption and foster parenting; abortion; technologically assisted conception; and gestational surrogacy. Cross-listed with GSST 140.

ANTH 148 Gender and the State (4) Lecture, 3 hours; extra reading, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines theories of gender and the state, the engendering of politics, state functions, policy, and politics in various historical, political, cultural, and social contexts. Cross-listed with GSST 150.

ANTH 149 Gender, Kinship, and Social Change (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S. Explores theories of gender and kinship, the formation of gender hierarchies and their uneven development, and the dynamics of family and gender in stratified social formations. Analyzes the relationship between family forms and political and economic processes. Cross-listed with GSST 149.

ANTH 150 Human Microevolution (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): ANTH 002; relevant preparation in the life sciences, or consent of instructor. Covers methods of classical and population genetics applied to the understanding of evolution and variation in contemporary human populations.

ANTH 151 The Art of the Aztec Empire (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): AHS 027/ANTH 027/LNST 027 or upper-division standing or consent of instructor. An introduction to the art of the Aztec Empire. Studies architecture, sculpture, costume, painting, limpid art, gold work, and feather work. Explores the relationship between art and ritual and the imperial state. Cross-listed with AHS 112 and LNST 112.

ANTH 152 Evolution of the First Hominids (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 or consent of instructor. Explores human evolution in the first five million years; examines the fossil record and incorporates data from archaeology and genetics. Topics include hominoid evolution in the Miocene, origin models of the human lineage, and the first ancestral humans.

ANTH 153 Evolution of the Genus Homo (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 or consent of instructor. Explores human evolution in the last two million years; examines the fossil record and incorporates data from archaeology and genetics. Topics include origins of genus <i>Homo</i>, world-wide dispersals, Neanderthals, and origins of modern humans.

ANTH 154 Research Methods in Biological Anthropology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 or consent of instructor. Explores human evolution in the last two million years; examines the fossil record and incorporates data from archaeology and genetics. Topics include origins of genus <i>Homo</i>, world-wide dispersals, Neanderthals, and origins of modern humans.
cussion, 1 hour; outside research, 3 hours. Prerequisite(s): consent of instructor. An in-depth study of the human skeleton, including bone biology, functional morphology, fragment identification, reconstruction, forensic methods, and curation techniques. Useful for anthropologists and those intending careers in medicine, physical therapy, and forensics.

ANTH 165 Visual Culture of the Incas (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the art, architecture, and urban form of the Inca civilization. Examines how these elements influenced state formation, conquest, and resistance. Includes studies of urban plans, buildings, textiles, prints, sculpture, metalwork, and ceramics. Cross-listed with AHS 177 and LNST 117.

ANTH 158 Biological Approaches to Medical Anthropology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 or consent of instructor. Introduces medical anthropology from the biological perspective. Explores topics on evolution, health, and medicine; human biological variation in relation to disease; bioarchaeology; and the history of health. Takes the integrative and multidisciplinary approach.

ANTH 160 Political Economy of Health (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines critical medical anthropology. Focuses on the linkages between political economy, health, and healthcare systems in modern societies. Considers the effects of power relations, and environmental transformation in particular social contexts. Looks at four case studies: the political economy of HIV/AIDS, poverty, famine, and nuclear regulation.

ANTH 161 The Body in Western Art: Antiquity to Present (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing in one of the following majors: Anthropology, Art History, Art History/Administrative Studies, Art History/Religious Studies, Gender and Sexuality, History, History/Administrative Studies, History/Law and Society; or consent of instructor. Presents further questions and study of the human body and how it was depicted and interpreted in works of art from Roman Antiquity to the present, familiarizing them with a broad range of artworks in their specific historical, cultural, medical, social, religious, political and intellectual contexts. Cross-listed with AHS 133, GSST 130, and HISE 149. Credit is awarded for only one of AHS 016 or AHS 133/ANTH 161/ GSST 130H/HISE 149.

ANTH 162 Culture and Medicine (4) Lecture, 3 hours; consultation, 1 hour. Interrelationships of health, disease and culture. Examinations of “sickness,” “disease” and “curing” concepts; effects of cultural behavior on health and illness. Special focus on traditional societies and their belief systems, and on the effects of cultural change (historical and modern) on illness and curing.

ANTH 163 Transnational and Global Communities (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical introduction to anthropological and related research and theory concerning transnational and global sociocultural processes. Special emphasis on transnational, diasporan, and other unbound communities; borderlands; and the impact of global media and communication and transnational migration on community and identity.

ANTH 164 Forensic Anthropology (4) Lecture, 2 hours; activity, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 with a grade of “D-” or better. Introduces the applied study of forensic anthropology. Topics include basic training in forensic anthropology, its history and theoretical background, medico-legal aspects, case studies, and training in how to identify human skeletal remains and information that can be determined from human bone.

ANTH 165 (E-Z) Anthropological Methods (4) Lecture, 3 hours; assignment of remaining hours vary from segment to segment. Prerequisite(s): assignment of prerequisites vary from segment to segment. Surveys methods and techniques utilized in archaeology, biological anthropology, cultural anthropology, and linguistic anthropology. Emphasizes field and laboratory methods.

ANTH 165E Methods in Archaeology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 005 with a grade of “D-” or better. Review of methods used by archaeologists in field and laboratory contexts. Critically explores the applications of different techniques to answer social questions.

ANTH 165F Methods in Biological Anthropology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 002 or consent of instructor. Introduces research methods in biological anthropology. Topics include the history of scientific research in American anthropology, statistics, data resampling, evolution, and variation.

ANTH 165G Methods in Cultural Anthropology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 001 with a grade of “D-” or better. Introduces research methods used by cultural anthropologists. Examines the research process from identifying research problems, to selecting research methods, developing research strategies, collecting and analyzing data, and reporting research findings. Methods and topics covered include participant observation, writing fieldnotes, interviews and surveys, qualitative and quantitative data analysis, and research ethics.

ANTH 167 Structural/Descriptive Linguistics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): LING 020 or consent of instructor. An overview, from the original sources, of the development of major figures and schools in linguistics from Chomsky through early Chomsky. Cross-listed with LING 167.

ANTH 168 Caribbean Culture and Society (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of the Caribbean region from a historical, cultural, and political perspective. Emphasis on contemporary issues affecting the Caribbean, and the struggle of its people to maintain their identities. Cross-listed with ETST 148 and LNST 168.

ANTH 169 From the Maghreb to the Middle East (4) Lecture, 3 hours; 1 hour individual study; 1 hour; extra reading; 1 hour. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 002 or ANTH 002H or ANTH 003 or ANTH 003H or consent of instructor. An introduction to the peoples and societies of North Africa, including the Maghreb and the Middle East. Topics include religion, migration, race, and sexuality in national and international contexts of war. Explores ideologies and representations of masculinity and femininity in discourses of militarism. Topics include war crimes; contests over historical memory; effects of militarization on gender roles; cults of heroism; and peace activism.

ANTH 169A Introduction to Anthropological Methods and Techniques (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): consent of instructor. Upper-division standing or consent of instructor. Examines the range of means attached to spaces and places, from small-scale expressions such as houses to larger ones such as cities and landscapes. Explores how spaces can reflect social conflict or social unity. Through a study of diverse cultural traditions, considers both the architecture and occupied but “unbuilt” spaces in ancient and current societies.

ANTH 170 Ethnobotany (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in the Philippines, Indonesia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Designed for the student interested in the performing arts and cultures of mainland and insular Southeast Asia. No Western music background is required. Cross-listed with AST 127, DENCE 127, ETST 172, and MUS 127.

ANTH 171 Gender, Sexuality, and Music in Cross-Cultural Perspectives (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Cross-listed with ETST 148 and LNST 168.

ANTH 172 Archaeological Theory and Method (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): AMTH 001 or AMTH 001H or AMTH 002 or AMTH 002H or AMTH 003 or AMTH 003H or consent of instructor. Strongly recommended for anthropology majors and minors. Surveys methods and techniques utilized in archaeology, cultural anthropology, and physical anthropology. Explores the epistemology of scientific discourse; debates in ethnography, linguistics, and processual and poststructural archaeology, and techniques in physical anthropology emphasizing demographic, epidemiological, and genetic analysis.

ANTH 180B Research Methods and Techniques in Cultural Anthropology (4) Lecture, 3 hours; fieldwork, 30 hours per quarter. Prerequisite(s): ANTH 180A or consent of instructor. Strongly recommended for anthropology majors and minors. Develops the most important methods in cultural anthropology including...
research design, participant observation, informant selection, organization of field notes, household and community questionnaires, structured and unstructured interviews, oral and life histories, archival research and secondary data, and coding and analysis of qualitative data.

ANTH 180C Anthropological Field Research (4) Lecture, 2 hours; outside research, 6 hours. Prerequisite(s): ANTH 180A or ANTH 184 or ANTH 185; or consent of instructor. Introduces students to the process and problems of conducting field research in the local region. Topics include construction of research problems, research design, research implementation, preparation of human subject protocols, strategies of data collection and analysis, and report preparation.

ANTH 181 Political Economy of Southern Africa (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. Examines contemporary societies of southern Africa. Focuses on changes and continuities since the end of apartheid. Topics include transformations in ethnic and racial identity and classification; postapartheid class formation and neoliberalism; labor migration and immigration; HIV/AIDS; land reform, resettlement, and spatial transformation; tourism; and conservation.

ANTH 182 Anthropology of Human Rights (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-di- vision standing or consent of instructor. Examines debates concerning human rights and social injustice. Uses case studies in Asia, Africa, and Latin America to explore legal, cultural, and political practices and representations of rights and reconciliation in postconflict settings. Includes globalization of rights; cultural relativism; indigenous rights and social injustice.

ANTH 184 Field Course in Anthropology (16-Apr) Field, 12-48 hours. Prerequisite(s): upper-division standing or consent of instructor. Cross with ANTH 184, with a qualified professional at selected research sites with on-site supervision. Normally, 16 units will be assigned only when the student is engaged in full-time research at a site distant from UC Riverside. Course may be repeated for credit for up to three quarters with consent of the instructor and approval of a research plan by the department chair.

ANTH 185 Field Course in Archaeology: Survey and Documentation (4) Lecture, 1 hour; discussion, 1 hour; field, 6 hours. Prerequisite(s): ANTH 003 or ANTH 005; upper-division standing; consent of instructor. Students will serve in a field capacity on an archaeological survey, excavation, or experimental project. Topics include field work and subspecialization in survey, excavation, and experimental methods. Fieldwork may take place on and off-campus.

ANTH 186 War and Violence in the Ancient World (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ANTH 180A or ANTH 184 or ANTH 185; or consent of instructor. Examines the social impacts of war, civil strife, and political violence across time and space, including the ancient Maya, classical Greece, the medieval Islamic world, the Middle Ages, and Near Eastern empires.

Graduate Courses

ANTH 200A Core Theory in Anthropology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing in Anthropology or consent of instructor. Examines the foundational theories of anthropology and how these inform current discussions about, for example, the impact of colonialism and nationalism on tradition- al cultures; and globalization. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ANTH 200B Professionalism in Anthropology (4) Seminar, 3 hours; outside research, 1 hour; seminar, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers professional development, including research, writing, teaching, presentation, publishing, and other professional responsibilities. Topics include research ethics; professional development; and professional networks.

ANTH 210A Description and Inference in Anthropology (4) Seminar, 3 hours; outside research, 1 hour; individual study, 1 hour; reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the methods and theories used in anthropological research, including descriptive techniques and inferential statistics.

ANTH 210B Theory and Method in Mexican Ethnography (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys ethnographic literature on Mexican ethnography, with an emphasis on contemporary research. Covers anthropological approaches to the study of text, ritual, and performance in Mexico. Topics include the impact of colonialism and nationalism on tradition- al cultures; and globalization. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.
ANTH 252 Seminar in Archaeology (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Studies in culture history and in the data and methods of archaeological research. Course is repeatable as topics change.

ANTH 253 Seminar in Physical Anthropology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the analysis of human variation and evolution, the structure of human populations, and the biocultural environments of humans. Course is repeatable as topics change.

ANTH 255 Feminism, Gender, and Archaeology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Considers feminist perspectives on past human socie- ties, as well as how feminism and gender have shaped archaeological research design. Examines how gender relates to careers in archaeology.

ANTH 256 Seminar in Cultural Anthropology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides focused coverage of concepts, theory, and methods central to various subfields in cultural anthro- pology. Course is repeatable as topics change.

ANTH 257 Southeast Asian Religions (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Discusses different and dynamic aspects of religion in various Southeast Asian countries including Indonesia, Malaysia, Thailand, Cambodia, Vietnam, and the Philippines. Explores contextualized readings featuring historical, anthropological, literary, and other discipli- nary perspectives on this diverse region. May be taken Satisfactory (S) or No Credit (NC) with consent of in- structor and graduate advisor. Course is repeatable as topic changes to a maximum of 8 units. Cross-listed with RLST 253 and SEAG 202.

ANTH 258 Space and Place in Archaeology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines concepts of space and place in archaeo- logy. explores how spaces can reflect and foster social conflict or unity through studies of diverse cultural tra- ditions. Considers both the architecture and occupied but unbuilt spaces in ancient and current societies.

ANTH 259 Seminar in Anthropological Linguistics (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Studies in the concepts, methods, and data pertinent to anthropological linguistics.

ANTH 260 Ethnographic Field Methods (4) Seminar, 3 hours; field, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces ethnographic field methodologies and research techniques through theoretical and practical application. Examines histor- ical and contemporary models of fieldwork practice and ethics. Topics include fieldwork preparation; participant observation; ethnographic responsibilities; data collection techniques; interviews; gendered dynamics of field research; historical and visual meth- ods; and violence in the field. Course is repeatable.

ANTH 261 Anthropology of the Body (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines cultural anthropology’s treatment of the body as both a subject and object of social processes through recent and classic texts. Aims to ground theoretical inquiry in ethnographic and historical materials through the examination of bodies across time and space.

ANTH 262 Seminar in Medical Anthropology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys major topics in medical anthro- poly. Examines the theoretical and methodological underpinnings of medical anthropology, including the cultural construction of health and disease, the nature of the therapeutic process, and how social structures contribute to inequality and suffering.

ANTH 263 Seminar in Ecological Anthropology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Selects topics in method and theory of ecological anthropology, including ethnobiology, food production and consumption, development issues, views of the environment, and questions about the relationship of humans to their environments.

ANTH 264 Codices of Ancient Mexico (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. The major manuscripts of the pre-Hispanic and contact periods of Mesoamerica. Special focus will be on the ancient codices of the Maya, Aztec, Mixtec, and the unprovenienced Borgia Group.

ANTH 265 Seminar on Anthropology of Visual Culture (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Presents a historical and ethnographic overview of the role of visual culture in the production and transmission of culture. Examining the politics of representation and the ways in which images have maintained or challenged racial, gender, and global hierarchies and inequalities.

ANTH 266 Seminar on History and Memory (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores how societies remember, forget, and give meaning to the past through diverse forms of expression in national and transnational contexts. Examines representations across historical contexts and narrations, as well as the ways in which history and memory are shaped and contested by competing claims to power, legitimacy, and authenticity.

ANTH 267 Ethnographies of Postsocialism (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores diverse sociocultural, economic and political experiences of socialist-capitalist transformations. Includes late and postcapitalist nation states in Eastern Europe and postcolonial Asia, Latin America, and Africa. Examines the revivals of political and cultural projects as a response to capitalist globalization and escalating social and economic inequalities.

ANTH 268 Seminar in Political Ecology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the relationship between political economy and human ecology for the analysis of the interaction between people, natural resources, and the environment.

ANTH 278 Seminar in Representation and the Ethno- graphic Text (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Reviews different forms of stratification and power in different and dynamic aspects of religion in various Southeast Asian countries including Indonesia, Malaysia, Thailand, Cambodia, Vietnam, and the Philippines. Explores contextualized readings featuring historical, anthropological, literary, and other discipli- nary perspectives on this diverse region. May be taken Satisfactory (S) or No Credit (NC) with consent of in- structor and graduate advisor. Course is repeatable as topic changes to a maximum of 8 units. Cross-listed with RLST 253 and SEAG 202.

ANTH 291 Individual Studies in Coordinated Areas (1-8) Prerequisite(s): graduate standing. A program of study designed to advise and assist candidates who are preparing for doctoral examination. The following rules apply: 1) a student may take up to 12 units for the Basic Requirements; 2) a student may take up to 8 units for the Comprehensive Requirements. Graded Satisfactory (S) or No Credit (NC).
Art

Subject abbreviation: ART
College of Humanities, Arts, and Social Sciences

Brandon Lattu, M.F.A., Chair
Department Office, 239 Arts
(951) 827-4634; art.ucr.edu

Professors
John M. Divola, M.F.A.  Distinguished Professor
Jim Isermann, M.F.A.
Charles Long, M.F.A.
Amir Zaki, M.F.A.

Professor Emeritus
Uta Barth, M.F.A.
Jill Giegerich, M.F.A.
James S. Strombotne, M.F.A.

Associate Professors
Brandon Lattu, M.F.A.
Yunhee Min, M.A.

Assistant Professor
Lynne Marsh, M.F.A

Major

The Department of Art offers a B.A. degree in an interdisciplinary program that emphasizes a critical approach to artistic production. Courses are offered in the following curricular areas: photography, digital art, video, two- and three-dimensional media (painting, drawing, sculpture, installation), and critical theory. The program is designed primarily for students preparing for graduate study and those who plan to continue professionally as artists. The Department of Art does not offer any course work in commercial art or in graphic design. The department does however welcome the participation of nonmajors and nondegree students.

Admission

Incoming freshmen applicants may simply declare a major in Art upon the submission of their Undergraduate Admission application. However, current UCR non-majors and new incoming transfer students must submit a portfolio electronically, consisting of ten (10) images of your original work and/ or three (3) clips of moving images or sound work. Guidelines for the portfolio and a link to the site for submission can be found on the Art Department website at art.ucr.edu. Students whose portfolios are approved will be admitted to the major. Guidelines for submission are also available from Undergraduate Admissions and from the Department of Art.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The major requirements for the B.A. in Art are as follows:

1. Lower-division requirements (33-34 units)
   a) ART 001 or ART 002
   b) ART 003 or ART 004/MCS 004.
   c) ART 005

d) ART 006/MCS 006

e) Two of the following courses: ART 009, ART 065, ART 066, ART 067, or any of ART 001, ART 002, ART 003 and ART 004/MCS 004 not used to fulfill Major Requirements 1.a) or 1.b).

f) One course from the following courses: AHS 017C, AHS 020, or AHS 021.
g) ART 032

2. Upper-division requirements (40 units)
   a) ART 160
   b) One of the following Art History courses: AHS 115, AHS 135, AHS 136/MCS 137, AHS 175, AHS 176/MCS 176, AHS 178/URST 178, AHS 179, AHS 180, AHS 181, AHS 182, ART 183, AHS 184/URST 184, AHS 185/URST 185, AHS 186/MCS 186, AHS 187, AHS 188, AHS 189/E-Z or any other upper-division Art History course that covers the period 1945 to present
   c) ART 180
   d) ART 132 (must pass with a C or better)
   e) A minimum of 24 additional units of upper-division Art course work

Note: A maximum of 12 upper-division transfer units of established equivalency can be accepted for credit. Equivalent transfer units in lower-division studio art course work and lower- and upper-division Art History course work is also accepted for credit toward the major in the respective lower- or upper-division category.

A minimum of 36 units of Art must be taken in residence (UCR Department of Art) to fulfill this major.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan to study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program

The Art Department offers the Master of Fine Arts (M.F.A.) degree in Visual Art.

Master of Fine Arts in Visual Art

The program's primary goal is to provide a context for research and production of contemporary art at the highest level. The M.F.A. in Visual Art is interdisciplinary, and students can draw on the resources of other departments on campus, including the UCR/California Museum of Photography.

The program emphasizes digital imaging, photography, and video, but students are free to work in any medium. The core of the program is independent creative work done in consultation with faculty. Creative work can be digital imaging, film or video works, installations, painting, performances, photography, sculpture, or any visual medium.

Admission

Applicants must have a B.A. or B.F.A. degree. They must submit an application including all required support documents, a portfolio of their work, and three letters of recommendation. The GRE is not required. Students without any visual arts background may be required to complete courses in Studio Art and Art History subsequent to admission.

Plan I (Thesis) The M.F.A. is a Plan I (thesis) master's degree program, requiring 72 units in graduate or approved upper-division undergraduate courses that must be completed with at least a letter grade of “B” or “Satisfactory.”

Required courses include 48 units in graduate courses in theory and criticism, as well as individual projects and tutorials:

1. Three courses of ART 285, Graduate Critique
2. ART 230, Contemporary Critical Issues
3. ART 240, Critical Theory
4. ART 299, Research for Thesis
5. One of the following Art History Graduate Seminars (AHS 167, AHS 252, AHS 260, AHS 272, AHS 273, AHS 274, AHS 276, AHS 277, AHS 278, AHS 279, AHS 282, AHS 283, AHS 284, AHS 285, AHS 286 or AHS 287)
6. 20 units of ART 293, Directed Individual Studio Production

Of the remaining 24 units in elective courses, at least one additional course must be in Art History or Media and Cultural Studies, and at least two additional courses must be taken from a department other than art. These courses may be graduate or undergraduate courses.

MFA students receive a degree in Visual Art. The course of field study is not characterized by medium.

Students participate on yearly reviews during the Winter quarters of their first and second year. The thesis requirement is met by the student’s M.F.A. thesis exhibition, accompanied by a written thesis on the work exhibited. A graduate thesis committee reviews the thesis. The committee is composed of four faculty members, at least three from the Department of Art. The fourth faculty member may be from another department at any UC Campus. Persons who are not UC Senate members may be appointed only with the approval of the Graduate Dean. Nominations that require this approval should be forwarded to the Graduate Division by the end of the student’s second year.
Foreign Language Requirement None
Teaching Requirement None; however, students are given opportunities to teach and are encouraged to do so.
Normative Time to Degree Nine quarters

Lower-Division Courses

ART 001 Beginning Drawing and Design (4) Lecture, 2 hours; studio, 4 hours. Introduction to the materials, techniques, structure and expressive properties of drawing and design. Includes lectures, studio exercises and outside assignments.

ART 002 Beginning Painting and Design (4) Lecture, 2 hours; studio, 4 hours. Introductory course in the media, techniques, structural and expressive properties of painting and design. Includes lectures, studio exercises and outside assignments.

ART 003 Introduction to Photographic Processes (5) Lecture, 3 hours; studio, 4 hours. Introduction to the basic principles of photography as fine art. Focuses on technological and conceptual evolution from analog to digital practice. Addresses a range of technological approaches to photography from traditional analog processes to digital image capture, organization/archiving, and printing. Explores historical and contemporary approaches to creating meaningful photographs.

ART 004 Introduction to Moving Images: Film, Video and New Media (5) Lecture, 3 hours; studio, 3 hours; screening, 3 hours. Prerequisite(s): none. Explores issues and skills of video/film/media art based in production, history, and theory of the moving image. Introduces basic production, editing concepts and techniques of live-action production, storyboards, image editing, and final authoring. Examines the moving image through installation, documentary, experimental film, video art, sound art, and performance. Cross-listed with MCS 004.

ART 005 Beginning Sculpture and Three-Dimensional Design (4) Lecture, 3 hours; studio, 3 hours. Prerequisite(s): none. Introduction to the basic skills required to make sculpture and other sculptural objects. Covers concept building, planning, design, brainstorming, materials, techniques, and basic contemporary sculpture history and theory. Lectures address work of contemporary artists and contemporary concepts of three-dimensional design. Studio assignments introduce new concepts and materials. Equipment is provided.

ART 006 Introduction to Contemporary Critical Issues in Art (4) Lecture, 3 hours; discussion, 1 hour. Examines basic principles and methodologies of theory as applied to the interpretation and creation of works of art. Includes screenings. Cross-listed with MCS 006.

ART 008 Current Topics in Contemporary Art (4) Lecture, 3 hours; activity, 3 hours. Examines visual arts as contemporary phenomenon. Includes study of recent exhibitions of contemporary art, the way art is culturally distributed, and the ideological and conceptual dialogue surrounding significant contemporary art. Encourages visits to nearby museums and major art galleries.

ART 009 Introductory Web-Based Art: Site Creation and Navigation (4) F Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): none. An introduction to the technology and critical issues of Web-based art. Covers Web-site creation software and conceptual and creative navigation. Emphasis is on contemporary issues of non-object, byte-based art practice. Zaki

ART 032 Sophomore Workshop (4) Lecture, 3 hours; studio, 3 hours. Introduces art majors to the importance of interdisciplinary work, independent projects, critical analysis in a group critique situation, exhibition preparation and considerations of presentation of their work through written and spoken language. Prepares art majors for upper division coursework.

ART 065 Introduction to Digital Painting and Drawing: Painting Without a Trace (4) Lecture, 3 hours; laboratory, 4 hours; individual study, 2 hours. An introduction to digitally based painting and drawing. Focuses on use of digital software such as Adobe Photoshop and Illustrator to create paintings without the use of traditional paint. Explores the back and forth relationship this new medium and traditional painting, drawing, and photography in history and practice.

ART 066 Introduction to Three-Dimensional Digital Modeling and Animation (4) Lecture, 3 hours; laboratory, 3 hours; individual study, 2 hours. Covers basic skills necessary to create three-dimensional digital images and models. Emphasizes techniques for polygon and curved-surface modeling and photorealistic image creation through material shading, texturing, and lighting. Introduces basic scripting methods to create complex models and images with Autodesk Maya or equivalent. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination.

ART 067 Three-Dimensional Digital Modeling and Animation (4) Lecture, 3 hours; laboratory, 3 hours; individual study, 2 hours. Prerequisite(s): ART 066. Builds advanced skills for three-dimensional modeling. Introduces basic computer animation techniques within the framework of existing software. Techniques include rigging skeletons for character models, key-framing, and special effects animation using Autodesk Maya software or equivalent. Teaches proficiency in analogous scripting operations. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 8 units.

ART 070 (E-Z) Digital Imaging Software for the Visual Arts (2) Lecture, 10 hours per quarter; laboratory, 30 hours per quarter; individual laboratory, 4 hours per quarter. Trains the student in basic digital image manipulation software skills in preparation for digital image applications across varied media. E. Introduction to Image Manipulation (Photoshop); F. Introduction to Video Editing (Final Cut Pro, Avid, Media 100); G. Introduction to Web Authoring (Dreamweaver, QuickTime); I. Introduction to Graphic Design and Desktop Publishing (Quark). Each segment is repeatable as its topics change to a maximum of 8 units.

ART 071 (E-Z) Photographic Materials and Processes (2) Lecture, 15 hours per quarter; laboratory, 15 hours per quarter. Prerequisite(s): ART 003 or consent of instructor. In-depth instruction of conventional (i.e., nondigital) photographic processes. Instruction is primarily technical; involves some discussion of application to contemporary art. F. View Camera Workshop; K. Technical Issues of Black and White Photography; M. Technical Issues of Color Photography; N. Intermediate Technical Aspects of Black and White Photography; O. Intermediate Technical Issues of Film-Based Digital Photography. Segments are repeatable.

ART 075 (E-Z) Sculpture Materials and Processes (2) Workshop, 10 hours per quarter; laboratory, 3 hours. Each topic focuses on the fundamental aspects of material/medium in the art-making process. Provides in-depth understanding for the beginning sculpture student and a project-derived technique. E. Metal; F. Mold-Making; G. Plaster and Clay; J. Wood. Each segment is repeatable to a maximum of 8 units.

Upper-Division Courses

ART 102 Intermediate Drawing (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): ART 001 and ART 002 or equivalent and consent of instructor. An intermediate course of study. Subject: primarily still life, landscape and non-figurative images; purpose: a fuller understanding of the technical and expressive aspects of drawing. Studio exercises and in-studio lectures. Course is repeatable to a maximum of 8 units with consent of instructor.

ART 103 Advanced Drawing (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): ART 102: Intermediate Drawing, or equivalent and consent of instructor. An advanced course of study in drawing techniques and the employment of drawing motions as a terminal use of means of artistic expression. Course is repeatable to a maximum of 12 units.

ART 104 Life Drawing (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): ART 001 and ART 002 or equivalent and consent of instructor. Media to be pencil, charcoal, pen and ink; subject, primarily the figure; purpose, a fuller understanding of the figure and figure composition; method combines lectures with in-studio instruction, outside assignments. Course is repeatable to a maximum of 12 units.

ART 110 Intermediate Painting (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): ART 110 and consent of instructor. Advanced studio in painting. Focuses on selected special techniques or approaches to painting. E. Supports, Grounds, Underpainting, and Blending; F. Glazing, Varnishing, and Layering; G. Big Collaborative Painting; I. All Paint. Each segment is repeatable to a maximum of 12 units.

ART 111 Advanced Painting (4) Lecture, 2 hours; studio, 2 hours. Prerequisite(s): ART 110 and consent of instructor. Advanced studio in painting. Focuses on selected special techniques or approaches to painting. E. Supports, Grounds, Underpainting, and Blending; F. Glazing, Varnishing, and Layering; G. Big Collaborative Painting; I. All Paint. Each segment is repeatable to a maximum of 12 units.

ART 112 (E-Z) Painting Materials and Processes (2) Workshop, 1 hour; studio, 2 hours. Prerequisite(s): upper-division standing in studio or consent of instructor. Focuses on selected special techniques or approaches to painting. E. Supports, Grounds, Underpainting, and Blending; F. Glazing, Varnishing, and Layering; G. Big Collaborative Painting; I. All Paint. Each segment is repeatable to a maximum of 12 units.

ART 115 Intermediate Sculpture (4) Lecture, 3 hours; studio, 3 hours. Prerequisite(s): ART 005. Develops the necessary technical skills for making sculpture. Through project assignments, students explore associations between materials, forms, and context to construct or deconstruct ideas. Audiovisual presentations, readings, and group critiques survey twentieth-century sculpture and more recent practices. Examines the artist’s role in the cultural landscape of spectacle and entertainment. Course is repeatable to a maximum of 12 units.

ART 123 Chromatography (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing in Art; one of the following beginning studio courses: ART 001, ART 002, ART 003, ART 004 or ART 005. Introduces philosophical, theoretical, and scientific histories relating to the understanding and development (use) of color in aesthetic production alongside material history of chemical industry in the 19th and 20th centuries and recent discoveries of color and technology. Focuses on color as material and perception and exploring fluidity in meaning, production, and experience.

ART 125 Sculpture Hybrid: Furniture, Architecture, Decoration (FAD) (4) Lecture, 3 hours; laboratory, 3 hours; consultation, 1 hour. Prerequisite(s): ART 115; or consent of instructor. Introduces the sculptural object that exists as or in relationship to furniture, architecture, and interior decoration. Includes an overview of work that defies classification as art or design such as the Bauhaus movement, through utopian American mid-century design and architecture and Italian-based Memphis design, to
contemporary art-making practices. Explores theoretical challenges inherent in this art-making strategy.

**ART 131 Intermediate Photography and Digital Technology (4)** Lecture, 3 hours; laboratory, 4 hours. Prerequisite(s): ART 003 or consent of instructor. The complete cycle of photographic production from scanning to output. Emphasizes developing skill in creating digital photographic imagery for creative and cultural expression. Some digital equipment are provided. A 35mm single lens reflex (SLR) or digital cameras and flash drives are required. Course is repeatable to a maximum of 8 units. Cross-listed with MCS 131.

**ART 132 Junior Art Workshop (4)** Lecture, 3 hours; studio, 3 hours. Prerequisite(s): ART 006/MCS 006, ART 032, upper-division standing in Art; or consent of instructor. Prepares junior art majors for their senior course work. Emphasizes interdisciplinary work, independent projects, critical analysis in a group critique situation, exhibition preparation, and writing a preliminary artist statement. Letter Grade Only.

**ART 133 Senior Art Workshop (4)** Lecture, 3 hours; studio, 3 hours. Prerequisite(s): ART 001 and ART 002. Exploration into experimental methods for creating an image; techniques of frottage, collage, photo transfer, modeling and mold making, assemblage.

**ART 135 Intermedia: Art, Media, and Culture (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Study of performance, photography, video, film, television, installation, and/or other intermedia. Focuses on intermedial artworks and how they are constructed, documented, analyzed, and viewed in the larger context of culture. Cross-listed with MCS 135.

**ART 136 Installation and Site-Specific Art (4)** Lecture, 3 hours; studio, 3 hours. Prerequisite(s): consent of instructor. Focuses on performance, photo installation, computer art, video/film, site-specific installation, sculpture, and/or other intermedia. Concentrates on production and analysis of site-specific art. Course is repeatable to a maximum of 8 units. Cross-listed with MCS 136.

**ART 137 Advanced Sculpture (4)** F, W, S, Lecture, 3 hours; studio, 3 hours. Prerequisite(s): ART 115. Focuses on self-directed individual sculpture projects. Course is repeatable to a maximum of 12 units.

**ART 139 Intermediate Web-Based Art: Animation, Audio, and Interactivity (4)** W Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ART 009 or consent of instructor. Explores the conceptual and creative possibilities of Web-based animation, audio, and interactive software at the intermediate level. Addresses the complex interconnections and unique qualities of Internet-based art.

**ART 140 Intermediate Analog Photography (4)** Lecture, 3 hours; studio, 4 hours. Prerequisite(s): ART 003, ART 071K is recommended (may be taken concurrently); or consent of instructor. Focuses on developing individual creative approaches in analog photography and strengthening controls and techniques in black and white printing. Requires students to provide their own analog film cameras. Course is repeatable to a maximum of 12 units.

**ART 143 Advanced Digital Imaging Technology (4)** Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ART 003, ART 131/MCS 131. Covers advanced digital imaging technologies such as large-format scanning, printing, color correction, retouching, and color management. Emphasizes the development of technical skills. Zaki

**ART 145 Advanced Photography Workshop (4)** Lecture, 3 hours; studio, 4 hours. Prerequisite(s): ART 131/MCS 131, ART 140 or consent of instructor. Study of experimental advanced photographic techniques. Includes examination of critical and creative problems. Course is repeatable to a maximum of 12 units.

**ART 146 (E-Z) Topics in Advanced Photography (4)** Lecture, 2 hours; studio, 4 hours. Prerequisite(s): ART 131/MCS 131, ART 140 or consent of instructor. An advanced studio course designed to focus on selected special techniques of or approaches to photography. Subject matter is determined by the instructor and may vary. K. Polaroid Photography; L. The Book and the Photograph; M. Dye Transfer; N. Current Art Practice. Does not cover software training or commercial graphic design.

**ART 169 (E-Z) Digital Imaging Software for the Visual Arts: Intermediate Software Skills (1)** Lecture, 6 hours per quarter; laboratory, 12 hours per quarter. Prerequisite(s): ART 007/MCS 007 or consent of instructor. Covers digital imaging application across varied media. Includes Web design, digital video editing, video compositing and rendering, digital photography, and desktop publishing. Targets specific software that aid in developing digital production skills that can be applied to a wide array of intermediate course work. E. Image Manipulation (Adobe Photoshop). F. Video Editing (Final Cut Pro, Adobe Media 100); G. Web Authoring (Dreamweaver, QuickTime); J. Graphic Design and Desktop Publishing (Quark). Each segment is repeatable to a maximum of 3 units.

**ART 171 Intermediate and Advanced Sculpture and Digital Technology (4)** Lecture, 2 hours; laboratory, 4 hours; individual study, 2 hours. Prerequisite(s): ART 005, ART 066. Covers intermediate and advanced three-dimensional modeling and printing resulting in sculpture derived entirely from the computer. Emphasizes individual projects with the potential to create both computer-based models and material-based sculptures. Discusses new digitally based sculptural possibilities in relation to historical sculptural practice. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 8 units.

**ART 175 Advanced Digital Workshop (4)** Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ART 131/MCS 131 or ART 139 or ART 150/MCS 150. Designed to encourage the development of individual projects utilizing digital art technology. Areas of inquiry may include, but are not limited to, digital imaging, Web-based works, forms of digital publishing, digital video, and digital multimedia installation. Involves laboratory exercises, lectures, discussion of art, and exhibitions, and self-directed assignments. Course is repeatable to a maximum of 12 units.

**ART 180 Contemporary Issues and Practice (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): any lower-division studio art course; or self-directed study around a sequence of three to six visiting artists, authors, and critics. Visitor presentations will be augmented by relevant articles and in-class presentations. Students generate written and oral responses to specific artists and topics to be determined by the instructor. Course is repeatable to a maximum of 12 units.

**ART 185 Senior Thesis Seminar (4)** Seminar, 3 hours; preparatory work, 3-6 hours. Prerequisite(s): senior standing in Art; 32 units of upper-division studio art courses; review of preliminary portfolio two quarters before intended enrollment. Independent work and group seminars; completion of thesis statement and presentation of a finished body of work to faculty thesis committee. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ART 185 or ART 195.
ART 190 Special Studies (1-5) To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Total credit may not exceed 8 units.

ART 195 Senior Thesis (4) Independent work, 12 hours. Prerequisite(s): completion of 32 units of upper-division studio art courses, review of a preliminary portfolio two quarters prior to intended enrollment; or consent of faculty advisor. The student produces and presents a finished body of work to the faculty. Credit is awarded for only one of ART 185 or ART 195.

ART 198-1 Individual Internship (1-12) field, 2 hours per unit. Prerequisite(s): consent of instructor and upper-division standing. Work with an appropriate professional individual or organization to gain experience and skills in the student's chosen art specialty. Letter grade or Satisfactory (S)/No Credit (NC). Repeatable to a total of 16 units; maximum of 4 units count toward major in Art.

Graduate Courses

ART 230 Contemporary Critical Issues (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Focused analysis of contemporary issues of art and media practice communications theory. Investigates painting, sculpture, photography, digital practice, film, video, fiction, feminism, multicultural studies, and gay and lesbian studies. Involves readings, screenings, visiting artists or critics, and field trips. Course is repeatable to a maximum of 12 units.

ART 240 Current Topics in Critical Theory (4) Seminar, 3 hours; extra reading, 3 hours; outside research, 2-3 hours. Prerequisite(s): graduate standing. ART 006/ MCS 006 and ART 160 or equivalents or consent of instructor. Selected theoretical systems as applied to modern, postmodern, and post-postmodern art. Course is repeatable as topics change to a maximum of 12 units.

ART 285 Peer Critique (4) F, W, S Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides a serious and sophisticated environment for peer critique of studio production. Involves readings, screenings, and field trips. Course is repeatable as content changes.

ART 290 Directed Studies (1-6) F, W, S Individual study, 3-18 hours; studio, 3-6 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Individual study of selected topics directed by a faculty member. Course is repeatable as topics change.

ART 292 Concurrent Studies in Art (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor. Taken concurrently with a 100-series course but on an individual basis. Involves research, critique, studio production, or written work commensurate with the number of units elected. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ART 293 Directed Individual Studio Production (1-4) Studio, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor; graduate advisor. Independent study with faculty member to evaluate artwork, assess progress and provide criticism. Topics may include historical precedents, theoretical readings and consultation on production or presentation of artworks. Course is repeatable as content changes.

ART 299 Research for Thesis (1-4) Outside research, 1-6 hours; studio, 3-6 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor; satisfactory completion of 28 graduate units in the Masters of Fine Arts program. Individual research with faculty advisor in preparation for comprehensive exhibition for the degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

ART 302 Teaching Practicum (1-4) Practicum, 2-8 hours; consultation, 1-4 hours. Prerequisite(s): graduate standing. Provides supervision of teaching in undergraduate Art courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Art History

Subject abbreviation: AHS

College of Humanities, Arts, and Social Sciences

Jeanette Kohl, Ph.D., Chair
Department Office, 225 Arts (951) 827-5919; arthistory.ucr.edu

Professors
Malcolm Baker, Ph.D. Distinguished Professor
Conrad Rudolph, Ph.D. Distinguished Professor

Professors Emeriti
Dericksen M. Brinkerhoff, Ph.D.
François Forster-Hahn, Ph.D.
Ginger C. Hsü, Ph.D.
Thomas O. Pelzel, Ph.D.

Associate Professors
Johnnes Endres, Dr. phil.habil. (Art History/ Comparative Literature and Languages)
Liz Kotz, Ph.D.
Jeanette Kohl, Ph.D.
Susan Laxton, Ph.D.
Patricia A. Morton , Ph.D.
Kristoffer Neville, Ph.D.
J. P. Park, Ph.D.
Jason Weems, Ph.D.

Assistant Professors
Aleca LeBlanc, Ph.D.

Cooperating Faculty
Karl A. Taube, Ph.D. (Anthropology)

Major

The Art History major provides the framework for the critical study of a wide range of global visual culture from different periods of human history and in all media.

The department works closely at both the undergraduate and graduate levels with the UCR California Museum of Photography to give students an opportunity to work with archival and art photographs and with the Jack and Marilyn Sweeney Art Gallery to provide access to cutting-edge multimedia works of art and to give the possibility of gaining curatorial experience.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Undergraduate Studies section.

Major Requirements

Art History Major

The major requirements for the B.A. in Art History are as follows: (52 units)

1. Lower-division requirements (12 units): one lower-division course in each of the three major areas. Note: No course that appears in more than one area can be repeated
   a) Pre-modern: AHS 015, AHS 017A, AHS 017B, AHS 027/ANTH 027/LNST 027
   b) Early Modern: AHS 015, AHS 017B, AHS 017C, AHS 023, AHS 028/LNST 028
   c) Modern/Contemporary: AHS 008, AHS 017C, AHS 020/MCS 023, AHS 021/URST 021, AHS 023, AHS 028/LNST 028

2. Upper-division requirements (40 units)
   a) AHS 192
   b) Two courses in each of the major areas (24 units). Note: No course that appears in more than one area can be repeated.

(1) Pre-modern: AHS 102/ANTH 102, AHS 112/ANTH 151/LNST 112, AHS 116/LNST 116, AHS 117/ANTH 157/LNST 117, AHS 138/AST 138, AHS 139/AST 139, AHS 143/AST 143, AHS 144/AST 144, AHS 147, AHS 148, AHS 155, AHS 156, AHS 157, AHS 159

(2) Early Modern: AHS 113, AHS 116/LNST 116, AHS 117/ANTH 157/LNST 117, AHS 134/HISE 134, AHS 138/AST 138, AHS 139/AST 139, AHS 143/AST 143, AHS 144/AST 144, AHS 146/AST 147, AHS 160, AHS 161, AHS 162, AHS 163, AHS 164, AHS 165/HISE 133/WMST 170, AHS 166/WMST 169, AHS 167, AHS 168, AHS 169, AHS 170, AHS 171, AHS 172, AHS 173, AHS 174, AHS 175, AHS 177, AHS 178/URST 178, AHS 179


3. Twelve (12) elective units of upper-division course work in Art History chosen from the three major areas:
Art History/Administrative Studies Major

The major between the departments of Art History and Business Administration provides students with training in management and the history of art. The major requirements for the B.A. degree in Art History/Administrative Studies are as follows:

Art History requirements (48 units)

1. Lower-division requirements (12 units): one lower-division course in each of the three major areas. Note: No course that appears in more than one area can be repeated
   a) Pre-modern: AHS 015, AHS 017A, AHS 017B, AHS 018/AST 018, AHS 027/ANTH 027/LNST 027
   b) Early Modern: AHS 015, AHS 017B, AHS 017C, AHS 018/AST 018, AHS 023, AHS 028/LNST 028
   c) Modern/Contemporary: AHS 008, AHS 017C, AHS 020/MCS 023, AHS 021/URST 021, AHS 023, AHS 028/LNST 028

2. Upper-division requirements (36 units):
   a) AHS 192, Junior and Senior Seminar (4 units)
   b) Two courses (24 units total) in each of the major areas (Pre-modern, Early Modern, Modern/Contemporary) Note: No course that appears in more than one area can be repeated.
   c) Eight (8) elective units of upper-division course work in Art History chosen from the three major areas.

Administrative Studies requirements (37 units)

1. Lower-division requirements (17 units)
   a) BUS 010, BUS 020
   b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   c) CS 008 (may be used to satisfy breadth requirements)

2. Upper-division requirements (20 units)
   a) Two courses (8 units) from the list below:
      (1) ECON 102 or ECON 104A or ECON 130 or ECON 162/BUS 162
      (2) PSYC 140 or PSYC 142
      (3) SOC 150 or SOC 151 or SOC 171
      (4) POSC 181 or POSC 182 or POSC 183
      (5) ANTH 127 or ANTH 131
     These two courses must be outside the discipline of Art History and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.
   b) A three-course track (12 units) in Business Administration courses from one of the following:
      (1) Organizations (General): BUS 100, BUS 107, BUS 176/SOC 176, BUS 158/ANTH 105, SOC 150, SOC 151
      (2) Human Resources Management/Labor Relations: BUS 100, BUS 107, BUS 152/ECON 152, BUS 153/ECON 153, BUS 155, BUS 157, PSYC 142
      (3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, POSC 186
      (4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114, BUS 117
      (5) Managerial Accounting/Taxation: BUS 108, and two from BUS 166, BUS 168A, BUS 168B
      (7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
      (8) Management Information Systems: BUS 101, BUS 171, BUS 173
      (9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127
   Note: In filing the dual requirements of the major students may not count more than two courses toward both parts of their total requirements (Art History requirements and Administrative Studies requirements).

Art History/Religious Studies Major

The Art History/Religious Studies Major combines the disciplinary interest in the history of the visual arts with its related religious content and background.

Major Requirements

The major requirements for the B.A. degree in Art History/Religious Studies are as follows:

Asian Concentration (52 units)

1. Lower-division requirements (12 units)
   AHS 015, AST 030/CHN 030, RLST 005

2. Upper-division requirements (40 units)
   a) Art History (16 units): AHS 140/AST 140, AHS 141/AST 141, AHS 143/AST 143, CPLT 141
   b) Religious Studies (24 units): choose from RLST 101, RLST 103, RLST 105, RLST 106, RLST 142/AST 142/CHN 142, RLST 144/CPLT 144
   3. Optional 190-level work in either Art History or Religious Studies

Student-designed Comparative Concentration (52 units)

1. Lower-division requirements (12 units)
   a) Art History, choose at least 4 units: AHS 015, AHS 017A, AHS 017B, AHS 017C, AST 030/CHN 030
   b) Religious Studies, choose at least 4 units: RLST 005, RLST 007, RLST 010

2. Upper-division requirements (40 units)
   a) Art History, choose at least 12 units: AHS 140, AHS 141, AHS 143, AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 164, AHS 171, AHS 172, CPLT 141
   b) Religious Studies, choose at least 12 units: RLST 100, RLST 101, RLST 103, RLST 105, RLST 106, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136, RLST 142/AST 142/CHN 142, RLST 144/CPLT 144

3. Optional 190-level work in either Art History or Religious Studies

Western Concentration (At least 52 units)

1. Lower-division requirements (16 units)
   a) Art History: AHS 017A, AHS 017B, AHS 017C
   b) Religious Studies, choose at least 4 units: RLST 007, RLST 010

2. Upper-division requirements (36 units)
   a) Art History (16 units): choose from AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 164, AHS 171, AHS 172
   b) Religious Studies (20 units): choose from RLST 100, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136

3. Optional 190-level work in either Art History or Religious Studies

Minor

The minor upper-division requirements are designed to encourage study across art-historical areas, while providing the opportunity for some concentration in one specific area.

Requirements for the minor in Art History are as follows:

1. Lower-division requirements (8 units): One lower-division course from two of the three major areas. Note: No course that appears in more than one area can be repeated.
   a) Pre-modern: AHS 015, AHS 017A, AHS 017B, AHS 018/AST 018, AHS 027/ANTH 027/LNST 027
   b) Early Modern: AHS 015, AHS 017B, AHS 017C, AHS 018/AST 018, AHS 023, AHS 028/LNST 028
   c) Modern/Contemporary: AHS 008, AHS 017C, AHS 020/MCS 023, AHS 021/URST 021, AHS 023, AHS 028/LNST 028

2. Upper-division requirements: Sixteen (16) upper-division units selected from the three areas listed under the major (No more than 8 units may be selected from any one area.)
Graduate Program

The Department of History of Art offers the M.A. and Ph.D. in Art History.

For graduate study, the department offers upper-division and graduate courses in the history of European, U.S., Central and Latin American, and Asian visual culture from ancient to contemporary times (including the history of photography), emphasizing the interpretation of visual culture in its historical and cultural context.

Admission

All applicants to these programs must have completed a bachelor's degree or its approved equivalent from an accredited institution and have attained an undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applications are accepted in the Fall quarter only. All applicants must submit scores from the Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally, each applicant must submit a writing sample and three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application. Applicants holding an M.A. from another institution take fewer courses and advance to candidacy more quickly, as specified below. Upon entering the program, students consult with the Graduate Adviser regularly to discuss their course of study and progress in the program.

Master's Degree

The terminal M.A. program will allow students to explore the academic study of art history, to pursue careers requiring some graduate education (such as museum education), or to prepare for admission to a Ph.D. program.

Course Work

48 units of course work are required for the M.A. degree, which may be awarded upon a student upon finishing the requirements if the student does not hold an M.A. in Art History. At least 32 of these units must be in graduate level courses. The Department requires students to take a two-quarter Proseminar (AHS 251A and AHS 251B) in the first year and a one-quarter professional development and thesis writing course (AHS 280). In addition to AHS 251A, AHS 251B and AHS 280, students must take two graduate seminars in their area of specialization, two graduate seminars outside of their chosen area, two additional graduate level courses and six additional graduate or upper-division courses.

Students who enter with an M.A. degree complete a minimum of 20 units, 12 of which must be at the graduate level. These courses include AHS 251A, AHS 251B, AHS 280, one graduate seminar in their area of specialization, and two graduate or upper-division courses. Students may also take courses with the approval of the graduate advisor in visual culture offered by the department of Anthropology, Media and Cultural Studies, or other departments or programs at UCR or other UC campuses.

Students may take as many units of AHS 297 and AHS 299 (thesis research and writing) as desired, but only 12 of these units may be applied to the 32 graduate units required for the degree.

The thesis is the culminating requirement for the degree. Students must complete a successful oral discussion (the "Thesis Meeting") prior to filing the completed thesis. The thesis should be filed within one year after completing all formal course work.

Language Requirement

Students must demonstrate proficiency in a research language (in addition to English) appropriate to their area of study. The relevant language is chosen in consultation with the graduate advisor and, if possible, the potential M.A. thesis advisor. Ideally, the student should acquire this language proficiency before entering the program. If this is not the case, the language requirement should be fulfilled before the fourth quarter in residence. This requirement is meant to provide the student with an understanding of a foreign language so that the student can perform graduate level research in this language.

To satisfy the language requirement, the student has several options, which are outlined in the department's Graduate Student Handbook. Most commonly, students, while enrolled as graduate students, complete, with a grade of "B" or better, a UC language course or courses equivalent to the following UCR classes:

- CHN 006
- FREN 004 or FREN 009A and FREN 009B
- GER 004 or GER 001R and GER 002R
- ITAL 004
- JPN 006
- SPN 006

Doctoral Degree

The Ph.D. will prepare students for academic work as researchers, university instructors, and curators in their fields of expertise.

Admission

The Ph.D. program is conceived in two stages: coursework and candidacy. Students who already hold an M.A. in Art History are admitted Post-M.A., but are required to complete one year of coursework (20 units), including three graduate seminars, as well as the language requirements, and the field review as stated in the program description below. Students admitted post-M.A. usually advance to candidacy after one year of coursework.

Course Work

Candidates for the Ph.D. degree entering with a baccalaureate degree complete a minimum of 60 units of required course work, 36 of which must be at the graduate level. The Department requires students to take a two-quarter Proseminar (AHS 251A and AHS 251B) in the fall of the first year and a one-quarter professional development and thesis writing course (AHS 280). In addition to AHS 251A, AHS 251B and AHS 280, students must

Students who enter with an M.A. degree complete a minimum of 20 units, 12 of which must be at the graduate level. These courses include AHS 251A, AHS 251B, AHS 280, one graduate seminar in their area of specialization, and two graduate or upper-division courses. Students may also take courses with the approval of the graduate advisor in visual culture offered by the department of Anthropology, Media and Cultural Studies, or other departments or programs at UCR or other UC campuses.

Students who already hold an M.A. in Art History / 108

Admission

The Ph.D. program is conceived in two stages: coursework and candidacy. Students who already hold an M.A. in Art History are admitted Post-M.A., but are required to complete one year of coursework (20 units), including three graduate seminars, as well as the language requirements, and the field review as stated in the program description below. Students admitted post-M.A. usually advance to candidacy after one year of coursework.

Course Work

Candidates for the Ph.D. degree entering with a baccalaureate degree complete a minimum of 60 units of required course work, 36 of which must be at the graduate level. The Department requires students to take a two-quarter Proseminar (AHS 251A and AHS 251B) in the fall of the first year and a one-quarter professional development and thesis writing course (AHS 280). In addition to AHS 251A, AHS 251B and AHS 280, students must take two graduate seminars in their area of specialization, two graduate seminars outside of their chosen area, two additional graduate level courses and six additional graduate or upper-division courses.

Students who enter with an M.A. degree complete a minimum of 20 units, 12 of which must be at the graduate level. These courses include AHS 251A, AHS 251B, AHS 280, one graduate seminar in their area of specialization, and two graduate or upper-division courses. Students may also take courses with the approval of the graduate advisor in visual culture offered by the department of Anthropology, Media and Cultural Studies, or other departments or programs at UCR or other UC campuses.

Sixth-Quarter Review

All Ph.D. students undergo a comprehensive review no later than the sixth quarter of enrollment in the program, based on a portfolio submitted by the student and advisor. The graduate studies committee reviews the student's record and makes one of the following recommendations: proceed, hold, or terminate. Students receiving a hold may reapply once, within three quarters. Students receiving a terminate may continue enrolling for no more than three quarters to complete M.A. requirements.

Only under extraordinary circumstances may a student continue enrolling for more than 9 quarters (including enrollment while an M.A. student at UCR) without permission to proceed to examinations.

Language Requirement

Ph.D. students are required to demonstrate competence in two foreign languages before advancement to candidacy. For some fields, additional languages may be required for mastery of the primary and secondary literature. The appropriate languages will be determined in consultation with the student's academic advisor and approved by the graduate advisor.

To satisfy the language requirements, the student has several options, which are outlined in the department's Graduate Student Handbook. Most commonly, students, while enrolled as graduate students, complete, with a grade of "B" or better, a UC language course or courses equivalent to the following UCR classes:

- CHN 006
- FREN 004 or FREN 009A and FREN 009B
- GER 004 or GER 001R and GER 002R
- ITAL 004
- JPN 006
- SPN 006

Written and Oral Qualifying Examination

The qualifying examination will take the form of written literature reviews, subsequently defended orally. In the second year of the doctoral program, each student will write a substantial literature review of the major field, with the expectation that the review of the major field will demonstrate a broad knowledge of the field in which the dissertation will make a contribution. The field review will then be
examined by the faculty and approved by the graduate committee no later than the end of the winter quarter in the third year.

Advancement to Candidacy

Advancement to candidacy is predicated on successful passage of the required coursework, language exams, and field reviews/oral exams. To advance to candidacy, a student must write a dissertation prospectus and pass a qualifying oral examination. The prospectus consists of a concise explanation of the rationale, scope, and method of the proposed dissertation, and should be prepared in consultation with the dissertation advisor, who must approve it before the oral qualifying exam can be scheduled. The oral examination, which is supervised by a faculty committee as stipulated in the regulations of the Graduate Division, concentrates on the students' preparation of writing a dissertation as indicated by the dissertation prospectus.

Dissertation and Final Oral Examination

A dissertation to be presented as prescribed by the Graduate Council is prepared under the direction of the candidate's dissertation committee. The dissertation itself must make a significant and original contribution to the field of art history, as demonstrated in a final oral examination or defense.

Normative Time to Degree including UCR M.A.

18 quarters counting time spent as UCR M.A. student or 15 quarters for those entering with an M.A. from another institution.

Lower-Division Courses

AHS 007 World Art: Images, Issues, and Ideas (4)
Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): none. An introduction to artistic achievements of the world's cultures and ways in which they can be viewed. Considers such issues as the use of artworks as historical documents; connections between "high art" and popular culture; and the relationship between artist, viewer, artistic tradition, and society.

AHS 008 Modern Western Visual Culture (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Focuses on broadly defined cultural practices in relation to painting, photography, video, architecture, and film. Introduces historical, aesthetic, and theoretical issues in twentieth-century visual culture, emphasizing political, social, and cultural themes relevant to contemporary life.

AHS 010 Topics in Art and Architectural History (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Explores significant themes and topics from the history of art and architecture around the world. Concentrates on particular subtopics to be announced in the Schedule of Classes. Course is repeatable as topics change to a maximum of 24 units.

AHS 013 Arts and Architecture of the Islamic World (4)
Lecture, 3 hours; discussion, 1 hour; outside research, 2 hours. Prerequisite(s): none. A survey of the major monuments and themes of the visual arts in the Middle East, North Africa, South Asia, and Spain, from the rise of Islam to the present day.

AHS 015 Arts of Asia (4)
Lecture, 3 hours; discussion, 1 hour; outside research, 2 hours. Prerequisite(s): none. A survey of the major monuments and themes of the visual arts of India, China, and Japan. Topics include recent archaeological discoveries, Buddhist art, Hindu sculpture and architecture, Zen in art, and the development of Asian pictorial art.

AHS 016 Introduction to the Body in Western Art (4)
Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): none. Introduces questions of the human body and how it was depicted and interpreted in works of art from Roman Antiquity to the present, familiarizing them with a broad range of artworks in their specific historical, cultural, medical, social, religious, political and intellectual contexts. Credit is awarded for only one of AHS 016 or AHS 133/ANTH 161/DNGE 129/GSST 130/HISE 149.

AHS 017A History of Western Art: Prehistoric to Byzantine (4)
Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): none. A survey of the visual arts from circa 1600 through the present. Includes the religious and political functions of art in the reestablishment of high civilization and the increased status of the individual artist. Credit is awarded for only one of AHS 017A or AHS 17HA.

AHS 017B History of Western Art: Medieval to Renaissance (4)
Lecture, 3 hours; discussion, 1 hour; extra reading, 1 hour; extra reading, 2 hours. Prerequisite(s): none. Surveys the visual arts of Europe in the Middle Ages and Renaissance. Includes the religious and political functions of art in the reestablishment of high civilization and the increased status of the individual artist. Credit is awarded for only one of AHS 017B or AHS 17HB.

AHS 017C History of Western Art: Baroque to Modern (4)
Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): none. Surveys the visual arts of Europe and America from circa 1600 through the present. Includes the religious and political roles of art, the rise of secular imagery, the increased role of women in the arts, the impact of popular culture and photography, and other new media in the visual arts. Credit is awarded for only one of AHS 017C or AHS 17HC.

AHS 020 Introduction to Media Art (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the impact of media technology on the visual arts, from photography and film to the Internet. Addresses mechanical reproduction, perception, gender, sexuality, identity, interactivity, cybernetics, and popular culture. Cross-listed with MCS 023.

AHS 021 Introduction to Architecture and Urbanism (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the built environment including buildings, gardens, and cities, examined in terms of historical, cultural, social, technological, and political factors. Emphasis is on examples from Southern California. Cross-listed with URST 021.

AHS 023 Introduction to American Art (4)
Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Surveys the art and visual culture of North America (primarily in the United States) from the first European contact to the present. Emphasizes visual representation as means for cultural encounter; the construction of race, class and gender, and the relationship between art, nation, and identity.

AHS 027 Art of Pre-Columbian America (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. A survey of the art and architecture of the ancient art of Mexico, Central America, and the Andean region of western South America. Discusses art of pre-Columbian America according to the three broad cultural regions of Mesoamerica, the lower part of central and southwestern South America, and the Andean area. Cross-listed with ANTH 027 and LNST 027.

AHS 028 Art and Architecture of Latin America (4)
Lecture, 3 hours; discussion, 1 hour; study abroad, 2 hours. Introduces Latin American art and architecture from the European conquest to the present. Topics include religious and secular art and architecture; hybridization of indigenous and imported styles; national styles after independence; Mexican murals; women artists; Latin American modernism; and Chicano and Border art. Cross-listed with LNST 028.

AHS 030 Rome: The Ancient City (4)
Lecture, 3 hours; extra reading, 3 hours. Traces the development of the city of ancient Rome. By studying the literary and historical evidence alongside the physical remains of the city—its buildings, streets, and historical and archaeological remains—this course seeks to introduce students to the Romans and to their importance for later ages. Cross-listed with CLA 017 and HIST 027.

Upper-Division Courses

AHS 107 Photography Since 1960 (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior or senior standing; or consent of instructor. A critical overview of major historical, social, and political issues in art photography since 1960. Topics include New Documentary, conceptual photography, the Pictures generation, institutional critique, identity, politics, the emergence of digital photography, and the cross-categorical expansion of the medium.

AHS 112 The Art of the Aztec Empire (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): AHS 027/ANTH 027/LNST 027 or upper-division standing or consent of instructor. An introduction to the art of the Aztec Empire. Studies architecture, sculpture, ceramics, painting, lapidary work, gold work, and feather work. Explores the relationship between art and ritual and art and the imperial state. Cross-listed with ANTH 151 and LNST 112.

AHS 113 Sixteenth-Century Mexico: An Art of Two Worlds (4)
Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. An introduction to the art of the first colonial century in Mexico. Investigates the translation of European art forms to the New World, the fate of indigenous traditions, and artistic change in the context of colonialism and evangelization.

AHS 114 History of Brazilian Art & Architecture (4)
Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour, written work, 1 hour. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. The history of Brazilian art and architecture from the nineteenth century to present. Explores visual culture including painting, sculpture, prints, murals, architecture, urbanism, landscape design, and installation art. Studies artworks and buildings through a social historical framework, taking into consideration topics like colonialism, modernization, underdevelopment, race, nationalism, internationalism, and globalization. Cross-listed with LNST 114.

AHS 115 Modern and Contemporary Art of Latin America (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. A study of Latin American art from circa 1900 to the present. Considers national and regional histories and artistic trajectories beginning with the advent of an artistic avant-garde. Investigates the relationships between European and Latin American developments. Cross-listed with LNST 115.

AHS 116 Architecture and Arts of the Andes (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. An introduction to architecture, urbanism, and related material culture of the Andes from ancient times to the present. Focuses on the diverse and rich architectural heritage of an important building center in the Americas. Addresses architecture's relationship to artistic and material production such as painting, pottery, sculpture, city planning, and textiles. Cross-listed with LNST 116.

AHS 117 Visual Culture of the Incas (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the art, architecture, and urban form of the Inca civilization. Examines how these elements influenced state formation, conquest, and resistance. Includes studies of urban plans, buildings, paintings,
AHS 120 Berlin Metropolis in Literature, Film, Music, and Art (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the metropolis Berlin as a gateway between the East and West. Explores topography of the city through film, art, music, and literary texts. Considers Berlin's dramatic transformations as a microcosm of Germany and Europe's troubled history in the twentieth century. Course conducted in English. Cross-listed with CPLT 111, EUR 120, GER 111, and MCS 178.

AHS 133 The Body in Western Art: Antiquity to Present (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing in one of the following majors: Anthropology, Art History, History/Administrative Studies, Gender and Sexuality Studies, History, History/Administrative Studies, History/Law and Society; or consent of instructor. Presents further questions and study of the human body and how it was depicted and interpreted in works of art from Roman Antiquity to the present, familiarizing them with a broad range of artworks in their specific historical, cultural, medical, social, religious, political and intellectual contexts. Cross-listed with ANTH 161, HISE 149, and HISE 149. Credit is awarded for only one of AHS 161 or AHS 133/ANTH 161/GS&T 130/HISE 149.

AHS 134 Art and Society: Patrons and Museums (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores how patrons and museums have influenced the production and reception of art. Topics include patronage, collecting, and audience for art in Renaissance Italy; modern American megaparons, such as the Gettys and Rockefellers; and multimedia museum programs used to educate a wider public in the visual arts. Cross-listed with HISE 134.

AHS 135 Postmedia Art (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Covers heterogeneous movements, theories, and practices from the 1960s to the present that have collectively challenged the doctrine of medium specificity. Topics may include dematerialization, conceptual and post-conceptual art, performance and body art, earthworks, process art, and experimental sound and radio.

AHS 136 History of Video Art (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Tracks the evolution of video art from the invention of the Portapak and early video collectives to the current age and of politics during the period of the revival of foreign classical traditions. Covers the production and uses of sculpture within eight-century British and French culture. Examines the role of art in the co-optation of the Church by the Empire and then in the aftermath of its fall.

AHS 137 History of Experimental Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. A survey of cinema outside of the economic, institutional, and aesthetic imperatives of mainstream film production. Covers alternative film movements including surrealism and dada, Soviet avant-garde, the Cine 16 Group, French new wave, North American avant-garde, and the artist's film. Cross-listed with MCS 138.

AHS 138 Arts of China (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of Chinese art and culture from the prehistoric to the contemporary. Cross-listed with AST 138.

AHS 139 The Arts of Buddhism (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the history, concepts, and arts of Buddhism. Emphasizes the transmission and cultural translation of pictorial arts within Asia and to Western worlds. Cross-listed with AST 139.
AHS 170 Baroque Architecture (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): Art History course or consent of instructor. Examines the development of architecture in Europe and the Americas from 1580 to 1750. Explores the concept of buildings and the city as a form of communication; the spread and reformulation of architectural ideas in new contexts; and the rise of the architectural profession.

AHS 171 The Church, the Court, and the People: Art in Seventeenth-Century Europe (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. A study of the domain and rights of figures of Italian, French, Spanish, Flemish, and Dutch Baroque art. Includes the works of Caravaggio, Bernini, Velazquez, and Rembrandt. Emphasizes the development of illusionistic ceiling decoration, the theoretical basis of Baroque art, and the sacred and political uses of art.

AHS 172 Baroque Rome (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. An in-depth examination of Roman art in the seventeenth century. Studies painting, sculpture, architecture, and urban planning in their political and religious contexts. Emphasizes the ecclesiastical and private patrons who transformed Rome into one of the world’s most important cities.

AHS 173 Rococo to Revolution: Art in Eighteenth-Century Europe (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Examines major developments in eighteenth-century painting, sculpture, and interior decoration from the emergence of the Rococo to the dawn of Neoclassicism. Explores the response of art to new forms of patronage, the ethos of eighteenth-century art, and how art functioned as social and political commentary.

AHS 175 Industry and Alienation: Late Nineteenth-Century American Art (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): an Art History course or upper-division standing or consent of instructor. A study of American art from 1840 to 1900. Focuses on social, political, and artistic issues related to industrialization. Explores themes in visual culture, the construction of an American identity, the role of fine arts in American society, and the tensions of class, gender, race, and ethnicity in American art.

AHS 176 Twentieth-Century Photography 1900-1960 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): Art History course or upper-division standing or consent of instructor. A study of documentary, photojournalism, and street photography. Explores the ideas about architecture and architectural production.

AHS 177 American Art: Colonial Period to 1900 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Explores painting and architecture in the United States from the colonial period to 1900.

AHS 178 The Modern City (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): Art History course or upper-division standing or consent of instructor. Examines the modern metropolitan landscape, including the history of industrial revolution to the present. Explores the history and theory of modern urbanism through case studies of metropolitan areas with a rich urban culture, architecture, and morphological features. Investigates approaches to the problems of the large urban agglomerations in the context of social, political, and cultural conditions. Cross-listed with URST 178.

AHS 179 Revolution, Reaction, and Revision: American Art between the World Wars (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): an Art History course or upper-division standing or consent of instructor. An in-depth study of American art and visual culture during the early twentieth century, focusing on the period between the two world wars. Traces artistic developments in painting, photography, cinema, and material culture. Explores the issues of race, class, gender, and regional identity as addressed in these media.

AHS 179A Honors History of Western Art: Prehistoric to Byzantine (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to AHS 017A. Surveys the visual arts of the ancient Near East and Egypt, the Greek world, and the Roman and Byzantine empires. Topics include the growth of urbanism, art as an expression of religious and political beliefs, and cultural contact as a source of artistic change. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of AHS 017A or AHS 179A.

AHS 179B Honors History of Western Art: Medieval to Renaissance (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to AHS 017B. Surveys the visual arts of Europe in the Middle Ages and Renaissance and the Renaissance. Provides a thematic history of the advance of experimental arts including painting, sculpture, photography, video, film, performance, installation, and new media art. Cross-listed with MJS 186.

AHS 180 Modern European Art I: Nineteenth Century (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Surveys painting and sculpture in Europe from the French Revolution to the Franco-Prussian War. Introduces the ideas and concepts of modern European art. Traces artistic developments from Neoclassicism to the emergence of Impressionism in a broad cultural, social, and political context.

AHS 181 Modern Art II: Art in Europe, 1870-1945 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Traces the history of the modern movement from Impressionism to the end of World War II. Focuses on the arts in their interrelationships to the political events and social conditions of the period. Emphasizes the persecution of modernism in Europe under fascism and communism.

AHS 182 Visual Art and Visual Theory after 1945 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Traces developments in all media within a historical and theoretical context. Focuses on the rise of postmodernism, analyzing work in relation to theories of representation and cultural identity.

AHS 183 Photography on Display (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Course varies according to exhibitions at the California Museum of Photography. Provides the necessary historical and theoretical background of the specific photographs on display. Addresses the wider museum context of the difference between working photographs, art photographs, and the politics of that designation. Course is repeatable as topics change to a maximum of 12 units.

AHS 184 Modern Architecture (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Explores modern architecture and its sources from 1800 to the present. Cross-listed with URST 184.

AHS 185 Architectural Theory from Vitruvius to Venturi (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Examines the development of architectural thought from Vitruvius to the present, emphasizing the modern period. Surveys the major themes of architectural theory and investigates the relationships between ideas about architecture and architectural production. Cross-listed with URST 185.

AHS 186 Media and Movements: Film, Video, Photography, and the Visual Arts (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Focuses on key cultural movements or developments in Europe and the United States from the 1920s to the 1980s. Provides a thematic history of the avant-garde and experimental arts including painting, sculpture, photography, video, film, performance, installation, and new media art. Cross-listed with MJS 186.

AHS 188 Nineteenth-Century Photography (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Examines the development of photography in the nineteenth century, examining technology, artistic practices, and social uses of this medium. Focuses on European and American materials, as well as traces the histories of portrait, landscape, scientific, and documentary photography.

AHS 189 (E-Z) Topics in Contemporary Art (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Addresses selected issues, movements, and artists of importance to international art history since the 1960s. E: Art since Conceptual Art. Each segment is repeatable as its topics change to a maximum of 12 units.

Special Studies (1-5) To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable to a maximum of 12 units.

AHS 191 California Modern Art (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): an Art History course or upper division standing or consent of instructor. Explores California visual expression from 1900 to 1980. Provides critical attention to the development of a purportedly unique California art and culture. Focuses on Southern California topics in order to take advantage of local and regional museums, collections, lectures, and events.

AHS 192 Junior and Senior Seminar in Art History (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing in Art History or Art History Administrative Studies. Critical study of selectior, or senior standing; or consent of instructor. Topics vary. Course is repeatable to a maximum of 12 units.

AHS 195H Senior Honors Thesis (1-4) Thesis, 3-12 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Independent research and preparation of a senior honors thesis completed under the supervision of a faculty member. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 8 units.
AHS 198-I Individual Internship (1-12) research, variable. Prerequisite(s): consent of instructor and upper-division standing. Individual study or apprenticeship in a museum, art library, or slide and photo archive in order to gain practical experience and skills for future professional work. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

**Graduate Courses**

**AHS 251A Proseminar in Historiography (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the history of the discipline of art history. Covers historiographic traditions from antiquity to the present.

**AHS 251B Proseminar in Methodology (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the history and methodologies of art history. Covers the models and approaches of different periods from Vasari to the present.

**AHS 252 History and Ideology of the Museum (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the history of collecting and the evolution of the museum as a cultural institution in the western world. Includes an investigation of sources, documents, and historiography complemented by a study of museums and collections in the Los Angeles area.

**AHS 260 Seminar in Latin American Art (4)** Seminar, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of Latin American art from the European conquest to the present. Course is repeatable as topics change.

**AHS 267 Seminar in Asian Art (4)** Seminar, 3 hours; outside research, 3 hours; research paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers special topics in Asian art. Course is repeatable as topics change.

**AHS 272 Seminar in Medieval Art (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers special topics in Medieval art. Course is repeatable as topics change.

**AHS 273 Seminar in Renaissance Art (4)** Seminar, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Special topics in Italian and/or Northern Renaissance art. Course is repeatable as topics change.

**AHS 274 Seminar in Seventeenth- and Eighteenth-Century Art (4)** Seminar, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Special topics in seventeenth- and eighteenth-century art. Course is repeatable as topics change.

**AHS 276 Seminar in Nineteenth-Century Art (4)** Seminar, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Special topics in the history and theory of nineteenth-century European and/or American art. Course is repeatable as topics change.

**AHS 277 Seminar in Twentieth-Century Art (4)** Seminar, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of twentieth-century European and/or American art. Course is repeatable as topics change.

**AHS 278 Seminar in Modern Architecture (4)** Seminar, 3 hours; outside research, 3 hours; research paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of twentieth-century architecture and urbanism. Course is repeatable as topics change.

**AHS 279 Seminar in American Art (4)** Seminar, 3 hours; outside research, 3 hours; research paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of American art, photography, and visual/material culture from the colonial period to the present. Course is repeatable as topics change.

**AHS 280 Seminar in Research, Critical Analysis, and Thesis Writing (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers advanced research that helps in conceptualizing a thesis topic, organizing and structuring material, and writing one chapter of the thesis. Examines research in different fields of the history of art. Explores scholarly issues from a diversity of specializations. Also provides strategic professional advice for career development. Course is repeatable as topics change.

**AHS 282 Seminar in New Media (4)** Seminar, 3 hours; outside research, 3 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of photography, film, video, and digital media. Course is repeatable as topics change.

**AHS 283 Seminar in History of Photography (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history of photography, with an emphasis on new theories and histories of photographic practice. Students encouraged to do research projects drawing on the collections of the UCR/California Museum of Photography. Course is repeatable as topics change.

**AHS 284 Seminar in Contemporary Art and Theory (4)** Seminar, 3 hours; individual study, 3 hours; research paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Studies selected topics in contemporary art, photography, and related media, with an emphasis on critical theories of representation and issues of practice. Course is repeatable as topics change.

**AHS 285 Getty Consortium Seminar (4)** F, W, S Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers the models and approaches of different periods from Vasari to the present. Course is repeatable.

**AHS 287 Curating as Critical Practice (4)** Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Initiates the process of bringing the work of the seminar into the public sphere. Students critique contemporary exhibition practice and develop an exhibition concept that successfully communicates the research and debates of the specific topic of study. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 12 units.

**AHS 290 Directed Studies (1-8)** research, variable. Prerequisite(s): consent of instructor. Independent work under a staff member's supervision in a particular field. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**AHS 292 Directed Research (1-6)** research, variable. Prerequisite(s): consent of instructor, completion of language requirement and one seminar. Research study or exploratory work toward the development of the thesis. Graded Satisfactory (S) or No Credit (NC).

**AHS 298-I Individual Internship (1-4)** research, variable. Individual study or apprenticeship in a museum, art library, or slide and photo archive in order to gain practical experience and skills for future professional work. Graded Satisfactory (S) or No Credit (NC). Repeatable to a total of 12 units. Not more than 8 units count toward the 40 units required for the M.A.

**AHS 299 Research for Thesis or Dissertation (1-12)** Thesis, 3-36 hours; variable hours. Prerequisite(s): consent of instructor, completion of language requirement and one seminar. Thesis or Dissertation research and writing. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**Professional Courses**

**AHS 301 Directed Studies in the Teaching of the History of Art (3)** Seminar, 2 hours; consultation, 1 hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluation required of new Art History Teaching Assistants. Covers instructional methods and classroom/section activities. Conducted by the Teaching Assistant Development Program and department faculty. Credit is not applicable toward degree unit requirements. Graded Satisfactory (S) or No Credit (NC).

**AHS 302 Teaching Practicum (1-4)** Lecture, 1-4 hours; clinic, 1 hour. Prerequisite(s): limited to departmental teaching assistants; graduate standing. Supervised teaching in upper- and lower-division Art History courses. Required of all Art History teaching assistants. Credit not applicable toward degree unit requirements. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**Asian Studies**

Subject abbreviation: AST

College of Humanities, Arts, and Social Sciences

Languages

- Ahmad Fawzi (Comparative Literature & Foreign Languages)
- Ahmad Fawzi
- Mariam Been Iann (Comparative Literature & Foreign Languages)
- Lynda Bell (History)
- David Biggs (History)
- Edward Chang (Ethnic Studies)
- Lucille Cha (History)
- Kelly Jeong (Comparative Literature & Foreign Languages)
- Ruhi Khan (Media & Cultural Studies)
- Jodi Kim (Ethnic Studies)
- John Kim (Comparative Literature & Foreign Languages)
- Perry Link (Comparative Literature & Foreign Languages)
- Margherita Long (Comparative Literature & Foreign Languages)
- René Lysloff, Chair
- Hendrik Maier (Comparative Literature & Foreign Languages)

Art History / Asian Studies / 112

Committee in Charge

- Muhammad Ali (Religious Studies)
- Mariam Been Iann (Comparative Literature & Foreign Languages)
- Lynda Bell (History)
- David Biggs (History)
- Edward Chang (Ethnic Studies)
- Lucille Cha (History)
- Kelly Jeong (Comparative Literature & Foreign Languages)
- Ruhi Khan (Media & Cultural Studies)
- Jodi Kim (Ethnic Studies)
- John Kim (Comparative Literature & Foreign Languages)
- Perry Link (Comparative Literature & Foreign Languages)
- Margherita Long (Comparative Literature & Foreign Languages)
- René Lysloff, Chair
- Hendrik Maier (Comparative Literature & Foreign Languages)
Major
The Asian Studies major affords students the opportunity to study Asia from an interdisciplinary perspective, drawing on courses and faculty from various departments of the College of Humanities, Arts, and Social Sciences. Students are strongly encouraged to consider participating in the Education Abroad Program offered through the UC in various Asian locales, including China, Taiwan, Hong Kong, Japan, Vietnam, Singapore, the Philippines, India, and Korea. Students may also participate in the undergraduate intercampus exchange program, which allows any UC student to apply for study for one term at other UC campuses. Both options provide rich opportunities to participate in additional course work on Asia that may be counted toward the major.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
The requirements for the B.A. degree in Asian Studies are as follows:

Students can focus on any aspect of Asia and/or Asian America, and are strongly encouraged to select a disciplinary focus in Anthropology, Art History, Comparative Literature and Foreign Languages, Ethnic Studies, Music and Culture, Media and Cultural Studies, or Religious Studies. Students may choose to focus on the historical interactions and cultural similarities and differences among East, Northeast, South, Southeast, West, and Central Asia peoples, including those constituting transnational and/or diaspora communities throughout the world. Students interested in Asian diaspora communities are also encouraged to consider a secondary disciplinary focus in Ethnic Studies, leading to a minor in Asian American Studies.

All students are required to enroll in at least 4 units of AST 195 and write a senior thesis during the first or second quarter of their senior year. (This is a substantial paper based on original research under the supervision of a faculty member of the Asian Studies program.)

1. Lower-division requirements (12 units plus language requirement)

a) Two years of basic language instruction in any Asian language (This requirement may be filled by language courses currently offered at UCR or through approved summer language programs. In some cases, the second year requirement may be waived with the approval of the Asian Studies Committee in Charge)

b) At least 12 units from the following:
   - AHS 015, AST 022/ MCS 022/ JPN 022, AST 023/ CPLT 023/ JPN 023, AST 030/ CHN 030, AST 034/ JPN 034, AST 040/ CHN 040, AST 045 (E-Z)/ HIST 045 (E-Z), AST 046/ CHN 046, AST 046W/CHN 046W, AST 047/KOR 047/ MICS 047, AST 050/ UP 056, AST 062/ CPLT 062/ SEAS 062, AST 063/ CPLT 063/ SEAS 063, AST 064/MICS 049/ SEAS 064/ VNM 064, AST 065/ SEAS 065, AST 090, CPLT 029, ESTT 005, ESTT 005H, HIST 030, HIST 044/RLST 044, HIST 044W/RLST 044W, JPN 035, KOR 042, RLST 005, RLST 005H

2. Upper-division requirements (40 units)

Students are required to enroll in a minimum of one course each from three of the following areas of emphasis.

a) Asian America: AST 124/ MUS 124, ENGL 139, ENGL 139T, ETST 106, ETST 110 (E-Z), ETST 133, ETST 136, ETST 137/SEAS 137, ETST 138, ETST 139, ETST 140, ETST 143A/SEAS 143A, ETST 143B/SEAS 143B, ETST 144, ETST 150, SOC 136

b) China: AHS 143/AST 143, AST 107/CHN 107/RLST 107, AST 135/CHN 135, AST 136/CHN 136, AST 142/ CHN 142/RLST 142, AST 148/CHN 148, AST 185/CHN 185/ MICS 169, CHN 105, CHN 108, CHN 110 (E-Z), CHN 115 (E-Z), CHN 190, HIST 180, HIST 181, HIST 182, HIST 191W, MICS 156 (E-Z), MCS 172, RLST 103

c) Japan/Korea: AHS 144/AST 144, AHS 146/AST 147, AHS 112/KOR 112, AST 150/JPN 150, AST 152 (E-Z)/ JPN 152 (E-Z), AST 153 (E-Z)/ JPN 153 (E-Z), AST 154 (E-Z)/ JPN 154 (E-Z), AST 169/MUS 169 (4 units maximum), AST 184/AST 184/ MICS 184, CPLT 142 (E-Z)/ GSST 142 (E-Z), CPLT 145/JPN 145, ETST 136, JPN 190, KOR 110 (E-Z), RLST 105


e) Other East, Northeast, South, Southeast, West, or Central Asia: ANTH 128/AST 128/DNCE 128/ MUS 128/THEA 176, AST 133/ CPLT 144/RLST 144, AST 145/CHN 141/CLA 141/CPAC 141/POSC 140, PHIL 110, POSC 130, RLST 101, RLST 103, RLST 104, RLST 105, RLST 106, RLST 108, RLST 145/SEAS 145

f) Senior thesis requirement: 4 units of AST 195

Minor
The Asian Studies minor allows students from any discipline to enhance their studies with a focus on Asian peoples and cultures. The minor consists of 28 units.

1. Lower-division requirements: 8 units from the following:
   - AHS 015, AST 022/ JPN 022, AST 030/ CHN 030, AST 034/ JPN 034, AST 040/ CHN 040, AST 045 (E-Z)/ HIST 045 (E-Z), HIST 044/RLST 044, JPN 035, RLST 005H

2. Upper-division requirements: 20 units from the following:
   - AHS 140/AST 140, AHS 141/AST 141, AHS 143/AST 143, AHS 144/AST 144, AHS 146/ AST 147, ANTH 140, ANTH 176/AST 127/DNCE 127/ETST 172/MUS 127, ANTH 128/ AST 128/DNCE 128/MUS 128/THEA 176, AST 107/CHN 107/RLST 107, AST 124/ MUS 124, AST 135/CHN 135, AST 133/ CPLT 144/ RLST 144, AST 136/CHN 136, AST 142/CHN 142/RLST 142, AST 148/CHN 148, AST 150/JPN 150, AST 152 (E-Z)/ JPN 152 (E-Z), AST 153 (E-Z)/ JPN 153 (E-Z), AST 154 (E-Z)/ JPN 154 (E-Z), AST 156/CHN 156, AST 162/HIST 187/SEAS 162/ VNM 162, AST 163/CPLT 163/ SEAS 163, AST 165 (E-Z)/ GSST 165 (E-Z)/VNM 165 (E-Z), JPN 168/MUS 168 (no more than 2 units may be applied to the minor), AST 169/MUS 169 (no more than 2 units may be applied to the minor),JPN 170/MUS 170 (no more than 2 units may be applied to the minor), AST 184/CHN 184/ MICS 184, AST 185/CHN 185/MICS 169, AST 190 (no more than 4 units may be applied to the minor), CHN 101A, CHN 101B, CHN 101C, CHN 104, CHN 105, CHN 108, CHN 110 (E-Z), CHN 115 (E-Z), CHN 190, CPLT 143/FREN 143, CPLT 142 (E-Z)/ GSST 142 (E-Z), ENGL 139, ENGL 139T, ETST 133, ETST 137/SEAS 137, ETST 138, ETST 140, ETST 143A/SEAS 143A, ETST 144, ETST 150, HIST 180, HIST 181, HIST 182, HIST 191W, MICS 156 (E-Z), MCS 172, RLST 103

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Lower-Division Courses
AST 022 Introduction to Japanese Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to Japan’s major directors and to watching and writing about Japanese film. Works studied range from the seminal epics of Kurosawa to recent anime. All films have subtitles. No previous knowledge of Japanese language or culture is required. Cross-listed with JPN 022 and MCS 022.
AST 023 Modern Japan and Personal Narrative (4)
Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Introduces major debates in history, politics, and culture through the genres of biography, autobiography, diary, and confession. Explores the parallel construction of the modern nation, the modern language, and the modern self. Traces the development of Japan’s "national novel." Builds skills in close reading by studying the rhetoric of self-narrative. Cross-listed with CPLT 023 and JPN 023.

AST 030 Introduction to Chinese Civilization (5)
Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An introduction to Chinese civilization through an interplay of philosoph- ical, historical, religious, and literary readings from the ancient times through the modern age. Uses audiovisual media. All work is in English. Cross-listed with CHN 030.

AST 034 Introduction to Classical Japanese Literature (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): none. A survey of some of the more famous works of premodern Japanese literature from 10th century poetry collections to 18th century puppet plays. Focuses on the relationship among aesthetics, politics, language, and gender. Assignments include manga translations, creative writing, and intensive Web research. Cross-listed with JPN 034.

AST 040 Masterworks of Chinese Literature (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. A survey of selected great works of Chinese literature. Special attention is given to the contexts of selected literary and artistic representations. Cross-listed with CHN 040.

AST 045 (E-Z) Topics in Asian History (4)
Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): none. An introduction to regional histories and cultures of Asia. E. Premodern China and Japan; F. Contemporary Chi- na; G. India in the Western Imagination. Cross-listed with HIST 045 (E-Z).

AST 046 Responses to Political Repression in Modern Chinese Literature and Film (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An examination of the various responses to political repression in China during the second half of the twentieth century through selected literary and artistic representations. Cross-listed with CHN 046. Credit is awarded for only one of CHN 046AST 046 or CHN 046WAST 046W.

AST 046W Responses to Political Repression in Modern Chinese Literature and Film (4)
Lecture, 2 hours; dis- cussion, 1 hour; written work, 3 hours. Prerequisite(s): ENG 001B with a grade of "C" or better or consent of instructor. Examination of the various responses to political repression in China during the second half of the twentieth century through selected literary and artistic representations. Fulfills the third-quarter writing requirement for students who earn a grade of "C" or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Cross-listed with CHN 046W. Credit is awarded for only one of CHN 046AST 046 or CHN 046WAST 046W.

AST 047 Introduction to Korean Film (4)
Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to the major directors and films of Korea. Covers the genres and periods of works produced from the 1950s to the present. All films have English subtitles. No previous knowledge of Korean language or culture required. Cross-listed with KOR 047 and MCS 047.

AST 048 Chinese Cinema (4)
Lecture, 2 hours; discussion, 1 hour; screening, 2 hours; outside research, 1 hour. Prerequisite(s): none. Study of selected films from China and Taiwan with attention to cultural context. Questions addressed may include the following: What do we look for in a film? What are the film’s interrelations with theatre, photography, and literature? How do we understand the film as an art form? Cross-listed with CHN 048.

AST 049 Introduction to Southeast Asian History (4)
Lecture, 3 hours; extra reading, 3 hours. Introduces major themes and events in Southeast Asian history. Covers from prehistory to contemporary events in the region. Develops basic historical approaches to under- standing contemporary trends, such as the spread of world religions, regional differences and connections, trading patterns, cultural forms, and historically impor- tant sites. Cross-listed with HIST 046 and SEAS 047.

AST 056 Cultures of the Japanese Empire (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Covers the social histories and literatures of the Japanese Empire from the foundation of the Meiji state to the present. Includes the Ainu, Okinawan, Taiwanese, and Korean cultures. Explores the concepts of assimilation, citizenship, national language, nation-state, sover- eignty, total war, and translation. Utilizes readings in English. Cross-listed with CPLT 056 and JPN 056.

AST 062 Introduction to Southeast Asian Literature (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to modern and contemporary Southeast Asian literature and culture with a focus on individual national histories. Explores the relationship between aesthetics, politics, and academic scholarship. Readings are in translation; classes conducted in English. Cross-listed with CPTL 062 and SEAS 062.

AST 063 Reading Southeast Asian Stories (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to the modern short story in Southeast Asia. Considerations include the act of reading. Readings are in translation; classes conducted in English. Course is repeatable as content changes to a maximum of 8 units. Cross-listed with CPLT 063 and SEAS 063.

AST 064 Introduction to Vietnamese and Diasporic Film Culture (4)
Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Engages in critical viewing strategies and analytical visual critique. Explores the revival of film production in Vietnam following the Vietnam War, with a focus on the themes of production, state control, and international distribution. Readings are in translation; classes conducted in English. Cross-listed with MCS 049, SEAS 064, and VNM 064.

AST 065 Introduction to Southeast Asian Cultures (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequi- site(s): none. An introduction to the world of Southeast Asia with an emphasis on aspects of local cultures. Cross-listed with SEAS 065.

AST 090 Special Studies (1-5)
Individual study, 3-15 hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Program as a means of meeting special curricular problems. Course is repeatable.

Upper-Division Courses

AST 107 Taoist Traditions (4)
Lecture, 3 hours; individ- ual study, 3 hours. Prerequisite(s): AST 030/CHN 030 or upper-division standing or consent of instructor. A survey of Taoism and its philosophical aspects. Topics include the Tao Te Ching, the <t>Chuang-tzu</t>, the Taoist canon, meditation, immortality, alchemy, and ritual. Cross-listed with CHN 107 and RLST 107.

AST 112 Modern Korean Literature (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of modern Korean literature from the colonial era to the present. Topics include colonialism; cultural influence and exchange; gender, family and sexuality; nation and nationalism; Confucian tradition and patriarchal culture; and modernization and capitalism. Cross-listed with KOR 112.

AST 118 (E-Z) Masterworks of Chinese Literature in Translation (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines canonical Chinese works of literature in translation. Conducted in English. E. The Ancient Times Through the Early Imperial Dynasties. Cross-listed with CHN 118 (E-2).

AST 119 Javanese Music and Culture (4)
Lecture, 3 hours; term paper, 1 hour; online discussion and lis- tening, 2 hours per week. Prerequisite(s): upper-divi- sion standing or consent of instructor. Examines Java- nese traditional and contemporary music. Focuses on the music of the Javanese gamelan and its relation to larger cosmological themes. Other topics include rural versus court traditions, popular music, mass media, pracy, Hindu roots, modernity, and local practices versus global trends. Cross-listed with MUS 119.

AST 123 Southeast Asian Performance (4)
Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the roles and genres of expressive culture in Southeast Asia, including dance, music, theater, film, and digital culture. Performance is discussed as both a time-honored and a contempo- rary medium for cultural production, from the courts to everyday experience. Cross-listed with ANTH 126, DNCE 123, MUS 123, and SEAS 123.

AST 124 Music of Asian America (4)
Lecture, 3 hours; music listening, 1 hour; individual study, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores music as a window on the cultural politics of Asian America. Examines expressive cultural constitutive ethnic identities and emergent political formations. Covers musics of Asian immigrants and of subsequent generations, including Asian American jazz and hip-hop. Cross-listed with MUS 124.

AST 126 Southeast Asia, Prehistory to 1800 (4) Le- cture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers the major Southeast Asian historical periods and cultures. Includes prehistory, classical kingdoms, and early modern trading states. Considers the role of ancient stories, religious systems, technologies, and art forms in forming traditional Southeast Asian identities, as well as the influences on these identities from outside the region. Cross-listed with HIST 185 and SEAS 185.

AST 127 Music Cultures of Southeast Asia (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in the Philippines, Indonesia, Malaysia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Designed for the student interested in the arts and cultures of mainland and insular Southeast Asia. No Western music background is required. Cross-listed with ANTH 176, DNCE 127, ETST 172, and MUS 127.

AST 128 Performing Arts of Asia (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in four major geopolitical regions of Asia: Central, East, South, and Southeast. No Western music training is required. Course is repeatable to a maximum of 8 units. Cross-listed with ANTH 128, DNCE 128, and TDFP 176.

AST 129 Modern Southeast Asia, 1800 to Present (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the formation of modern Southeast Asian nations and cultures since 1800. Compares colonial and postcolonial experiences in the region. Studies the formation of nationalist movements and the relationship of nationalist history with traditional and local histories. Considers the role of the individual, modern media, and global trade in the near-present. Cross-listed with HIST 186 and SEAS 186.
AST 132 Medical Traditions in China and Greece (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): one of the following courses: AST 030/ CHN 030, CHN 104, CHN 105, AST 107/CHN 107/ RLLST 107, CHN 108, AST 120/CHN 120/RLLST 120, AST 148/CHN 148, CLA 010A, CLA 010B, CLA 010C, CLA 040, CLA 050, CLA 100/HISE 110, CLA 102/ CPAC 102, CLA 112/CPLT 112/RLLST 117, CLA 114/ CPLT 114, CPAC 112/CLA 112/HISE 113, CLA 120 (E-Z), CLA 121/CPAC 121/POSCL 121, CLA 165, CPAC 133/HISE 114, CPAC 134/HIST 110, CLA 141/AST 145/ CHN 141/CLA 141/POSCL 140, CPAC 143/CHN 143/RLLST 143; or consent of instructor. Comparative examination of medical traditions in classical China and Greece, and the development of the Chinese medical systems now referred to as traditional Chinese medicine. Focuses on their cultural and social contexts. Cross-listed with CHN 132, CLA 132, and CPAC 132.

AST 133 Buddhist Literature (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Readings in canonical and non-canonical Buddhist texts. Includes Buddhist-influenced literature written by Asian, European, and American authors. Examines themes of emptiness, impermanence, and no-self. Cross-listed with CPLT 144 and RLLST 144.

AST 135 Great Novels of China (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of great novels of China. Classes are conducted in English. Cross-listed with CHN 135.

AST 136 Family and Gender in the Chinese Short Story (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines a broad array of short stories from the Tang to the Qing dynasties (approximately ninth to eighteenth century). Investigates love, marriage, family, gender dynamics, and the representation of women in Chinese literature. No knowledge of Chinese required. Cross-listed with CHN 136.

AST 138 Arts of China (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of Chinese art and culture from the prehistoric to the contemporary. Cross-listed with AHS 138.

AST 139 The Arts of Buddhism (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the history, concepts, and arts of Buddhism. Emphasizes the transmission and cultural translation of pictorial arts within Asia and to Western worlds. Cross-listed with AHS 139.

AST 142 Chuang-tzu (4) Lecture, 3 hours; outside research, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): RLLST 005 or RLLST 005H or AST 107/CHN 107/RLLST 107 or consent of instructor. An examination of chaos, epistemological, and linguistic relativism, fate, skill, and the character of the sage in the Chinese text, Chuang-tzu. Cross-lists the structure and style of this literary masterpiece. Students with knowledge of classical Chinese may arrange additional work through special studies. Cross-listed with CHN 142 and RLLST 142.

AST 143 Text and Image in Chinese Painting (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Examines the art of writing and painting in China, focusing on the close relationship between written language and pictorial image. Reading knowledge of the Chinese language is not necessary. Cross-listed with AHS 143.

AST 144 Arts of Japan (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Major developments in the arts of Japan from the prehistoric to the contemporary period. Emphasizes the social and cultural contexts of religious art, architecture, and master artists through history, with a brief introduction to contemporary art and pop culture. Cross-listed with AHS 144.

AST 145 Militarism and Hegemony in the Ancient World (4) Lecture; 3 hours; outside research, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Major study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing or consent of instructor. Major study of Chinese and Japanese military and political history from the prehistoric to the contemporary period. Emphasizes the social and cultural contexts of religious art, architecture, and master artists through history, with a brief introduction to contemporary art and pop culture. Cross-listed with AHS 144.

AST 146 Contemporary Asian Art (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing in Art History/Administrative Studies (AHAT), or Art History/Religious Studies (AST); or consent of instructor. Explores the wide spectrum of contemporary arts from China, Korea, and Japan in terms of modernism, orientalism/occidentalism, identity politics, and globalization. Cross-listed with CHN 141, CHN 141, CPAC 141, and POSCL 140.

AST 147 The Japanese House (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. History of the traditional Japanese house from prehistoric times to the nineteenth century. Examples used to place the Japanese house within the general history of Japanese architecture and within its social and cultural context. Cross-listed with AHS 145.

AST 148 Chinese Poetry and Poetics in Translation (4) Lecture, 2 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to theClose-listed with AHS 145.

AST 150 In Women's Hands: Reading Japanese Women Writers (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines major works of Japanese women writers from Heian (ninth century) to contemporary, focusing on themes, genres, representations of gender, ideas of love and romance, and feminine aesthetics. Readings include fiction, poetry, essays, and drama, with a main emphasis on fictional writing. Classes are conducted in English. Cross-listed with CHN 148.

AST 152 Modern Japanese Literature (4) Lecture, 2 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to modern Japanese literature in translation, as seen through the lens of a particular theme or issue. All materials read or viewed in English. E. The End of the World in Japanese Literature. F. The Mask in Japanese Fiction: Love and Death. J. Classics and Canon; K. Dreams and Other Virtual Worlds. Cross-listed with JPN 152 (E-Z).

AST 153 Themes in Early Japanese Literature (4) Lecture, 2 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to early Japanese literature, as seen through the lens of a particular theme or issue. All works are read in English translation. E. Supernatural Japan; F. Woman Warrior; G. The Culture of the Floating World: Tokugawa Period Literature, Drama, and Art. Cross-listed with JPN 153 (E-Z).

AST 154 Themes in the Folklore and Popular Culture of Japan (4) Lecture; 2 hours; discussion, 1 hour; extra reading, 1 hour; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include myth, legend, folklore, folk performance, festival, ritual, and the development of popular or commercial culture. Considers literary works, the folk arts, film, television, the Internet, nationalism, modernity, commodification, and the invention of tradition. E. Ancient Myth to Contemporary Legend: A Study of Japanese Folk Narrative; F. History of Japanese Popular Culture. Cross-listed with JPN 154 (E-Z).

AST 160 The Vietnam Wars (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1989) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticollonial movements; periods of French and American military involvement up to 1975; the postwar society; and the post-<i>doi moi</i> society. Cross-listed with HIST 184, SEAS 184, and VNM 184. Credit is awarded for only one of the following: AST 160/HIST 184/SEAS 184/VNM 184 or AST 160S/HIST 184S/SEAS 184S/VNM 184S.

AST 165 The Vietnam Wars (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1989) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticollonial movements; periods of French and American military involvement up to 1975; the postwar society; and the post-<i>d<o>i moi</i> society. Cross-listed with HIST 184S, SEAS 184S, and VNM 184S. Credit is awarded for only one of the following: AST 160/HIST 184/SEAS 184/VNM 184 or AST 160S/HIST 184S/SEAS 184S/VNM 184S.

AST 161 Translating Modern Southeast Asian Texts (4) Lecture, 3 hours; term paper, 1.5 hours; written work, 1.5 hours. Prerequisite(s): upper-division standing; knowledge of one Southeast Asian language is recommended. An introduction to translating modern Southeast Asian texts into English. Presents translations of texts from Vietnam, Indonesia, and the Philippines in a context of theory. Material in English. Course is repeatable as content changes to a maximum of 8 units. Cross-listed with SEAS 161.

AST 162 Vietnamese Literary History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing. A historical analysis of Vietnamese literature from its oral tradition to contemporary fiction. Follows the formation of the nation-state and the subsequent struggles with the Chinese, French, and American military involvement up to 1975; the postwar society, and the post-<i>d<o>i moi</i> society. Cross-listed with HIST 184S, SEAS 184S, and VNM 184S. Credit is awarded for only one of the following: AST 160/HIST 184/SEAS 184/VNM 184 or AST 160S/HIST 184S/SEAS 184S/VNM 184S.

AST 164 Vietnamese American Culture (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the pervasive aspects of Vietnamese American culture. Includes shared histories, acculturation patterns, class
diversity, identity struggles, community-building literary and cultural production, youth issues, and cultural survival. Also introduces foundational literature, visual culture, and scholarship in the field. Cross-listed with SEAS 164 and VNM 164.

AST 165 (E-Z) Themes in Vietnamese Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of Vietnamese literature in translation as seen through the lens of a particular theme or issue. Focuses on the implications of gender and sexuality on nation formation. All materials are read or viewed in English. E. Women and War. Cross-listed with GSST 165 (E-Z), SEAS 165 (E-Z), and VNM 165 (E-Z).

AST 166 Vietnam and the Philippines (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Cross-listed with JPN 180 and MCS 180.ble as topics and instructor change to a maximum of 8 units. Cross-listed with CHN 185 and MCS 169.

AST 167 Postcolonial Literature and Criticism in Southeast Asia and South Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the comparative national histories of Vietnam and the Philippines by way of great literary works in various genres including poetry, short fiction, and novels. All materials are read in English. Cross-listed with CPTL 166, SEAS 166, and VNM 166.

AST 168 Javanese Gamelan Ensemble: Beginning (2) Studio, 6 hours. Prerequisite(s): upper-division standing and consent of instructor. Study and performance of the Central Javanese gamelan, consisting mainly of gong and gong-chime instruments. Readings and discussions focus on Javanese culture. Course is repeatable. Cross-listed with MUS 168 and SEAS 168.

AST 169 Taiko Ensemble (1) Studio, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of the Filipino rondalla, an ensemble consisting of various sizes of lute-like and guitar-like instruments. Discussions focus on Filipino culture. Course is repeatable. Cross-listed with MUS 170 and SEAS 170.

AST 170 Rondalla Ensemble (1-2) Studio, 2-4 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of the Filipino rondalla, an ensemble consisting of various sizes of lute-like and guitar-like instruments. Discussions focus on Filipino culture. Course is repeatable. Cross-listed with MUS 170 and SEAS 170.

AST 180 Japanese Documentary (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Studies the history of Japanese documentary cinema. Teaches strategies for reading nonfiction visual narrative. Explores other forms of documentary cinema and history including oral testimony, photography, and internet activism. Topics may include war, war protest, peace activism, environmental activism, nuclear politics, and moment of identity. Course is repeatable as topics and instructor change to a maximum of 8 units. Cross-listed with JPN 180 and MCS 180.

AST 184 Japanese Media and Cultural Studies (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates Japanese media and culture including film, television, video games, <i>anime</i>, <i>comics</i>, music, and print and digital media. Analyzes the function of media relating to issues of national identity, imperial culture, collective memory, and censorship. Includes transnational circulation of Japanese cultural forms, alternative media, and historical changes in technologies. Cross-listed with JPN 184 and MCS 184.

AST 185 New Chinese Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 202, upper-division standing or consent of instructor. A study of representative films from the People's Republic of China with a focus on those made during the last two decades. Conducted in English; most films have English subtitles. Cross-listed with CHN 185 and MCS 169.

AST 186 Hong Kong Cinema: Gender, Genre, and the “New Wave” (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 202 or upper-division standing or consent of instructor. Examines contemporary Hong Kong films, specifically the “New Wave” genre. Particular focus is on the sociopolitical conditions of Hong Kong and its relations with Great Britain and China, the linkages of which set the stage for the films and thematic concerns. Cross-listed with MCS 168.

AST 187 Vietnamese and Overseas Vietnamese Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 202 or upper-division standing or consent of instructor. Explores how Vietnamese people and the Vietnamese diaspora seek to imagine a sense of community in the postwar era through contemporary film and video. Examines the thematic of return, longing, and exile. Reviews some of the texts’ bold expressions of gender, sexuality, and identity. Cross-listed with MCS 167 and SEAS 177.

AST 188 (E-Z) Topics in Chinese History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing; HIST 180 or HIST 181 or HIST 182; or consent of instructor. An in-depth look at important topics in Chinese history. E. Chinese Food Culture; F. Four Great Inventions of Imperial China; G. Environmental History of China. Cross-listed with HIST 188 (E-Z).

AST 189 Encountering Vietnam (5) Lecture, 6 hours; tutorial, 6 hours; project, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on literary and historical accounts of Vietnam. Utilizes translated travel writings from different genres and eras. Proficiency in Vietnamese not required. Taught in Vietnam and offered only in summer. Cross-listed with HIST 189, SEAS 189, and VNM 189.

AST 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Program as a means of meeting special curricular problems. Course is repeatable.

AST 195 Capstone Senior Thesis (1-4) Thesis, 12 hours. Prerequisite(s): senior standing. Thesis composition under the guidance of Asian Studies faculty. Required for all Asian Studies majors. Course is repeatable to a maximum of 8 units.

**Biochemistry**

Subject abbreviation: BCH

College of Natural and Agricultural Sciences

Russ Hille, Ph.D., Chair
Graduate Program (951) 827-4116
Undergraduate Program (951) 827-7294
biochemistry.ucr.edu

Professors
Richard J. Debus, Ph.D.
Daniel R. Galile, Ph.D.
Russ Hille, Ph.D.
Paul B. Larsen, Ph.D.
Xian Liu, M.D., Ph.D.
Ernest Martinez, Ph.D.
Stephen R. Spindler, Ph.D.

Cooperating Faculty
Michael E. Adams, Ph.D. (Entomology/Cell Biology and Neurosciences)
Bahram Anvari, Ph.D. (Bioengineering)
Peter Atkinson, Ph.D. (Biomedical Sciences)
Jeffrey Bachant, Ph.D. (Cell Biology & Neurosciences)
Julia Bailey-Serres, Ph.D. (Botany and Plant Sciences)
David Binder, Ph.D. (Biomedical Sciences)
Katherine A. Borkovich, Ph.D. (Plant Pathology and Microbiology)
Richard Cardullo, Ph.D. (Biology)
Meng Chen Ph.D. (Botany and Plant Sciences)
Kathryn DeFea, Ph.D. (Biomedical Sciences)
Adler Dillman, Ph.D. (Nematology)
Nicholas Dipatrizo, Ph.D. (Biomedical Sciences)
Iryn Etheh, Ph.D. (Biomedical Sciences)
Thomas Eulgem, Ph.D. (Botany and Plant Sciences)
Xin Ge, Ph.D. (Chemical Environmental Engineering)
Joseph Geneverux Ph.D. (Chemistry)
Sarjeet Gill, Ph.D. (Biomedical Sciences)
Ansel Hsiiao, Ph.D. (Plant Pathology and Microbiology)
Hailing Jin, Ph.D. (Plant Pathology and Microbiology)
Ryan Julian, Ph.D. (Chemistry)
Edward Korzus, Ph.D. (Psychology)
Cynthia K. Larive, Ph.D. (Chemistry)
Julia Lyubovitsky, Ph.D. (Bioengineering)
Manuela Martins-Green, Ph.D. (Cell Biology & Neurosciences)
Ilhem Messoudai, Ph.D. (Biomedical Sciences)
Thomas H. Morton, Ph.D. (Chemistry)
Leonard Mueller, Ph.D. (Chemistry)
Eugene Niothnall, Ph.D. (Botany and Plant Sciences)
Constance Nugent, Ph.D. (Cell Biology & Neurosciences)
Schiller, Neal, Ph.D. (Biomedical Sciences)
Carolyn Rasmussen, Ph.D. (Botany and Plant Sciences)
John Shy, Ph.D. (Biomedical Sciences)
Frances Sladek, Ph.D. (Cell Biology & Neurosciences)
Jason Stajich, Ph.D. (Plant Pathology and Microbiology)
Prue Talbot, Ph.D. (Cell Biology and Neuroscience)
Vullev, Valentine I., Ph.D. (Bioengineering)
Ian wheelond, Ph.D. (Biomedical Science)
Emma Wilson, Ph.D. (Biomedical Sciences)
Nakai Yamanaka, Ph.D. (Entomology)
Raphael Zidovetzki, Ph.D. (Cell Biology & Neurosciences)

Asian Studies / Biochemistry / 116

Professors Emeriti
Thomas O. Baldwin, Ph.D.
Craig V. Byus, Ph.D. (Biotechnology/Biomedical Sciences)
Michael F. Dunn, Ph.D.
Helen L. Henry, Ph.D.
Darold D. Holten, Ph.D.
Richard A. Luben, Ph.D. (Biotechnology/Biomedical Sciences)
Anthony W. Norman, Ph.D. (Biotechnology/Biomedical Sciences)
Ning G. Pon, Ph.D.
Justin K.M. Roberts, Ph.D.
Jolinda A. Traquh, Ph.D.

Associate Professor
Li Fan, Ph.D.
Jikui Song, Ph.D.

Assistant Professors
Gregor Blaha, Ph.D.
Shiem Chelouf, Ph.D.
Jernej Murn, Ph.D.
Sean O'Leary, Ph.D.
Jefferson Perry, Ph.D.

Senior Lecturer Emerita
Miriam Ziegler, Ph.D.

Assistant Professor of Teaching
Stephanie Dingwall, Ph.D.
Major
The three emphases areas within the Biochemistry major are Chemistry, Biology, and Medical Sciences. The Biology and Chemistry emphases are for students interested in postgraduate education or employment in the basic areas of the discipline of Biochemistry. The goal of the Medical Sciences emphasis is to prepare students for admission to postbaccalaureate education in the health professions. The Biology, Chemistry, and Medical Sciences emphases focus on the development of laboratory and critical thinking skills, and hands-on laboratory experience. In addition, participation in an independent research project (BCH 197) or research tutorial (BCH 190), carried out under the supervision of a faculty member, is encouraged. Internships in industry (BCH 198-I) are also available, and often lead to valuable job experience and employment opportunities.

The department offers both B.A. and B.S. degrees. The major and emphasis requirements are the same for both, and most students choose the B.S. degree. The B.A. degree requires 12 additional units of Humanities and Social Sciences courses, and 16 units or a course 4 equivalency level of a foreign language (see College Breadth Requirements).

Note: A maximum of 12 units of 190-199 courses may be counted toward the 180 unit graduation requirement. All courses used towards the Biochemistry major requirements must be taken for letter grades.

Transfer Students
Transfer students majoring in Biochemistry must complete at least three of the following full-year sequences, which must include first-year calculus and general chemistry:

1. First-year calculus, equivalent to MATH 009A, MATH 009B, MATH 0046
2. General chemistry, equivalent to CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C
3. Organic chemistry (must be completed with a minimum grade of “B” in each term)
4. General biology, equivalent to BIOL 005A, BIOL 05LA, and BIOL 005B (and BIOL 005C, if available)
5. General physics (calculus-based) equivalent to PHYS 002A, PHYS 002B, PHYS 002C or PHYS 040A, PHYS 040B, PHYS 040C

Students must have a minimum grade point average of 2.70 in transferable college courses.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the major may also fulfill some of the college’s breadth requirements. Consult with a department advisor for course planning.

Major Requirements
The major requirements and the emphasis requirements are the same for the B.A. and the B.S. degree in Biochemistry. Choose one emphasis. All upper-division courses presume completion of the life sciences core curriculum.

Continuation in the major requires that the student maintains cumulative and upper division/science GPAs of 2.00 or higher, a GPA of 2.00 or higher in each academic quarter, and makes adequate progress in the major with no more than 16 units of repeated courses.

Adequate progress in the major is defined as (a) earning no grade lower than a “C-” in any required lower division mathematics or science course, STAT 100A, CHEM 12A, CHEM 12B, CHEM 12C, or any upper division BCH course, and (b) completing MATH 9B and CHEM 1A by the end of the Fall Quarter of the second year of residence and BCH 110A, BCH 110B, and BCH 110C by the end of the third year of residence. Freshmen must also complete BCH 95 with a grade of “S” during their first year of residence. Freshmen in the Medical Science Emphasis must also complete BCH 96 with a grade of “S” during their first year of residence. Freshmen who do not meet these adequate progress standards will be discontinued from the major. In addition, a student who receives a grade of “D+” or lower in any of the courses in (A) on the first attempt, or in any one of these courses in each of two attempts, will be discontinued from the major. Students who receive a grade lower than “B-” in BIOL 5A or CHEM 12A are strongly encouraged to complete BCH 100 during their second year of residence to better prepare themselves for BCH 110A, BCH 110B, and BCH 110C.

Biology Emphasis
1. Lower-division requirements (71 units)
   a) BCH 095 or equivalent, BCH 015
   b) BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
   c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C
   d) STAT 100A or MATH 009A, MATH 009B, MATH 0046
   e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A, PHYS 021B, PHYS 021C
   f) Choose two biological science courses from the following:
      (1) BCH 111, BCH 120, BCH 153/Biol 153
      (3) BIOL 104/BPSC 104, BIOL 132/BPSC 132, BIOL 143/BPSC 143, BIOL 148/BPSC 148, BIOL 155/BPSC 155, BPSC 135
      (4) BIOL 100/ENTM 100, BIOL 173/ENTM 173, ENTM 128
   g) ENSC 100
   h) ENTX 101, CBSNS 150/ENTX 150

2. Upper-division requirements (45-46 units)
   a) BCH 110A, BCH 110B, BCH 110C, BCH 162, BCH 184
   b) At least 3 units from BCH 111, BCH 120, BCH 153/Biol 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212
   c) BIOL 102
   d) CHEM 109 or CHEM 110A
   e) STAT 100A

Chemistry Emphasis
1. Lower-division requirements (76 units)
   a) BCH 095 or equivalent, BCH 015
   b) BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
   c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C
   d) STAT 100A
   e) CHEM 109 or CHEM 110A
   f) Choose two biological science courses from the following:
      (1) BCH 111, BCH 120, BCH 153/Biol 153
      (3) BIOL 104/BPSC 104, BIOL 132/BPSC 132, BIOL 143/BPSC 143, BIOL 148/BPSC 148, BIOL 155/BPSC 155, BPSC 135
   g) BIOL 100/ENTM 100, BIOL 173/ENTM 173, ENTM 128
   h) ENSC 100
   i) ENTX 101, CBSNS 150/ENTX 150

2. Upper-division requirements (45-46 units)
   a) BCH 110A, BCH 110B, BCH 110C, BCH 162, BCH 184
   b) At least 3 units from BCH 111, BCH 120, BCH 153/Biol 153/BPSC 153, BCH 180 (E-Z), BCH 183/BPSC 183, BCH 186, BCH 187, BCH 210, BCH 211, BCH 212
   c) BIOL 102
   d) CHEM 109 or CHEM 110A
   e) STAT 100A
f) Two courses from CHEM 110B, CHEM 113, CHEM 125, CHEM 150A, CHEM 150B, CHEM 166 (Other graduate courses may be substituted by students with a GPA of 3.00 or better with permission of the instructor and the faculty advisor.)

3. BCH 190 or BCH 197 are available as elective courses. Enrollment requires written permission of the supervising faculty member. No more than 9 units of courses numbered 190-199 may be counted towards the major.

**Medical Sciences Emphasis**

1. Lower-division requirements (69 units)
   a) BCH 095 or equivalent, BCH 015
   b) BCH 096, BCH 098
   c) BIOL 005A, BIOL 05LA or BIOL 020 BIOL 005B, BIOL 005C
   d) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA or CHEM 12A, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HLB or CHEM 12B, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HL or CHEM 12C
   e) MATH 007A or MATH 009A, MATH 007B or MATH 009B
   f) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

2. Upper-division requirements (45-46 units)
   a) BCH 110A, BCH 110B, BCH 110C, BCH 120, BCH 162, BCH 184
   b) BIOL 102
   c) CHEM 109 or CHEM 110A
   d) CBNS 101
   e) STAT 100A
   f) At least 3 units from BCH 183/BPSC 183, BIOL 119, BIOL 121, BIOL 161A, BIOL 161B, BIOL 171, CBNS 106, CBNS 150/ ENXT 150.

Graduate and upper-division courses can be substituted with permission of the instructor and the faculty advisor. Graduate courses require a GPA of 3.0 or greater in the sciences. Students should be aware that CHEM 005 is often a requirement for admission to professional schools.

**Graduate Program**

The Department of Biochemistry offers a graduate program leading to the M.S. or Ph.D. degree in Biochemistry and Molecular Biology. This program emphasizes basic biochemistry with research specializations in the areas of molecular biology, physical biochemistry, molecular endocrinology, plant biochemistry and molecular biology, signal transduction, and biomedical research. It is designed for students who are planning a career of research and teaching in biochemistry at colleges and universities or who wish to engage in biochemical investigations of fundamental or applied nature in private, governmental or commercial laboratories.

**Admission**

Students who have completed a bachelor’s degree in physical, biological, chemical, or agricultural sciences are invited to apply to the program. Regardless of the area of their major for the baccalaureate degree, students should have taken the following courses prior to beginning graduate study in biochemistry or plan to make up deficiencies soon after entering graduate school:

1. One year of calculus
2. One year of general physics
3. One year of organic chemistry
4. An introductory course in physical chemistry
5. At least two courses in biology at the upper-division level, including genetics

Students should arrange to take the GRE General Test in time for their scores to be submitted with their application.

**Doctoral Degree**

The Department of Biochemistry offers the Ph.D. degree in Biochemistry and Molecular Biology.

**Course Work**

The following courses are required. Credit for upper division courses listed below will be given at the discretion of the graduate advisor if equivalent coursework has been taken previously. Students’ course requirements are determined in consultation with the graduate advisor for them upon their arrival. The graduate advisor suggests an individualized course program involving classes in biochemistry and subsidiary fields of study, chosen from any of the physical, biological, or agricultural sciences. Although an adequate course preparation is a requisite part of the training program, the department encourages early involvement of the students in research directed toward their dissertations.

**BCH 110A-110B-110C: General Biochemistry**

**BCH 162: or equivalent research experience**

**BCH 184: Topics in Physical Biochemistry**

As part of the program, each student is required to serve at least two quarters as a teaching assistant. Each student fulfills the requirement through enrolment in BCH250, BCH 252 and GDIV 403.

**Dissertation and Final Oral Examination**

Following completion of their research, students submit a written dissertation and conclude their studies with an oral defense of their research. The dissertation consists of material from BCH 210, BCH 211, and BCH 212.

Upon successful completion of this exam, the student will then submit and orally defend a research report in which they describe the research they have performed thus far and develop a plan for their complete dissertation research project. This fulfills the requirement for an oral qualifying examination. Students completing all necessary requirements are advanced to candidacy for the Ph.D. degree.

Students must sit the comprehensive written exam within the first two years in the program. Unless excused by either the graduate advisor or department chair, failure to sit the examination will be regarded as a failed exam. Students must sit every sequential offering of the exam and no student will be given more than two attempts to achieve a satisfactory grade on the comprehensive written exam.

**Normative Time to Degree**

15 quarters. In the case that a student changes the degree aim from M.S. to Ph.D., normative time will be reset.

**Master’s Degree**

In addition to the Ph.D. program, the department offers two plans for the master’s degree (Plan I, Thesis; Plan II, Comprehensive Examination). Both plans require completion of at least 36 course units; for Plan I, a maximum of 12 units may be for thesis research.

**Course Work**

The following courses offered by the Biochemistry Department, or acceptable substitutes (determined by the Graduate Advisor when the student joins the program), are required.
BCH 100 Introduction to Human Biochemistry and Healthcare Service (1) Lecture, 8 hours per quarter; consultation, 2 hours per quarter. Prerequisite(s): a major in Biochemistry with an emphasis in Medical Sciences. Acquaints students with opportunities for volunteer activities in the humanistic and healthcare arenas in southern California. Provides students with the opportunity to validate their commitment to a career in the healthcare arena. Requires a term paper. Graded Satisfactory (S) or No Credit (NC).

BCH 097 Research Tutorial in Biochemistry (1) Laboratory, 3 hours. Prerequisite(s): lower-division standing, minimum grade of 3.5, approval of undergraduate advisor and consent of instructor. Laboratory tutorial in Biochemistry. To provide biochemistry laboratory experience for exceptional lower-division students. A written report is required at the end of each quarter. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 3 units.

BCH 098-I Individual Internship in a Humanitarian or Healthcare Arena (1) Internship, 3 hours; term paper, 10 hours per quarter. Prerequisite(s): a major in Biochemistry with an emphasis in Medical Sciences; BCH 096. Gives Biochemistry majors with a Medical Sciences emphasis real-world experience providing community service in a humanitarian or healthcare arena. Requires a written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 2 units.

Upper-Division Courses

BCH 100 Elementary Biochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, with grade of “C-” or better, CHEM 008C and CHEM 08LC. CHEM 08HC and CHEM 08HLC with grades of “C-” or better (CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC may be taken concurrently). Introduction to the biochemistry of living organisms based on a study of the structure, function, and metabolism of macromolecules and molecules of biological significance. Examines selected animals, plants, and microorganisms to develop a general understanding of structure-function relationships, enzyme action, regulation, bioenergetics, and intermediary metabolism. Credit is not awarded for BCH 110A or BCH 110B if a grade of C- or higher has been awarded previously in BCH 110A or BCH 110B.

BCH 110A General Biochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A with grade of “C-” or better; CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC with grades of “C-” or better. Considers the structure and function of biological molecules including proteins, carbohydrates, lipids, and nucleic acids.

BCH 110B General Biochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110A with a grade of “C-” or better or consent of instructor. Considers metabolism, DNA replication, mechanisms and regulation of catabolism, anabolism, and bioenergetics in living organisms.

BCH 110C General Biochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110A with a grade of “C-” or better or BCH 110B with a grade of “C-” or better or consent of instructor; BIOL 102 or consent of instructor. Considers regulation of gene expression, genome replication, recombination, and repair. Credit is not awarded for BCH 110C if it has already been awarded for BIOL 107A.

BCH 111 Molecular Biology and Genomics of Human Disease Vectors (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A. Covers molecular biology and genomics of human disease vectors, predominantly insects. Analyzes molecular aspects of immunity, blood digestion, reproduction, and other systems specific to arthropod vectors. Explores recent advances in vector-phenotype interactions and their potentials for control. Satisfactory (S) or No Credit (NC) grading is not available. Cross-listed with ENTM 111.

BCH 120 Topics in Human Biochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110 with a grade of “C-” or better or BCH 110A with a grade of “C-” or better or BIOL 107A with a grade of “C-” or better or consent of instructor. Lectures on biochemical and molecular aspects of modern endocrinology, nutrition, metabolic diseases, and blood chemistry. Emphasis is on relation of the above topics to medicine. The discussion sections are used for presentations on topical medical problems.

BCH 153 Plant Genomics and Biotechnology Laboratory (4) Lecture, 1 hour; discussion, 1 hour; laboratory, 6 hours. Prerequisite(s): BCH 110C or BIOL 107A; upper-division standing; consent of instructor. A study of modern techniques in plant genome modification. Topics include nucleic acid cloning and sequencing, plant tissue culture and genetic transformation; controlled-environment plant growth; gene mapping, and germplasm collections. Also explores the history of plant biotechnology, genetics, and medicinal, and societal relevance; and regulatory issues. Cross-listed with BIOL 153 and BPSC 153.

BCH 162 Advanced Biochemistry Laboratory (5) Lecture, 2 hours; laboratory, 9 hours. Prerequisite(s): BCH 015; BCH 110B; BCH 110C all with grades of “C-” or better, or consent of instructor. Advanced biochemistry laboratory techniques including modern methods of protein engineering, purification, and characterization, enzyme assays, principles of various types of column chromatography, SDS gel and other methods of electrophoresis, centrifugation, and crystallization. Most experiments include quantitative reasoning through data manipulation, numerical simulations, parametric evaluation, and detailed laboratory reports. Satisfactory (S) or No Credit (NC) grading is not available.

BCH 180 (E-Z) Advanced Methods in Biochemistry (2) F, W Lecture, 1 hour; seminar, 1 hour; term paper, .5 hours; extra reading, 2 hours. Prerequisite(s): upper-division standing, concurrent enrollment in BCH 197 or equivalent or BCH 110C with grade of “C-” or better or BIOL 107A with grade of “C-” or better; or consent of instructor. An introduction and discussion of the experimental approaches and modern techniques in the study of cell growth regulation, signal transduction, and cancer. E. Gene Regulation; F. Chromatin Research; G. Cell Signaling; I. Structural Biology; J. Biophysical Chemistry; K. Cryoelectron Microscopy; M. Biological Structure/Function; N. Genome Stability; O. Genomics and Proteomics; P. Regulated Synthesis; Q. Stem Cell Biology; R. Epigenetics; S. Molecular Biology of Genetic Diseases; T. Biochemistry of Development and Aging; U. Biochemistry of Stress Responses. Course is repeatable as content changes to a maximum of 6 units.

BCH 183 Plant Biochemistry and Pharmacology of Plant Metabolites (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110A, BCH 110B; or BCH 110C, or consent of instructor. Explores plant biochemistry and the significance of plant metabolites in medicine and pharmacology. Focuses on biotechnology, medicinal plants, and plant-derived drugs as well as the biochemical and pharmacological mode-of-action of secondary plant metabolites. Also addresses plant-specific biochemical processes such as photosynthesis. Cross-listed with BPSC 183.

BCH 184 Topics in Physical Biochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 100 with a grade of “C-” or better or BCH 110A with a grade of “C-” or better or BIEN 135 with grade of “C-” or better, or CHEM 109 with grade of “C-” or better or CHEM 110A with grade of “C-” or better; or consent of instructor. Explores modern biophysical methods determining the structures of biological macromolecules and relating structure to function. Covers x-ray crystallography, NMR, and cryoelectron microscopy. Addresses imaging and mass spectrometry for determining structure and ultraviolet, visible, infrared, RAMAN, fluorescence, NMR, EPR, and other forms.
of spectroscopy for relating macromolecular structure to function.

BCH 196 Topics in Molecular Bioenergetics (3) Lecture, 3 hours. Prerequisite(s): BCH 180 with a grade of “C-” or better or BCH 110B with a grade of “C-” or better; BCH 184 with a grade of “C-” or better; or consent of instructor. Introduction to biological energy transduction. Describes the coupling of oxidative phosphorylation and photosynthesis to adenosine triphosphate (ATP) synthesis and the coupling of ATP hydrolisis to ion transport, chemotaxis, molecular motors, biomimetics, and other biological processes on the basis of recent structural and mechanistic studies of the protein complexes involved.

BCH 187 Fundamentals of Enzymology (3) Lecture, 3 hours. Prerequisite(s): BCH 100 or BCH 110A with a grade of C- or better. An introduction to the fundamental principles of enzymology. Specific topics include, acid-base catalysis, strain effects, transition state theory, enzyme kinetics (including isokeyte effects), enzyme dynamics and enzyme regulation. Considers in detail the reactions of several representative enzymes.

BCH 189 Advanced Analysis of Biochemical Methods (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): senior standing in a Biochemistry major, concurrent enrollment in BCH 162, and consent of instructor. Working with a faculty mentor, students investigate the use of a set of biochemical methods through research of the original literature. Includes a term paper and a current state of the technology/methodology of interest. Satisfactory (S) or No Credit (NC) grading is not available.

BCH 190 Special Studies (2-4) Individual study, 6-16 hours. Prerequisite(s): upper-division standing and consent of instructor. Literature review and tutorial in selected modern biochemical topics. Course is repeatable.

BCH 197 Research for Undergraduate Students (1-4) Prerequisite(s): junior status and consent of the instructor. Directed research and preparation of written report. Course is repeatable.

BCH 198-1 Internship in Biochemistry (1-12) Internship, 3-36 hours. Prerequisite(s): BCH 015 or consent of instructor, upper-division standing. An internship to provide on-the-job biochemical experience in government, industrial, or clinical laboratories. Each individual project must be approved by the Biochemistry Department and the laboratory director where the internship is to be carried out. A written report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Graduate Courses

BCH 204 Genome Maintenance and Stability (4) Lecture, 3 hours, discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 113 or BIOL 114 or CBNS 101; BIOL 102 is strongly recommended. Emphasizes chromosome-based processes that maintain genome integrity and ensure accurate genome transmission during cell division. Topics are drawn from the primary literature and include chromatin structure and composition, DNA repair and recombination, telomere function and chromosome maintenance, mitotic chromosome segregation, and checkpoint surveillance mechanisms. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CBNS 204 and ENTM 204.

BCH 205 Signal Transduction Pathways in Microbes and Plants (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in the biological sciences, BIOL 107A or BIOL 113 or BIOL 114 or CBNS 101; or consent of instructor. Advanced topics in signal transduction pathways that regulate growth and development in plants and prokaryotic and eukaryotic microbes. Areas covered include two-component regulatory systems; quorum sensing; signaling via small and heterotrimetric G proteins; mitogen-activated protein kinase cascades; AMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BPS 205, CBNS 205, GEN 205, MBCL 205, and PLPA 205.

BCH 209 Ribonucleic Acid (RNA) Biology (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 107A or CBNS 101 or consent of instructor. A comprehensive overview of the multiple functions of ribonucleic acid (RNA) in the cell. Topics include mRNA, rRNA, and tRNA function and metabolism; RNA catalysis and the “RNA world”; eukaryotic and bacterial non-coding ribonucleic acids. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CBNS 209 and GEN 209.

BCH 210 Biochemistry of Macromolecules (4) Lecture, 4 hours. Prerequisite(s): BCH 110A, BCH 110B, BCH 110C or equivalents; BCH 184 (may be taken concurrently); CHEM 109; graduate standing or consent of instructor. Discussion of recent advances in the knowledge of the molecular architecture of proteins and nucleic acids, especially with respect to new experimental approaches for analyzing their structure and function. Chemistry of the active site of enzymes.

BCH 211 Molecular Biology (3) Lecture, 3 hours. Prerequisite(s): BCH 110A, BCH 110B, BCH 110C or equivalents; BCH 184 (may be taken concurrently); CHEM 109; graduate standing or consent of instructor. Advanced topics in molecular biology of the regulation of gene expression and regulation of DNA, RNA, and proteins. Some topics covered include the following: molecular anatomy of genes and chromosomes; DNA repair and recombination; regulation of genes in the cell cycle; telomerase; RNA processing and splicing; RNA editing; regulation of normal genes and oncogenes; chaperones and protein targeting.

BCH 212 Signal Transduction and Biochemical Regulation (3) Lecture, 3 hours. Prerequisite(s): BCH 110A, BCH 110B, BCH 110C or equivalents; graduate standing or consent of instructor. Advanced topics in signal transduction and biochemical regulation. Topics include protein kinases and protein phosphorylation; phosphatases and their role in regulation; function of phosphorylation events in regulation of metabolism and growth; calcium and other ion channels as signal transduction mechanisms; steroid hormones receptor super family; immune system signal transduction events.

BCH 230 (E-Z) Advanced Topics in Biochemistry (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): BCH 100 or both BCH 110A and BCH 110B or consent of instructor. An introduction to a particular field of biochemistry by analysis of the recent literature. E. Structure of Biological Molecules; F. Enzyme Catalysis; G. Glycocalbiochemistry; H. Membrane Biochemistry; I. Cytoskeleton and Extracellular Matrix; J. Molecular Anatomy of Genes and Chromosomes; K. Regulation of Chromatin Structure and Transcription; L. Genome Stability; M. Regulation of Protein Synthesis; O. Signal Transduction; P. Emerging Topics in Biochemistry and Molecular Biology; Q. Cell Cycle Regulation; R. Biochemistry of Stress Responses; S. Bioenergetics and Aging; T. Molecular Basis of Genetic Diseases; U. Genomics and Proteomics; W. Stem Cell Biology. Segments are repeatable.

BCH 231 The Plant Genome (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 100, BIOL 107A; or both BCH 110A, BCH 110B, BCH 110C or consent of instructor. Gives students an understanding for the structure of the plant nuclear, chloroplast, and mitochondrial genomes. Gene structure, regulation of gene expression, transposons, and methods of gene introduction are also emphasized. Cross-listed with BPS 231.


BCH 250 Oral Presentations in Biochemistry (2) Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): graduate standing. Training and practice in the present-ation of biochemical topics in both short and long seminar formats, using blackboard, overhead projector, and slides. Presentations are immediately and critically evaluated by both faculty and staff. Limited to 10 students.

BCH 251 Graduate Seminar in Biochemistry (2) Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): BCH 250. Oral reports by graduate students on current research topics in biochemistry.

BCH 252 General Seminar in Biochemistry (1) Seminar, 1 hour. Prerequisite(s): graduate standing. Oral reports by faculty, graduate students, and visiting scholars on current research topics in biochemistry. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BCH 261 Seminar in Genetics, Genomics, and Bioinformatics (1) Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BPS 261, BPS 261, ENTM 261, GEN 261, and PLPA 261.

BCH 289 Special Topics in Neuroscience (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to a particular area of neuroscience by analysis of the recent literature. Emphasizes recent advances in the special topic area. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BIO 289, CHEM 289, ENTM 289, NRSC 289, and PSYC 289.

BCH 290 Directed Studies (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing in Biochemistry; consent of instructor and graduate advisor. Experimental or literature studies on specifically selected topics undertaken under the direction of a staff member. With prior approval of the graduate advisor, M.S. students may receive a letter grade; other students are graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BCH 291 Individual Study in Biochemistry (1-6) Prerequisite(s): graduate standing in Biochemistry or consent of instructor. A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.S. and Ph.D. candidates; does not count toward the unit requirement for the M.S. degree. Graded Satisfactory (S) or No Credit (NC). Repeatable up to 6 units for pre-Master’s students and up to 12 units for Ph.D. students prior to successful completion of the qualifying examination.
Bioengineers develop processes and products that are important for health and treatment of diseases, new materials, protecting environments, and food production. They are employed by the pharmaceutical, biotechnology, medical device, and environmental and food industries. For students interested in medicine, the bioengineering program provides the basic courses to prepare for application to medical schools.

The objective of the bioengineering program is to produce graduates who:

- have a strong foundation to apply science, engineering, and biological principles to meet the challenges at the interface of engineering, life sciences, and medicine.
- have the capability to pursue graduate studies, careers in the medical device or biotechnology industries, or entry into medical or other health related professional schools.
- are effective as professionals working individually and in teams and can communicate effectively to integrate contributions from multiple disciplines to address biological and medical problems.
- have an appreciation of and sensitivity to a broad range of ethical and social concerns related to bioengineering.

The Bioengineering B.S. degree program at UCR is accredited by the Engineering Accreditation Comission of ABET, abet.org.

All undergraduates in the College of Engineering must see an advisor at least annually. Visit student.engr.ucr.edu for details.

University Requirements

See Undergraduate Studies section.

College Requirements

See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The Bioengineering major uses the following major requirements to satisfy the college's Natural Sciences and Mathematics breadth requirement.

1. BIOL 005A, BIOL 051A
2. CHEM 001A, CHEM 001B, CHEM 001C
3. MATH 008B or MATH 009A

Major Requirements

1. Lower-division requirements (84 units)
   a) BIEN 001, BIEN 010
   b) BIOL 005A, BIOL 051A, BIOL 005B
   d) CS 010
   e) EE 001A, EE 011A
   f) MATH 009A, MATH 009B, MATH 009C, (or MATH 091A, MATH 091B, MATH 091C) MATH 010A, MATH 010B, MATH 046
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (70 units)
   a) BIEN 101
   b) BIEN 105, BIEN 110, BIEN 120, BIEN 125, BIEN 130, BIEN 135, BIEN 140/CEE 140A, BIEN 155, BIEN 175A, BIEN 175B, BIEN 175C
   c) BIEN 115
   d) STAT 155
   e) Technical electives (16 units): BIEN 136/MSE 136, BIEN 137, BIEN 138, BIEN 140B/CEE 140B, BIEN 142, BIEN 159/CEE 159, BIEN 160, BIEN 165, BIEN 166, BIEN 167

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

Lower-Division Course

BIEN 001 Introductory Colloquium in Bioengineering (1) Colloquia, 1 hour. Colloquia on current topics in bioengineering and other related fields delivered at an introductory level. Presented by faculty members, visiting scientists, or individuals with industrial bioengineering experience. Graded Satisfactory (S) or No Credit (NC).

BIEN 010 Overview of Bioengineering (4) Lecture, 2 hours; discussion, 1 hour; practicum, 3 hours. Provides an overview of the various aspects of bioengineering and introduces bioengineering design. Illustrates the application of engineering principles for the design of various products to health science industries. Covers diagnostic instruments, artificial organs, biotechnology, and cell and tissue engineering. Covers engineering ethics.

Upper-Division Courses

BIEN 101 Quantitative Biochemistry (4) W, S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 005A; CHEM 008A and CHEM 081A or CHEM 081B and CHEM 081C; MATH 046. Provides Bioengineering students with an in-depth experience in applying mathematical modeling and simulation methods to understand the dynamics of biochemical systems. Prepares for designing new applications of genetic engineering.

BIEN 105 Circulation Physiology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 110. Introduces tensor and vector mathematics that describe the conservation of momentum and mass transport in biological sciences, the cardiovascular system, and pulmonary system. Includes constitutive equations, significance of fluid stress in biological vessels, and the physiological relevance of fundamental parameters. Emphasizes the relationship between function and system behavior.

BIEN 110 Biomechanics of the Human Body (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C or CHEM 01HC; CS 010; MATH 010A; PHYS 040B. Introduces the motion, structure, and function of the musculoskeletal system, the cardiovascular system, and the pulmonary system. Topics include applied statics, kinematics, and dynamics of these systems and the mechanics of various tissues (ligament, bone, heart, blood vessels, lung). Emphasizes the relation between function and material properties of these tissues.
BIEN 115 Quantitative Physiology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 110; consent of instructor is required for nonmajors. Analyzes quantitative aspects of physiological systems. Covers the nervous system, muscular system, respiratory system, renal system, and endocrine system, based on fundamental principles of material transport across biological membrane.

BIEN 120 Biosystems and Signal Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 105. Provides basic knowledge for the quantitative analysis of the dynamic behavior of biological systems. Particular applications include neural systems, control of metabolic and hormonal systems, and design of instruments for monitoring and controlling biological systems. Topics include system theory, signal properties, control theory, and transfer functions.

BIEN 125 Biotechnology and Molecular Bioengineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 101. Provides an overview of biochemical processes in cells and their use in developing new products and processes. Presents cellular processes such as metabolism, protein synthesis, enzyme behavior, and cell signaling and control from an engineering viewpoint of modeling and control.

BIEN 130 Bioinstrumentation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): concurrent enrollment in BIEN 130L or a grade of C- or better in BIEN 130L; EE 001A and EE 01LA with grades of C- or better. Introduces basic components of instruments for biomedical applications. Explores sources of signals and physical principles governing the design and operation of instrumentation systems used in medicine and physiological research. Topics include data acquisition and characterization, signal-to-noise concepts and safety analysis; and interaction of instrument and environment.

BIEN 130L Bioinstrumentation Laboratory (2) Laboratory, 3 hours; discussion, 1 hour. Prerequisite(s): concurrent enrollment in BIEN 130 or a grade of C- or better in BIEN 130L; EE 001A and EE 01LA with grades of C- or better. Laboratory experience with instrumental methods of measuring biological systems. Introduces various sensors and transducers to measure physical, chemical, and biological properties. Covers reliability, dynamic behavior, and data analysis.

BIEN 135 Biophysics and Biothermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 101, MATH 010B, MATH 046, PHYS 040C. An introduction to the application of thermodynamic principles to understanding the behavior of biological systems. Discusses physical properties of biomacromolecules, polymers, carbohydrates, and lipids, as well as the methods of characterizing their properties and interactions.

BIEN 136 Tissue Engineering (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): BIOL 005A and BIOL 005B, CHEM 010C or CHEM 014HC or equivalents; junior or senior standing or consent of instructor. Covers progress in cellular and molecular biology and engineering. Provides the basis for advancing tissue repair and regeneration with the goal of restoring compromised tissue functions. Presents methods for cell culture, tissue design and development, manipulation of the cell/tissue microenvironment, and current strategies for functional reconstruction of injured tissues. Cross-listed with MSE 136.

BIEN 137 Advanced Biomechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN110, BIOL 005B, MATH 046, PHYS 040A or equivalents; consent of instructor. Focuses on mechanical characterization of biological tissues at the cellular, organ, and system level. Explores biomechanical factors of physiological and pathological conditions.

BIEN 138 Fundamental Principles of Wound Repair (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 105, BIOL 002 or BIOL 005A, or equivalents; or consent of instructor. Provides fundamental understanding of the molecular and cellular biology of wound repair and regeneration. Focuses on the spatiotemporal roles of inflammatory cytokines, growth factors; extracellular matrix; mechanical forces; tissue cells and adult stem/progenitor cells in soft tissue repair. Topics include embryonic wound regeneration and adult skin and cardiovascular repair.

BIEN 140A Biomaterials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 101 or BCH 100, MATH 010B, PHYS 040B; or consent of instructor. Covers the principles of materials science and engineering with a focus on applications in bioengineering. Explores atomic structures, hard treatment, fundamentals of corrosion, manufacturing processes, and characterization of materials. Cross-listed with CEE 140A.

BIEN 140B Biomaterials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 040B. Covers the structure-property relations of metals, ceramics, polymers, and composites, as well as hard and soft tissues such as bone, teeth, cartilage, ligament, skin, muscle, and vasculature. Focuses on behavior of materials in the physiological environment. Cross-listed with CEE 140B.

BIEN 142 Introductory Biomedical Optical Imaging (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 040C and MATH 010B; or consent of instructor. Examines fundamental theory and basic design of biomedical optical systems. Explores the basic understanding of the working principles of optical components, diagnostic light-tissue interaction, and design of imaging systems to exploit the interaction of light with biological phenomena.

BIEN 155 Biotechnology Laboratory (2) Laboratory, 3 hours; discussion, 1 hour. Prerequisite(s): concurrent enrollment in BIEN 175A or a grade of C- or better in BIEN 175A; BIEN 101. Laboratory experience in cell culture, bioreactors, optical techniques, array techniques, and separation and purification methods.

BIEN 159 Dynamics of Biological Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005B, MATH 046; or consent of instructor. Covers engineering principles for the analysis and modeling of biological phenomena. Topics include molecular dynamics, transport, membranes, ligand-receptor interactions, enzyme kinetics, and dynamics of metabolic pathways. Examines the application of these principles to the design of bioengineers, biosystems, drug delivery systems, and artificial organs. Cross-listed with CEE 199.

BIEN 160 Biomedical Imaging (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 120. An introduction to the fundamental physics and engineering principles for medical imaging systems. Covers X-ray, ultrasound, radionuclide, magnetic resonance imaging, positron emission tomography, optical coherent tomography, and other optical methods. Includes image formation and reconstruction, image characteristics, and quality and image processing.

BIEN 165 Biomolecular Engineering (4) Lecture, 2 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): BIEN 135, or consent of instructor. Emphasizes engineering, biochemical, and biophysical concepts and technologies intrinsic to specific topics of biomolecular engineering. Introduces the history of genetic and protein engineering. Topics include biological thermodynamics, molecular kinetics, biochemical and biophysical approaches, protein engineering, high-throughput screening technologies, and protein engineering with unnatural amino acids.

BIEN 166 Bioenabled Engineering for Sustainable Energy (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 10 hours. Prerequisite(s): BIEN 140A/CEE 140A. Introduces the use of concepts from basic biological sciences (including biochemistry and biophysics) for applied energy engineering. Covers biological energy conversion (including photosynthesis) and its implication for sustainable energy technologies. Discusses recent advances in biomimetic and biosourced energy conversion.

BIEN 167 Medical Diagnostics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 130 or consent of instructor. Provides an overview of medical diagnostics. Topics include methods of biochemical detection, genotyping, DNA sequencing, medical imaging, hematolysis, microfluidics, epidemiology, diagnostics for point-of-care and resource-limited settings, and case studies of commercially successful diagnostic products.

BIEN 175A Senior Design (2) Lecture, 1 hour; practicum, 3 hours. Prerequisite(s): concurrent enrollment in BIEN 155 or a grade of C- or better in BIEN 155; BIEN 010 and BIEN 140A. Covers the entire design process for bioengineering. Explores intellectual property, quality control, and regulatory and ethical considerations. Requires working in small teams effectively to prepare formal engineering reports, web pages, notebooks, oral presentations, a project demonstration, and a business plan. Graded In Progress (IP) until BIEN 175A, BIEN 175B, and BIEN 175C are completed, at which time a final letter grade is assigned.

BIEN 175B Senior Design (4) Lecture, 2 hours; discussion, 1 hour; practicum, 3 hours. Prerequisite(s): BIEN 175A; senior standing in Bioengineering. Covers the entire design process for bioengineering. Explores intellectual property, quality control, and regulatory and ethical considerations. Requires working in small teams effectively to prepare formal engineering reports, web pages, notebooks, oral presentations, a project demonstration, and a business plan.

BIEN 175C Senior Design (4) Lecture, 2 hours; discussion, 1 hour; practicum, 3 hours. Prerequisite(s): BIEN 175B. Covers the entire design process for bioengineering. Explores intellectual property, quality control, and regulatory and ethical considerations. Requires working in small teams effectively to prepare formal engineering reports, web pages, notebooks, oral presentations, a project demonstration, and a business plan.

BIEN 190 Special Studies (1-5) Individual study. 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and department chair. Provides individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

BIEN 197 Research for Undergraduates (1-4) Laboratory, 3-12 hours. Prerequisite(s): consent of instructor and Bioengineering undergraduate program advisor. Directed research on a topic related to bioengineering. Requires a final written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIEN 198 R’Course – Variable Topics (1) Activity, 3 hours. Prerequisite(s): permission needed from department. An opportunity of UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 8 units.

Graduate Courses

BIEN 201 Mathematical Methods for Bioengineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 146A or equivalent; first-year standing in the graduate program in Bioengineering. Provides a fundamental grounding in applied mathematics. Enables the provision of problems in biotransport
and bioconversion kinetics. Topics include linear differential equations solutions; analytical methods for partial differential equations including separations of variables, similarity transforms, and perturbation methods; and numerical methods for bioengineering, regression techniques, and error analysis.

**BIEN 220 Chemical Genomics Design Studio (2)** Lecture, 1 hour; practicum, 4 hours. Prerequisite(s): course work in basic biology, calculus, chemistry, and physics; graduate standing or consent of instructor. BIEN 220 online section; enrollment in the Online Master-in-Science in Engineering program. Provides a bioengineering approach to the biological properties and interactions of various mammalian organ systems. Covers the nervous, muscular, cardiovascular, respiratory, and renal systems. Emphasizes the development of engineering principles governing these systems by applying quantitative and analytical approaches. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CMBD 220.

**BIEN 223 Engineering Analysis of Physiological Systems (4)** Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): course work in basic biology, calculus, chemistry, and physics; graduate standing or consent of instructor. BIEN 223 online section; enrollment in the Online Master-in-Science in Engineering program. Provides a bioengineering approach to the biological properties and interactions of various mammalian organ systems. Covers the nervous, muscular, cardiovascular, respiratory, and renal systems. Emphasizes the development of engineering principles governing these systems by applying quantitative and analytical approaches. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CMBD 220.

**BIEN 224 Cellular and Molecular Engineering (4)** Lecture, 2 hours; discussion, 1 hour; practicum, 3 hours. Prerequisite(s): graduate standing or consent of instructor. BIEN 224/MSE 224 online section; enrollment in the Online Master-in-Science in Engineering program. Emphasizes biophysical and engineering concepts intrinsic to specific topics at the cellular and molecular level. Includes receptor-ligand dynamics in cell signaling and function; DNA replication and RNA processing; cellular and protein sorting; control of gene expression; membrane structure, transport and biology; optical signal transduction; and mechanics of cell division. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with MSE 246.

**BIEN 227 Biophotonics: Laser-Tissue Interactions and Therapeutic Applications (3)** Lecture, 2 hours; term paper, 5 hours; written work, 1.5 hours. Prerequisite(s): BIOL 005B, CHEM 008B, or consent of instructor. Provides an overview of various types of interactions between lasers and biological tissues. Addresses methods of optical properties measurements, mathematical modeling of light propagation, and selected therapeutic applications of lasers. Includes one or two field trips to medical laser centers to observe laser treatment procedures.

**BIEN 228 Biophotonics: Optical Diagnosis and Measurements (3)** Lecture, 2 hours; outside research, 5 hours; extra reading, 1 hour; written work, 1.5 hours. Prerequisite(s): BIEN 227. Covers the fundamentals underlying optical diagnostic procedures, including absorption and scattering-based techniques. Also addresses physics of optical tweezers and their applications in biological sciences.

**BIEN 233 Computational Modeling of Biomolecules (4)** Lecture, 2 hours; workshop, 2 hours. Prerequisite(s): BIOL 005B; CHEM 008B and CHEM 008LB or CHEM 008LB; MATH 009C or MATH 009CH; PHYS 004C; prior computer programming experience. Introduces computational methods for the quantitative analysis of biomolecular structures at atomic resolution. Aids in understanding the physical and biochemical properties of biomolecular function, the prediction of biological properties, and the design of new experiments. Forms the basis for structure-based design of proteins with tailored properties and inhibitors of protein function. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

**BIEN 234 Orthopaedic Regenerative Engineering and Mechanobiology (4)** Lecture, 4 hours. Prerequisite(s): BIEN 110, BIEN 140A, BIOL 005A, and BIOL 005B, or equivalents; graduate standing or consent of instructor. Introduces advanced biomechanics and mechanobiology of skeletal tissues including bone and cartilage. Provides an understanding of structure-function relationship in biological tissues. Focuses on bone and cartilage regenerative engineering approaches based on scaffolds, stem cells, and mechanotransduction.

**BIEN 235 Vascular Biomechanics and Engineering (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 002, BIOL 005A, BIEN 105, or equivalent; graduate standing or consent of instructor. Provides detailed understanding of the crucial role of mechanical forces in guiding blood vessel formation and function in human health and disease. Topics include embryogenesis, wound repair, atherosclerosis, and aneurysms. Addressed are principles of biomaterials science and regenerative medicine for promoting therapeutic neovascularization.

**BIEN 236 Nanomaterials for Regenerative Medicine (4)** Lecture, 4 hours. Prerequisite(s): BIOL 005C, CHEM 001C (or CHEM 011HC), MSE 001, or equivalents; graduate standing or consent of instructor. Covers recent advances in nanomaterial synthesis, fabrication, and characterization. Focuses on the medical applications of nanomaterials. Addressed are principles of nanomaterials science such as nanoparticles, nanotubes, and nanofibers. Includes critical design criteria and assessment methods for properties of nanomaterials to meet medical requirements. Cross-listed with MSE 236.

**BIEN 237 Medical Diagnostics (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Provides an in-depth analysis of current topics in medical diagnostics. Focuses on critical reviews of recent journal articles on diagnostics and case studies of recent commercial diagnostic products. Topics include methods of biochemical detection, genotyping, medical imaging, hematology, microfluidics, epidemiology, and diagnostics for point-of-care and resource-limited settings. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

**BIEN 242 Advanced Biomedical Optical Imaging (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 142 or equivalent; graduate standing or consent of instructor. Examines advanced theory and optimized design of biomedical optical imaging systems. Topics include a full understanding of the working principles of optical components, diagnostic light-tissue interaction, and design of imaging systems to exploit the interaction of light with biological phenomena. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

**BIEN 245 Optical Methods in Biology, Chemistry, and Engineering (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers the use of optical techniques in biological research. Focuses on current research in cell signaling and control, including G protein-coupled receptors, signal transduction and cytoskeletal dynamics, and cell adhesion and cell metabolism. Students who submit a term paper receive credit for 2 units; other students receive credit for 1 unit. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

**BIEN 251 Biophotonics: Optical Microscopy and Its Biological Applications (3)** F, S, W Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the fundamentals of optical system design and system integration in light microscopy. Covers design components, including light sources, lenses, mirrors, dispersion elements, optical fibers, and detectors. Also covers optical system analysis, transfer functions, magnification, resolution, contrast, and on-cellular, cellular, organ, and organism applications.

**BIEN 260 Special Topics in Bioinstrumentation (1 or 2)** Seminar, 1 hour; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced technologies in biomedical engineering studies, such as spectroscopy, microscopy, magnetic resonance imaging, computed tomography, ultrasonography, and biosensors. Students who submit a term paper receive credit for 2 units; other students receive credit for 1 unit. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

**BIEN 261 Special Topics in Biotransport (1 or 2)** Seminar, 1 hour; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced techniques in the study of transport phenomena such as drug distribution, microrcirculation, membrane transport, and transport in organs and tissues. Students who submit a term paper receive credit for 2 units; other students receive credit for 1 unit. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

**BIEN 262 Special Topics in Biosignaling (1 or 2)** Seminar, 1 hour; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on current research in cell signaling and control, including G protein-coupled receptors, signal transduction and cytoskeletal dynamics, and cell adhesion and cell metabolism. Students who submit a term paper receive credit for 2 units; other students receive credit for 1 unit. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

**BIEN 263 Special Topics in Bioimputation (1 or 2)** Seminar, 1 hour; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on current research in cell signaling and control, including G protein-coupled receptors, signal transduction and cytoskeletal dynamics, and cell adhesion and cell metabolism. Students who submit a term paper receive credit for 2 units; other students receive credit for 1 unit. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

**BIEN 264 Biotransport Phenomena (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 105 or equivalent; graduate standing or consent of instructor. BIEN 264 online section; enrollment in the Online Master-in-Science in Engineering program. Covers the mathematical expression and modeling of principles.
underlying the transport processes of biological systems and biomedical engineering processes. Emphasizes momentum, mass transport, and interpretation of these processes. Topics include advanced development of governing conservation equations and the appropriate constitutive equations for transport in circulation and tissue. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

BIEN 265 Special Topics in Biomedical Optical Imaging (1 or 2) Seminar, 1 hour; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced theory, technology, and applications of biomedical optical imaging. Addresses novel sources of optical contrast, current developments in optical imaging instrumentation, and recent advances in their application to bioengineering. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

BIEN 266 Special Topics in Biophotonics (1 or 2) Seminar, 1 hour; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced methods for the determination of structure, dynamics, and interactions of biomolecules. Utilizes multidimensional near-infrared NMR spectroscopy. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

BIEN 268 Bioengineering Experimentation and Analysis (2) Laboratory, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C, CHEM 001C, CS 005, MATH 046, PHYS 002C or equivalents or consent of instructor. Introduces measurement principles and data acquisition methods related to biomechanics and biophysical applications. Covers photonic devices, detection, microscopy and spectroscopy techniques, and diagnostics and mechanistic ideas on photodynamic therapy. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

BIEN 269 Special Topics in Optical Measurements and Photomedicine (2) Discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the applications of optical trapping methods to characterize the mechanical and electromechanical properties of biological cells and membranes, and to quantify molecular interactions. Also covers the use of optical probes for cellular and tissue imaging, as well as optical therapy. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes.

BIEN 270 Transport with Reactions in Biological Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 264 or equivalent; graduate standing or consent of instructor; for BIEN 270 online section, enrollment in the Online Master-in-Science in Engineering program. Covers the mathematical expression and modeling of principles underlying the transport processes of biological systems reactions and biomedical engineering processes involving reactions. Topics include advanced development of chemical kinetics and reaction mechanisms of biological systems; enzymatic reactions; Michaelis-Menten kinetics; and cell-surface ligand-receptor kinetics. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

BIEN 271 Video Bioinformatics: Multi-scale Analysis of Biological Systems (2) Lecture, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the significant range for both the time and spatial scales of biological systems. Includes video imaging techniques, as well as how these spatial and time scales are analyzed for a better understanding of biological function. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 271 and GEN 271.

BIEN 272 Special Topics in Biomaterials and Tissue Engineering (1-2) Seminar, 1-2 hours; term paper, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced biomaterials and tissue engineering for medical applications. Explores the design, processing, characterization, and evaluation of biomaterials. Examines current development in novel materials and recent advances in their applications in tissue engineering, drug delivery, gene therapy, cell therapy, medical devices, and implants. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 30 units. Cross-listed with MSE 280.

BIEN 273 Special Topics in Regenerative Engineering and Biomechanics (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on advanced regenerative engineering and biomechanics in the skeletal system. Examines biomechanics of skeletal system at the tissue and cellular levels utilizing molecular biology approaches. Develops and implements regenerative methodologies for repairing damaged skeletal tissues by a thorough understanding in mechanobiology. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 30 units.

BIEN 274 Special Topics in Endothelial Biomedicine (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Presents an integrated view of the fundamental role of endothelial cells in regulating vascular tone, inflammation, and repair in both health and disease. Encompasses the principles related to developmental biology, molecular and cellular biology, biomechanics, bioengineering, and translational medicine. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 30 units.

BIEN 286 Colloquium in Bioengineering (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Colloquia on current research topics in bioengineering and other related fields. Presented by faculty members and visiting scientists. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIEN 290 Directed Studies (1-6) Individual Internship (1-12) Seminar, 1 hour; term paper, 0-24 hours; written work, 1-12 hours. Prerequisite(s): graduate standing; consent of instructor. Provides research opportunities for students who are enrolled in a Master-in-Science (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

BIEN 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor. Designated for research in bioengineering for the M.S. thesis or Ph.D. dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIEN 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): graduate standing; appointment as a teaching assistant or associate in Bioengineering. Provides supervised teaching in undergraduate courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIEN 401 Fundamentals of Proposal Preparation and Ethical Standards in Bioengineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. An introduction to effective proposal preparation and writing for bioengineering-related research. Also covers ethical standards of scientific research related to bioengineering. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

BIEN 402 Effective Writing for Bioengineering Research Publications (4) Lecture, 4 hours. Prerequisite(s): BIEN 401. An introduction to effective manuscript writing for bioengineering-related research publications.

Bioengineering Interdepartmental Graduate Program

Xiaoping Hu, Ph.D., Chair
Department Office, 203 MSE
(951) 827-2925; xiaoping.hu@ucr.edu
bioeng.ucr.edu

Distinguished Professors
Mark Alber, Ph.D. (Mathematics)
Bir Bhanu, Ph.D. (Electrical and Computer Engineering)
Sarajeet Gill, Ph.D. (Cell Biology & Neuroscience/Entomology)
David Lo, Ph.D. (Biomedical Sciences)
Ashok Mulchandani, Ph.D. (Chemical & Environmental Engineering)
Michael Pirrung, Ph.D. (Chemistry)
Kambiz Vafai, Ph.D. (Mechanical Engineering)
Charles Wyman, Ph.D. (Chemical & Environmental Engineering)

Professors
Michael E. Adams, Ph.D. (Cell Biology & Neuroscience/Entomology)
Guillermo Aguilar, Ph.D. (Mechanical Engineering)
G. John Andersen, Ph.D. (Psychology)
Christopher J. Bardeen, Ph.D. (Chemistry)
David Bocian, Ph.D. (Chemistry)
Richard Cardullo, Ph.D. (Cell Biology & Neuroscience/Entomology)
Quan Cheng, Ph.D. (Chemistry)
Sean Cutler, Ph.D. (Botany & Plant Sciences)
Iryna Ethen, Ph.D. (Biomedical Sciences)
Byron Ford, Ph.D. (Biomedical Sciences)
Thomas Girke, Ph.D. (Bioinformatics)
Tao Jiang, Ph.D. (Computer Science)
The Bioengineering Interdepartmental Graduate program (BIG) is the umbrella for graduate level research effort associated with the faculty in the Department of Bioengineering as well as other faculty at UCR who have an interest in training graduate students in bioengineering. The program offers graduate instruction leading to M.S. and Ph.D. degrees in Bioengineering.

Our interdisciplinary program combines a solid fundamental foundation in biological science and engineering, and aims to equip the students with diverse communication skills and training in the most advanced quantitative bioengineering research so that they can become leaders in their respective fields.

The result is a rigorous, but exceptionally interactive and welcoming educational training for Bioengineering graduate students.

The interdepartmental aspect of the program allows students to develop skills related to bioengineering with faculty in a broad range of disciplines. The research vision is to build strength from experts in biochemistry, biophysics, biology and engineering to focus on critical themes that impact bioengineering.

Contributing departments include: Bioengineering, Biochemistry, Biomedical Sciences, Botany & Plant Sciences, Cell Biology & Neuroscience, Chemistry, Chemical & Environmental Engineering, Computer Science, Electrical and Computer Engineering, Entomology, Mechanical Engineering, Physics & Astronomy, and Psychology.

The dominant research themes of BIG are advanced techniques development, bioimaging, biophysics of cellular systems, biomaterials, drug design and delivery, tissue engineering, cellular control and regulation, and computational modeling of biological systems.

Other research areas include: high-throughput screening systems, structural bioinformatics, microfluidics, charge transfer in biological and biomimetic systems, immunophysics, auditory bioengineering, molecular mechanisms of platelets activation, fatty acid contributions to obesity and diabetes, brain imaging, and bioseparations.

Please visit the UCR website to determine the research emphasis of the various participating faculty. The research efforts of faculty in the Department of Bioengineering can be found at bioeng.ucr.edu.

Combined B.S. + M.S. Five-Year Program: The college offers a combined B.S. + M.S. program in Bioengineering designed to lead to a Bachelor of Science degree as well as a Master of Science degree in five years. Applicants for this program must have a high school GPA above 3.6, a combined SAT Reasoning score above 1950 (or ACT plus Writing equivalent), complete the Entry Level Writing Requirement before matriculation, and have sufficient mathematics preparation to enroll in calculus in their first quarter as freshmen.

Interested students who are entering their junior year should check with their academic advisor for information on eligibility and other details.

Students in the B.S. + M.S. program may use units from their last two technical electives from their undergraduate course work towards their M.S. degree in addition to their B.S. degree. Students may not choose which technical elective units they will use. Only the last two courses will count. To transfer the units to the M.S. degree, students must see the department to submit the proper paperwork.

Admission: In addition to the following requirements, all applicants must meet the general requirements as set forth in this catalog under the Graduate Studies section.

Application to the BIG program is limited to the fall quarter.

Applicants will need to have completed coursework in chemistry, physics, math, biochemistry and biology, and engineering. Students without an undergraduate engineering degree should have excellent training in mathematics and the physical sciences.

Specific recommendations for students without an undergraduate engineering degree are:

- Two years of mathematics (equivalent UCR course = MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B).
- One year of physics (equivalent UCR course = PHYS 002A, PHYS 002B, PHYS 002C with lab).
- One year of inorganic chemistry including lab (equivalent UCR course = CHEM 001A, CHEM 001B, CHEM 001C).
- One year of organic chemistry including lab (equivalent UCR course = CHEM 112A, CHEM 112B, CHEM 112C).
- One course in biochemistry (equivalent UCR course = BCH 100 or BCH 110A or BCH 110B or BCH 110C).
- One course in molecular biology (equivalent UCR course = BCH 110C or BIOL 107).

Students with strong academic records may be admitted with limited coursework deficiencies, provided that these are satisfied by appropriate coursework taken during the first two years of graduate study.

Language Requirement: All international students whose first language is not English must satisfactorily complete the SPEAK test.

Students may be admitted to either the Master’s or the Ph.D. program. Students in the Master’s program may petition for admission into the Ph.D. program.

Master’s Program:

The M.S. program is ideal for professionals seeking greater depth in several areas of bioengineering. The degree requires a minimum of 36 quarter credits and may be completed in three to four academic quarters of full-time study. Both thesis and non-thesis options are offered for the degree program (Plan I, Thesis and Plan II, Comprehensive Examination).

Student must request permission to pursue an M.S. in Bioengineering while simultaneously pursuing a Ph.D. in a program other than Bioengineering.

Normative Time to Degree: Two years.

Plan I (Thesis):

In addition to the following requirements, all applicants must meet the requirements for Plan I as set forth in this catalog under the Graduate Studies section Master’s Degree Plan I (Thesis).

Course Requirements: Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium in Bioengineering, each quarter it is offered.

Plan II (Comprehensive Examination):

This plan is designed primarily for students who do not intend to pursue a Ph.D. in Bioengineering.

In addition to the following requirements, all applicants must meet the requirements for Plan I as set forth in this catalog under the Graduate Studies section Master’s Degree Plan II (Comprehensive Examination).

Course Requirements: Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium...
in Bioengineering, each quarter it is offered.

The comprehensive examination is prepared and administered by the Graduate Examination Committee. The student is allowed to choose between an oral and a written examination. The examination covers a broad range of topics chosen from upper division undergraduate courses and graduate courses taken by M.S. students.

Subsequent to the examination, the Graduate Examination Committee issues a passing or failing grade. Students who fail in the first attempt may retake the examination at the next scheduled comprehensive examination period. No more than two attempts to pass the exam are allowed.

The M.S. Comprehensive Examination may be held at the end of any quarters throughout the year. The committee to administer the M.S. Comprehensive Examination is selected by the Graduate Advisor and approved by the Graduate Program Committee.

Doctoral Program
The Ph.D. program is heavily integrated with research activities and is intended for well-qualified individuals who wish to pursue leadership careers in academic or industrial research. The Ph.D. program requires approximately three years of full-time study beyond the master's degree. In consultation with a faculty advisor, Ph.D. students plan their program of study.

The doctoral dissertation is based on original research in the field of specialization. An M.S. degree is not a prerequisite for entering the Ph.D. program.

The doctoral program includes a teaching requirement, an oral and written qualifying examination, and a dissertation.

Normative Time to Degree Five years.

Course Requirements Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium in Bioengineering, each quarter it is offered.

Written Qualifying Examination Students in the Ph.D. program must pass a written qualifying examination that covers the fields of engineering and biology that relate to the student's background and fields of interest.

Normative Time to Degree Five years.

Course Requirements Students must satisfy the core course requirements (see Core Courses). Students must enroll in BIEN 286, Colloquium in Bioengineering, each quarter it is offered.

Oral Qualifying Examination Following successful completion of the written examination, candidates for the doctoral degree must pass an oral examination, normally within three quarters of the date of their written exam. The oral examination is scheduled only after the candidate has written a proposal detailing the rationale, specific aims and approaches to be undertaken for her/his dissertation research.

Dissertation A written dissertation is completed by each student.

Candidates for the degree of Ph.D. may be required to defend the dissertation in a public, oral presentation at a time announced to members of the University community.

Core Courses All BIG graduate students are required to take at least three courses from the following six Bioengineering courses. Other courses may be substituted but must be approved by the bioengineering graduate advisor. Students from non-engineering backgrounds are also required to take BIEN 264 as one of their core course requirements.

Bioengineering Core
1. BIEN 223 - Engineering Analysis of Physiological Systems
2. BIEN 224 - Cellular and Molecular Engineering
3. BIEN 245 - Optical Methods in Biology, Chemistry, and Engineering
4. BIEN 249 - Integration of Computational and Experimental Biology
5. BIEN 264 - Biotransport Phenomena
6. BIEN 270 - Transport with Reactions in Biological Systems

Other required courses:
1. One bioscience class chosen from:
   - BCH 210, BCH 211, BCH 212, BIOL/CMDB 200, BIOL/CMDB 201, BIOL 203, BIOL 221/ MCBL 221/PLPA 226, or, with consent of instructor, BMSC 229, BMSC 230, BMSC 231, BMSC 232, BMSC 234, and BMSC 235 or NRSC 200A and 200B.

2. Other courses may be substituted but must be approved by the Bioengineering Graduate Advisor.

3. BIEN 286 - Colloquium in Bioengineering. This course is required every quarter in which it is offered.

Additional courses may be required by the Advisory Committee depending on the student's background and fields of interest.

M.S. and Ph.D. students are expected to complete the course requirements for the programs within their first year of residence.

Course Descriptions All Bioengineering courses are listed and described under Bioengineering.

Biological Sciences
Subject abbreviation: BLSC
College of Natural and Agricultural Sciences
Raphael Zidovetzki, Ph.D., Lead Advisor Program Office, 1223 Pierce Hall (951) 827-3579

The Biological Sciences interdepartmental major is not currently accepting new students. For more information, contact CNAS Undergraduate Academic Advising Center, 1223 Pierce Hall, (951) 827-7294.

Biology
Subject abbreviation: BIOL
College of Natural and Agricultural Sciences
Helen Regan, Ph.D., Department Chair Department Office, 2745 Life Sciences/ Psychology Bldg. (951) 827-5903; biology.ucr.edu

Major
The Department of Evolution, Ecology, and Organismal Biology offers B.A. and B.S. degrees in Biology. Both programs are based on the conviction that broad undergraduate training in biology, mathematics and the physical sciences, together with study in the humanities and social sciences, are fundamental to the education of a biologist. In addition to English composition, humanities,
social sciences and the Life Sciences core curriculum (see below, Major Requirements), both degrees require 36 units of upper-division (numbered 100-199) biology courses. The degrees differ in the humanities and social sciences requirements; also 16 units of a foreign language are required for the B.A., whereas the B.S. requires 16 additional units in substantive courses in biology or related fields. The research and teaching of the Department of Evolution, Ecology, and Organismal Biology includes different levels (e.g., molecules, cells, organisms, populations, communities) and processes (e.g., development, evolution) of biological organization. An overview is presented in the introductory courses (BIOL 005A, BIOL 05LA, BIOL 005B, and BIOL 005C), and emphasis is placed on the unifying principles of the discipline.

Because of the diversity within biology and the wide range of career options, much latitude is allowed in selecting upper-division biology courses for the 36 units required for the major. Each student can select courses and plan a program of study to meet her/his specific interests and career goals. For assistance with this, academic advisors are available in the CNAS Academic Advising Center (1223 Pierce Hall, (951) 827-7294). The section below, Programs of Specialization, is provided as a guide for course selection for graduate schools, medical and health science professional schools and the broad range of careers that are possible with the Biology major.

The 36 upper-division units are selected from a list which includes courses offered by the Department of Evolution, Ecology, and Organismal Biology (BIOL 100-199) and a limited number of courses in Biochemistry (BCH), and Cell Biology and Neuroscience (CBNS). Qualified undergraduates (GPA 3.0 or above) may participate in graduate-level biology seminar courses with consent of the instructor, and up to 4 units (with letter grade) may be included in the major.

Those who choose to obtain a B.S. degree have as a college requirement an additional 16 units in upper-division biology courses and/or substantive courses in a field or fields related to the major. The purpose of this related area is to add strength and breadth to the major and to meet specific requirements for postgraduate study or a chosen career. The substantive courses in fields related to the major may be lower or upper division, but they usually have science or mathematics prerequisites (e.g., CBNS 120/PSYC 120, CHEM 005, STAT 100A, STAT 100B, MATH 009C).

The Thomas Haider Program at the UCR School of Medicine Students in the Biology major and all others at UCR are eligible to complete admission requirements and apply for up to 24 positions reserved for UCR students in the UCR School of Medicine. Students eligible to apply to this unique pathway into the UCR medical school, called the Thomas Haider Program at the UCR School of Medicine, are those who attend UCR for at least six consecutive quarters and complete their bachelor's degree at UCR. Information on this program and general admission to the UCR medical school is provided at medschool.ucr.edu, in the school's section of this catalog, in the medical school Student Affairs Office (1682A School of Medicine Education Building, (951) 827-4334), and at orientation meetings held at UCR.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Natural and Agricultural Sciences, Colleges and Programs section.

Major Requirements
Some of the following requirements for the major in Biology may also fulfill the College’s breadth requirements. Consult with an academic advisor for course planning.

1. Life Sciences core curriculum (68-72 units)
   a) BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
   b) CHEM 001A, CHEM 01B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
   c) CHEM 008A and 08LA or CHEM 08HA and CHEM 08HA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 8HL, CHEM 080C and CHEM 08LC or CHEM 08HC and CHEM 8HL
   d) MATH 007A or MATH 009A, MATH 007B or MATH 009B
   e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC
   f) STAT 100A
   g) BCH 100 or BCH 110A

   The core curriculum must be completed with a grade point average of 2.0 or better and no grade lower than “C-.” If a grade of D or F is received in two core curriculum courses, either in separate courses or repetitions of the same course, the student will not be permitted to continue in the major.

2. Upper-division requirements (36 units)
   a) BIOL 102
   b) Thirty-two (32) additional Biology units to be taken in consultation with a faculty advisor

3. Other requirements

For the Bachelor of Arts only (0-16 units):
   The foreign language requirement may be fulfilled by completing level four or the demonstration of equivalent proficiency in one foreign language.

For the Bachelor of Science only (16 units):
   An additional 16 units in upper-division biology courses and/or substantive courses in a field or fields related to the major. A list of acceptable courses is available in the CNAS Academic Advising Center.

Programs of Specialization
The Life Sciences core curriculum (item 1 above) fulfills many of the requirements for admission to graduate schools in biology or professional schools in the medical and health sciences fields. In addition to Introductory Genetics (BIOL 102, 4 units), a wide choice is available for the remaining 32 upper-division units required for the Biology major (item 2.b) above and the 16 additional units related to the field of the major (B.S. degree, item 3 above). Each student selects upper-division and related courses depending on the type of school and career chosen (e.g., education, medicine, pharmacy, dentistry, optometry, veterinary medicine, nursing, physical therapy, public health, graduate school in one of the fields below).

In planning an academic program to prepare for teaching or one of the medical fields, present and prospective Biology majors are referred to relevant topics in the Biological Sciences section of this catalog. That section has information for those planning to attend graduate school in education to obtain a teaching credential (subsection, Teaching Credential) and/or a master’s or Ph.D. degree in education (subsection, Preparation for Graduate School). Also included are guidelines to help students select courses to prepare for admission to professional schools in the medical field (subsections, Medical Biology, Suggestions for Elective Units for Medical/Health Professions, Admission Requirements for Medical and Health Professional Schools). Additional information about required course work and admission tests (MCAT, OAT, VCAT, PCAT, GRE) can be obtained from (Veitch Student Center) and the Health Professions Advising Center (visit 1114 Pierce Hall or hpac.ucr.edu).

Suggested courses of study are provided below for those interested in various biological fields. These programs meet most of the requirements for admission to corresponding graduate schools for those students who wish to pursue a master’s and/or Ph.D. degree. The faculty advisor assists in selecting combinations of courses appropriate for advanced study in the fields below and others. Students considering graduate study are encouraged to do undergraduate research and take courses in computer science and statistics.

In some cases, a course of study differing substantially from the examples given below will best meet the needs of the student. In consultation with a faculty advisor, a student may prepare a program in some other biological specialization such as animal behavior, evolution/development or developmental biology.

Cell and Molecular Biology
BIOL 102, BIOL 105, BIOL 107A, BIOL 107B, BIOL 109 or BIOL 153/BCH 153/BPSC 153, CBNS 101 or BIOL 113 and BIOL 114, BIOL 119, BIOL 121/MBCL 121, BIOL 121/MBCL 121L, BIOL 122/MBCL 122, BIOL 123/MBCL 123/PLPA 123, BIOL 124/MBCL 124, BIOL 128/CBNS 128, BIOL 153/BCH 153/BPSC 153, BIOL 168, BCH 100 or the BCH 110A, BCH 110B, and BCH 110C sequence, BCH 102, CBNS 108, CBNS 150/ENTX 150, CHEM 005, CHEM 109, STAT 100A and STAT 100B

Ecology and Population Biology
BIOL 102, BIOL 104/BPSC 104, BIOL 105, BIOL 108, BIOL 116, BIOL 116L, BIOL 117, BIOL 160, BIOL 160L, BIOL 174, either BIOL 175 or BIOL 143/BPSC 143, the MATH 007A or
MATH 009A, MATH 007B or MATH 009B, and MATH 009C sequence, STAT 100A and STAT 100B.
Also recommended: BIOL 151, BIOL 161A, BIOL 163, BPSC 146, MATH 046, BIOL 165/BPSC 165, BIOL 166


Zoology and Physiology BIOL 100/ENTM 100, BIOL 102, BIOL 105, CBNS 101 or BIOL 113 and BIOL 114, BIOL 151, BIOL 152/ GEO 152, BIOL 157, BIOL 159, BIOL 160, BIOL 160L, BIOL 161A, BIOL 161B, BIOL 162/ENTM 162, BIOL 168, BIOL 171, BIOL 171L, BIOL 173/ENTM 173, BIOL 174, BIOL 175, BIOL 178, BCH 100, CBNS 106, CBNS 108, CBNS 116, CBNS 169. Students are also encouraged to take laboratory courses (e.g., BCH 102). Also recommended: a course in ecology (e.g., BIOL 116, BIOL 116L), STAT 100A and STAT 100B

California Teach-Science/Mathematics Initiative (CaTEACH-SMI) California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities, such as the SMI & Alpha Center Apprentice Programs, to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources which includes the National Science Foundation (NSF) Research scholarship Program to promote planning and professional development towards a science/mathematics education career.

For more information about the CaTEACH-SMI program, please visit smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at facebook.com/ScienceMathInitiativeAtUcr.

Additional Curricular and Advising Information
This catalog has sections applicable for all students at UCR (Finances and Registration, Academic Regulations), and a specific section for students in this college (College of Natural and Agricultural Sciences). Present and prospective students are referred to those sections for enrollment policies and procedures and curricular and advising information for the campus and college.

For Biology majors, information regarding the following topics can be obtained from the CNAS Undergraduate Academic Advising Center in 1223 Pierce Hall:
- Student Academic Advising
- Grading Basis: Letter Grade or S/NC
- Full or Part-time Study
- Transfer Students
- Minor
- Double Major
- Internships
- Preparation for Graduate School
- Education and Research Centers, Institutes and Resources

Independent Study and Research
The Department of Evolution, Ecology, and Organismal Biology offers courses in which students can enroll to do independent laboratory research or an in-depth library study of a topic of special interest.

Students desiring to do Independent Reading (BIOL 194), Introduction to Research (BIOL 197) or Junior/Senior Research (BIOL 199) should consult with a professor who is willing to supervise the project. The student may suggest a specific question or formulate a project after consultation with the instructor. Information about the research fields of the professors is available on the Department of Evolution, Ecology, and Organismal Biology website.

To enroll in these Independent Study and Research courses students should first contact the associated instructor for approval and proceed with enrolling through the CNAS Enrollment Management Center, preferably before the first day of instruction but no later than the end of the second week of the quarter.

Applicants for BIOL 194 and BIOL 199 should ordinarily be juniors or seniors with a GPA of 3.00 or higher. Sophomore students with a GPA of 3.00 or higher may apply to enroll in BIOL 197 (Introduction to Research), since the purpose of this course is to enable the student to do preliminary reading and laboratory research to explore with the professor the feasibility of undertaking a project for later enrollment in BIOL 199. Enrollment in BIOL 197 is not required before enrollment in BIOL 199, but the former course is available for those situations where preliminary work will be helpful.

For BIOL 194 and BIOL 199, the student writes a report of the library study or laboratory results for the quarter, which is reviewed by the sponsoring professor and submitted to the CNAS Academic Advising Center by the last day of instruction of the quarter.

Biolog 194, BIOL 197, and BIOL 199 are graded “S/NC”, and up to 9 units of credit may be counted as part of the 16 substantive units related to the major for the B.S. degree.

Natural Reserve System
This system was formed by the UC in 1965 to preserve for study a series of undisturbed natural areas representing the state’s vast ecological diversity. Since then the system has grown to include thirty-seven reserves, eight of them administered by the UCR campus. See Research Opportunities in this catalog.

Most of the reserves are undeveloped except for fencing, roads and trails, but laboratory facilities, housing and campsgrounds for class use are available at some sites. The reserves are used as outdoor classrooms and laboratories by students, teachers and researchers from educational institutions, public and private, throughout the state, across the nation and around the world. Some of the courses offered by the UCR Department of Evolution, Ecology, and Organismal Biology include field trips and overnight camping trips to the reserves. In the field, students are introduced to the great diversity of plant and animal organisms in Southern California, and to the effect of environmental factors on this diversity.

Undergraduate and graduate students who wish to use the reserves in their individual research projects should contact Dr. Kim Hammond, Department of Evolution, Ecology, and Organismal Biology, 3318 Spiehi Hall, (951) 827-4767, to obtain an application, map and list of rules and regulations.

Graduate Program
The Department of Evolution, Ecology, and Organismal Biology administers programs leading to the M.S. and Ph.D. degrees in Evolution, Ecology, and Organismal Biology, with specializations in Evolutionary Biology, Ecology, and Physiology and Biophysics.

Admission
Applicants are strongly advised to contact potential faculty advisor prior to applying to the program. Applicants must submit GRE scores for the General Test (verbal, quantitative, and analytical). In addition, submission of the Subject Test score may improve chances of admission and is recommended.

All graduate students entering the department meet with a guidance committee during the first quarter of enrollment so that their educational background can be addressed. Considering the requirements of the student’s specialization, the committee recommends a program of study to be followed in pursuit of graduate work. Because of the diversity among the specializations, course requirements for advanced degrees are specified by the student’s guidance committee.

Doctoral Degree
The Department of Evolution, Ecology, and Organismal Biology offers the Ph.D. degree in Evolution, Ecology, and Organismal Biology. In addition to the general requirements of the Graduate Division, students intending to become candidates for the Ph.D. degree in Evolution, Ecology, and Organismal Biology must complete the following.
Course Work  Course requirements are determined in consideration of the requirements of the student's area of specialization. Selection of specific courses is done by the guidance committee in consultation with the student. Students also are required to take two current research topics courses (BIOL 252 or another disciplinary colloquium and EEOB 265) for a minimum of 5 quarters prior to advancement to candidacy and 12 quarters prior to completion of the doctoral degree.

Professional Development  One unit of coursework in professional development, which is satisfied by EEOB 400.

Written and Oral Qualifying Examinations  Students must pass a written examination in their specialized field of interest not later than the end of the second year of residence. Written Qualifying Examinations must be completed by the eighth week of the sixth quarter in residence. Upon successful completion of the Written Qualifying Examination, an Oral Qualifying Examination is administered wherein students defend a proposal detailing the rationale, specific aims, and approaches to be undertaken for their proposed dissertation research.

Dissertation  Candidates may be required to successfully defend their dissertation research in a public oral presentation.

Teaching Requirement  Students must have at least one year of approved teaching experience.

Normative Time to Degree 18 quarters

Master's Degree

The Department of Evolution, Ecology, and Organismal Biology offers the M.S. degree in Evolution, Ecology, and Organismal Biology, with specializations in Evolutionary Biology, Ecology, and Physiology & Biophysics. To qualify for the M.S. degree in Evolution, Ecology, and Organismal Biology, candidates must meet the requirements of the Department of Evolution, Ecology, and Organismal Biology. These requirements are as follows:

Plan I (Thesis)  Thirty-six (36) quarter units of approved courses in the 100 or 200 series, of which at least 24 units must be in the 200 series courses in the biological sciences. Not more than 12 units of EEOB 299 may be applied to the degree. A minimum of 12 units of course work other than courses in the 290 series must be completed in fulfillment of the requirement for 24 units of graduate courses. Students must present an acceptable thesis and undergo a final oral examination in defense of the thesis.

Lower-Division Courses

BIOL 002 Cellular Basis of Life (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): none. An introduction to the fundamentals of life processes at the cellular level. Topics include cell structure, chemical composition, metabolism, reproduction, genetics, and development with emphasis on humans. Not recommended for natural science majors. Either BIOL 002 or BIOL 003 may be taken as a breadth requirement in biology; together they provide a general introduction to the field of biology. Credit is not awarded for BIOL 002 if it has already been awarded for BIOL 005A, BIOL 05LA or BIOL 020.

BIOL 003 Organisms in Their Environment (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): none. An introduction to the physiology, ecology, and evolution of living organisms with emphasis on humans. Not recommended for natural science majors. Either BIOL 002 or BIOL 003 may be taken as a breadth requirement in biology; together they provide a general introduction to the field of biology. Credit is not awarded for BIOL 003 if it has already been awarded for BIOL 005B.

BIOL 005A Introduction to Cell and Molecular Biology (4)  Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 05LA (may be taken concurrently) or BIOL 020 (may be taken concurrently) with grades of “C-” or better; CHEM 011A, CHEM 01LA with grades of “C-” or better or CHEM 01HA and CHEM 1HLA with grades of “C-” or better; consent of instructor is required for students repeating the course. An intensive course designed to prepare for upper-division courses in organismal biology. Covers biochemistry, structural, metabolic, and genetic aspects of cells. Required for Biology majors; recommended for science majors desiring an introduction to biology.

BIOL 005B Introduction to Organismal Biology (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A and BIOL 05LA or BIOL 020 with grades of “C-” or better; CHEM 011A or CHEM 01HA; CHEM 011B or CHEM 01HB; consent of instructor is required for students repeating the course. An intensive course designed to prepare for upper-division courses in organismal biology. Covers developmental biology, physiology, and regulation of the level of the organism. Required for Biology majors; recommended for science majors desiring an introduction to biology.

BIOL 005C Introductory Evolution and Ecology (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A, BIOL 05LA, and BIOL 005B with grades of “C-” or better; MATH 008B with a grade of “C-” or better or MATH 009A with a grade of “C-” or better or equivalent; consent of instructor is required for students repeating the course. An intensive introduction to the field of evolution and ecology. Covers population dynamics, community ecology, population genetics, and evolutionary theory. Recommended for science majors desiring an introduction to biology. Students who take equivalent first-year biology at another institution may enter directly into BIOL 005C without critical handicap.

BIOL 010 Headlines in the History of Life (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A or BIOL 008A (may be taken concurrently); consent of instructor. An introduction to laboratory exercises on organisms from the Proterozoic to the present. Emphasis is on origin and evolution of major groups of animals. Credit is not awarded for BIOL 010 if it has already been awarded for BIOL 05LA.

BIOL 020 Dynamic Genome (2) F Laboratory, 6 hours. Prerequisite(s): CHEM 001A or CHEM 01HA, MATH 008B or MATH 009A (MATH 009A may be taken concurrently); freshman standing. Introduces computational and experimental approaches in investigating the genomes of plants and animals. Explores scientific discovery using the tools of bioinformatics and genomics. Includes participation in research projects being conducted on campus. Credit is not awarded for BIOL 020 if it has already been awarded for BIOL 05LA.

BIOL 030 Human Reproduction and Sexual Behavior (4)  Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A consideration of human anatomy, physiology and behavior as related to sexual reproduction, including discussion of fertility, pregnancy, childbirth and birth control. Consideration will also be given to homosexuality, venereal diseases, sex education, sexual intercourse and response.

BIOL 034 Human Heredity and Evolution (4)  Lecture, 3 hours; discussion and problem solving, 1 hour; audio-visual aids plus discussion, 1 hour. Basic human genetics and evolution, emphasizing their relationship to physical and emotional health. Political, philosophical and ethical implications of human heredity and evolution.

BIOL 040 Disease and History: From the Bubonic Plague to AIDS (4)  Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. This course lecture for nonscience majors will deal with the natural history of infectious diseases and how plagues have influenced the course of human history. It will cover the biology, pathology, epidemiology, and immunology of viruses, bacteria, and protozoan parasites causing smallpox, yellow fever, influenza, AIDS, syphilis, bubonic plague, tuberculosis, leprosy, malaria, and African sleeping sickness. The role of scientific inquiry in the conquest of human disease will be emphasized.

BIOL 05LA Introduction to Cell and Molecular Biology Laboratory (1) Laboratory, 3 hours. Prerequisite(s): BIOL 005A (may be taken concurrently); consent of instructor. Required for students repeating the course. An introduction to laboratory exercises on fundamental principles of and techniques in cell and molecular biology. Illustrates the experimental foundations of the topics covered in BIOL 005A. Credit is not awarded for BIOL 05LA if it has already been awarded for BIOL 020.

Upper-Division Courses

BIOL 100 General Environments (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 055B, BIOL 005C, or equivalents; or consent of instructor. An introductory study of insects, Earth's most diverse group of animals (75 percent of animal species are insects). Lecture covers the anatomy, physiology, ecology, behavior, and diversity of insects. Laboratory focuses on insect identification. Cross-listed with ENTM 100.

BIOL 102 Introductory Genetics (4)  Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 020 or BIOL 05LA, and BIOL 005B with grades of “C-” or better. An introductory course that includes classical Mendelian genetics, linkage and recombination, sex-linked traits, cytogenetics, developmental genetics, and molecular genetics. Also includes some probability theory and statistics.

BIOL 104 Foundations of Plant Biology (4)  Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005C. A study of the plant world from cells to ecosystems. Examines the structure and function of organisms from the major plant groups and their role in the biosphere. The laboratory explores the unique properties of plants. Cross-listed with BPSC 104.

BIOL 105 Evolution (4)  Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A or BIOL 010 with a grade of “C-” or better. BIOL 102, CHEM 008C and CHEM 08LC, or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 098B, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics, or consent of instructor. Covers the causal interpretation of organic diversity and adaptation. Topics include inference of evolutionary change from the fossil record and from genomic and molecular patterns; microevolution and macroevolution; systematics and the species problem; and natural selection, drift, and other forces of evolution.

BIOL 106 Biology of Human Variation (4)  Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102; BIOL 105 or BIOL 108; BIOL 005B (STAT 100B may be taken concurrently); or consent of instructor. A survey of variation within and among contemporary human populations arising from genetic and environmental factors. Covers single-locus and polygenic inheritance, developmental plasticity, and physio-
Biology / 130

logical acclimatization. Includes biogeographic and demographic influences; variation in pigmentation, stature, physiology, disease susceptibility, behavior, and IQ; and critical evaluation of racial and ethnic classifications.

**Biol 107A Molecular Biology (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 008C and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics. An examination of the organization, function, and behavior of eukaryotic cells. Topics include membrane structures, protein targeting, the cytoskeleton, motility, and cell division. Emphasis is on the experiments that form the basis of the current understanding of the cell. The discussion section focuses on reading and analyzing original journal articles.

**Biol 114 Advanced Cell Biology: Cellular Reproduction and Signaling (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C, BIOL 102, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A. The study of the structure and function of the genetic material, including DNA structure, DNA replication and recombination, regulation of gene expression, and protein synthesis. Examines both prokaryotic and eukaryotic systems including contemporary recombinant DNA technology and applications of molecular cloning procedures. Credit is not awarded for BIOL 107A if it has already been awarded for BCH 110C.

**Biol 107B Advanced Molecular Biology (3)** Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 107A or BCH 110C or equivalents. An advanced treatment of the functional architecture of genetic material. Topics include genome structure and chromosome organization, DNA replication and gene expression, cloning organisms, protein engineering, and application of modern molecular biology to agricultural problems. Coverage of each topic includes discussion of the impact of the emergent molecular technology on society.

**Biol 108 Population Genetics and Genomics (4)** Lecture, 3 hours; discussion and demonstration, 1 hour per week. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H, CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, one course in statistics. A study of factors influencing genetic variation in biological populations. Topics include the effects of natural selection and drift on genetic variation, detecting adaptive change from genomic data, why genetic diseases and cancers persist, the evolution of co-operation, adaptation to pathogens and to a changing environment, and the genetic challenges faced by small conserved populations.

**Biol 110 Biology of Human Problems (4)** Seminar, 4 hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, one course in statistics. Emphasis is on the experiments that form the basis of the current understanding of the cell. The discussion section focuses on reading and analyzing original journal articles.

**Biol 116 Ecology and Conservation Biology (4)** Lecture, 3 hours; discussion, 1 hour; field, 9 hours per quarter. Prerequisite(s): BIOL 005C with a grade of “C-” or better, CHEM 001C (or CHEM 01HC), MATH 007B or MATH 009B or MATH 09H, or consent of instructor. Introduces principles of ecology with emphasis on implications for the conservation of biodiversity. Topics include physiological ecology, organismal adaptations to the environment, life histories, the niche concept, population growth, interspecific interactions, and the structure and functioning of communities and ecosystems. Also covers topics in applied ecology and conservation biology.

**Biol 118 Laboratory in Molecular Phylogenetics and Evolution (4)** Lecture, 2 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): BIOL 100 and BIOL 100A, BIOL 005C with a grade of “C-” or better, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, one course in statistics. Emphasis is on the experiments that form the basis of the current understanding of the cell. The discussion section focuses on reading and analyzing original journal articles.

**Biol 119 Introduction to Genomics and Bioinformatics (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C with a grade of “C-” or better, BIOL 102, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, STAT 100A, or consent of instructor. Covers theory, techniques, and analytical methods for interpreting patterns of molecular evolution and phylogeny. Explores the consequences and applications of evolutionary hypotheses using modern computational methods. Includes polymerase chain reaction (PCR), cloning, gel electrophoresis, and restriction site analysis.

**Biol 120 Introduction to Plant Pathology (3)** Lecture, 3 hours. Prerequisite(s): BIOL 005A, BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics. An introduction to the science of genomics and bioinformatics. Includes genome sequencing; database techniques; structural, comparative, and evolutionary genomics; and microarray analysis.

**Biol 121 Introductory Microbiology (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics, or consent of instructor. Covers the principles of microbial taxonomy, basic evolution, and epidemiology. Includes fundamental quantitative and diagnostic microbiological procedures, basic mechanisms of microbial genetic exchange, and a project examining bacterial epidemiology. Cross-listed with MCB 121.

**Biol 122 Food Microbiology (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 101/MCB 101 with a grade of “C-” or better; BIOL 121/MCB 121. Covers spoilage and preservation of food quality and indicator organisms; the role of microorganisms in the production of dairy goods and fermented beverages; food-borne pathogens and microbiological production of toxins; and classical and modern molecular methods for detection of food microorganisms. Cross-listed with MCB 122.

**Biol 123 Introduction to Comparative Virology (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics, or consent of instructor. Covers the principles of microbial taxonomy, basic evolution, and epidemiology. Includes fundamental quantitative and diagnostic microbiological procedures, basic mechanisms of microbial genetic exchange, and a project examining bacterial epidemiology. Cross-listed with MCB 122.

**Biol 124 Pathogenic Microbiology (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 121/MCB 121 with a grade of “C-” or better or consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers research strategies for examining mechanistic and evolutionary hypotheses of bacterial, plant, and viral pathogenesis. Cross-listed with MCB 124.

**Biol 127 Insect Ecology (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC, CHEM 08H and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics, or consent of instructor. Covers the principles of microbial taxonomy, basic evolution, and epidemiology. Includes fundamental quantitative and diagnostic microbiological procedures, basic mechanisms of microbial genetic exchange, and a project examining bacterial epidemiology. Cross-listed with MCB 122.
BIOL 128 Immunology (3) Lecture, 3 hours. Prerequisite(s): BIOL 005C, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A. A study of humoral and cellular immunology. Topics include lymphoid systems, cells, antigens, antibodies, cellular immunity, and tumor and transplantation immunology. Diseases and altered immune states associated with each topic are discussed in detail. Cross-listed with CBINS 128.

BIOL 132 Plant Anatomy (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A and BIOL 005B, BPSC 104 or BIOL 104; or consent of instructor. Functional and developmental aspects of plants: cell, tissue, and organ structure. Covers all aspects of the flowering plant life cycle from germination to pollination and fruit and seed development. Cross-listed with BPSC 132. Smith

BIOL 134 Introduction to Mycology (3) Lecture, 3 hours. Prerequisite(s): BIOL 005A, BIOL 010A or BIOL 020, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HL. Cross-listed with MATH 009B or MATH 09HB, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Introduction to the morphology, taxonomy, genetics, physiology, ecology, and economic importance of the major groups of the fungi. Cross-listed with PLPA 134.

BIOL 138 Plant Developmental Morphology (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BCH 100 or BCH 110A (BCH 100 or BCH 110A may be taken concurrently), BIOL 005B, BIOL 005C, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, PHYS 002C, PHYS 02LC; or consent of instructor. Introduces the key areas of research in plant morphology and developmental biology. Emphasizes flowering plants (angiosperms). Cross-listed with BPSC 138. Springer

BIOL 143 Plant Physiology (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HL, PHYS 002C and PHYS 02LC; or consent of instructor. Prerequisite(s): BIOL 134/PLPA 134; or consent of instructor. Introduces fundamentals in the use of laboratory instruments and techniques for the isolation, cultivation, and identification of representatives of the major taxa of fungi. Cross-listed with PLPA 134.

BIOL 151 Invertebrate Zoology (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, PHYS 002A with grades of “C-” or better. Structure, classification, and biology of the invertebrates.

BIOL 152 Principles of Invertebrate Paleobiology and Paleoecology (4) Lecture, 2 hours; laboratory, 3 hours; three 1-day field trips. Prerequisite(s): BIOL 005C with a grade of “C-” or better or BIOL 010/GEOL 003 with a grade of “C-” or better. Cross-listed with BIOL 104 with consent of instructor. A study of the fossil record, paleoecology, classification theory, the nature of adaptive radiations, and extinctions. Cross-listed with GEO 152.

BIOL 153 Plant Genomics and Biotechnology Laboratory (4) F, Even Years Lecture, 1 hour; discussion, 1 hour; laboratory, 6 hours. Prerequisite(s): BIOL 153A, BIOL 153B, and CHEM 110A or BCH 110A (BCH 100 or BCH 110A may be taken concurrently); or consent of instructor. An introduction to the exam of the structure, function, and behavior of eukaryotic chromosomes. Cross-listed with BPSC 155.

BIOL 155 Chromosomes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HL, MATH 007B or MATH 09HB or MATH 09HB, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. A study of the functional anatomy of vertebrates including humans. Examines each organ system from a developmental and evolutionary perspective. Topics include phylogeny, the skeleton, muscles, and the nervous system. BIOL 161A, BIOL 161B, BIOL 171, and BIOL 171L provide a one-year sequence in vertebrate and human anatomy and physiology. Recommended for sophomores and juniors.

BIOL 158 Medical Molecular Parasitology (4) Lecture, 3 hours; seminar, 1.5 hours. Prerequisite(s): BIOL 110C or BIOL 107A. An overview of genome organization and gene expression, with an emphasis on eukaryotic systems, learning, and the role of the nervous system in integrating behavior in insects. Cross-listed with ENTU 162. Carde

BIOL 161 Functional Anatomy of the Vertebrates (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): BIOL 161A, CHEM 008B and CHEM 08HL, CHEM 08HLA; CHEM 008B and CHEM 08HL, PHYS 002A, and one course in statistics with grades of “C-” or better. A study of the functional anatomy of vertebrates including humans. Examines each organ system from a developmental and evolutionary perspective. Topics include circulatory, sense organs, and the respiratory, digestive, and urogenital systems. BIOL 161A, BIOL 161B, BIOL 171, and BIOL 171L provide a one-year sequence in vertebrate and human anatomy and physiology. Recommended for sophomores and juniors.

BIOL 162 Insect Behavior (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or BIOL 100/ENTU 100; or consent of instructor. An analysis of the mechanisms that cause and control behavioral reactions of insects. Emphasizes ethological and physiological knowledge concerning orientation mechanisms, communication systems, learning, and the role of the nervous system in integrating behavior in insects. Cross-listed with ENTU 162. Carde

BIOL 163 Evolutionary Ecology of Terrestrial Vertebrates (5) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, MATH 007B or MATH 09HB or MATH 09HB. Topics include ecology, evolution, and behavior of birds, mammals, reptiles, and amphibians. Laboratory covers systematics, morphology, and identification and includes indoor lab and field trips to local habitats.

BIOL 165 Restoration Ecology (4) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 104/BPSC 104 or BIOL 116 or ENSC 100; CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HLB, STAT 100A (STAT 100B may be taken concurrent). Laboratory exercises in animal behavior. Covers topics such as foraging behavior, aggression, and territoriality.

BIOL 166 Developmental Biology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOI
107A: a course in cell biology is recommended. An advanced description of the embryonic development of animals. Covers the basic concepts of fertilization, gastrulation, and neurulation. Analyzes topics in current developmental research, with an emphasis on the molecular mechanisms of pattern formation and differentiation.

BIOL 171 Human Anatomy and Physiology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOI 161A; CHEM 008C and CHEM 08LC, or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H9; PHYS 002C; PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; concurrent enrollment in BIOL 171. An analysis of cell, tissue, and organ structure and function in normal and diseased conditions. Topics include the musculoskeletal, circulatory, and autonomic nervous systems; glands and hormones; body fluids and the kidney; digestion and absorption; and pharmacology and hematology. BIOI 161A, BIOI 161B, BIOI 171, and BIOI 171L provide a one-year sequence in vertebrate and human anatomy and physiology.

BIOL 171L Human Anatomy and Physiology Laboratory (1) Laboratory, 3 hours. Prerequisite(s): BIOI 161A (may be taken concurrently), CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H9; PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; BIOI 161B is recommended; concurrent enrollment in BIOL 171L. Involves laboratory experiments in physiology and study of human anatomy and histology (normal and diseased). Includes experimentation, data collection, and analysis that incorporates hematology, blood proteins, urinalysis, neuromuscular control, cardiac excitation and pharmacology, blood pressure, electrocardiography, and electroencephalography. BIOI 161A, BIOI 161B, BIOI 171, and BIOI 171L provide a one-year sequence in vertebrate and human anatomy and physiology.

BIOL 173 Insect Physiology (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOI 005A and BIOI 005B or equivalents; CHEM 008A and 08LA or CHEM 08BA and 08HLA; CHEM 008B and 08LB or CHEM 08HB and 08HLB; CHEM 08C and 08LC or CHEM 08HC and CHEM 08HLC, or equivalents; or consent of instructor. Introduction to principles of insect physiology. Subjects include growth, development and hormones, cuticle, nervous system, circulation, respiration, digestion, nutrition, excretion, reproduction, water balance, and temperature relations. Prior knowledge of insects is not assumed. Cross-listed with ENTM 173.

BIOL 174 Ecological and Evolutionary Physiology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOI 005A, BIOI 005B, BIOI 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H9, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics. Examines the interactions between organisms and their environment, morphologies, and behavioral phenotypes. Includes allometry and scaling, metabolism and locomotion, heat and water exchange, evolution of endotherms, artificial selection experiments, and phylogenetically based statistical methods.

BIOL 175 Comparative Animal Physiology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOI 005A, BIOI 005B, BIOI 005C, BIOI 161A, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H9, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, STAT 100A: recommended; BIOI 151 and BIOI 161B. Topics include nutrition and energy metabolism, gas exchange, circulation, and regulation of body fluid composition.

BIOL 176 Comparative Biomechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOI 005C; PHYS 002C or PHYS 040C, BCH 100 or BCH 110A. Applies principles from physics and engineering to the study of the relationship between organism form and function. Covers examples from diverse plant and animal systems. Includes fundamental properties of solids and fluids, viscoelasticity, drag, biological pumps, locomotion, and muscle mechanics.

BIOL 178 Hormones and Behavior (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOI 005A, BIOI 005B, BIOI 005C, CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09H9, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics. An examination of the interactions between hormones and behavior in animals, including humans. Provides an overview of endocrine physiology, and examines the roles of hormones in sexual differentiation, sex differences in behavior, sexual behavior, parental behavior, affiliation, aggression, stress, and mood.

BIOL 190 Special Studies (1-4) Individual study, 3-12 hours. Prerequisite(s): instructor and departmental chairman. To be taken as a means of meeting special curricular needs. Grading basis to be selected in consultation with the instructor and departmental chairman. Course is repeatable.

BIOL 191 Seminar in Biology (2-4) Seminar, 2-4 hours. Prerequisite(s): upper-division standing; consent of instructor. A critical study of selected topics in biology. Course is repeatable.

BIOL 194 Independent Reading (1-4) Consultation, 1-4 hours. Prerequisite(s): junior or senior standing and consent of instructor and departmental chairman. Independent study under faculty supervision. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

BIOL 197 Introduction to Research (1-2) Consultation, 1-2 hours. Prerequisite(s): sophomore, junior or senior standing and consent of instructor and departmental chairman. Reading, planning and preliminary laboratory work to develop a research project suitable for BIOL 199, Junior/Senior Research. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIOL 199 Junior/Senior Research (1-4) Laboratory, 1-4 hours. Prerequisite(s): junior or senior standing, a minimum GPA of 3.0 and consent of instructor and departmental chairman. Special problems and research in biology. Prerequisite: the supervision of members of the faculty of the Department of Evolution, Ecology, and Organismal Biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIOL 200 Cell Biology (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): BCH 110A or BCH 110B or equivalent (may be taken concurrently): BIOI 102 or equivalent: BIOI 113 or BIOI 114 or CBSN 101 or equivalent. An examination of the structure and function of eukaryotic cells and their components with emphasis on the facts that provide the foundation for our current knowledge. Covers topics such as cell membranes, intracellular trafficking, cell-to-cell interactions, motility, and the cytoskeleton. Cross-listed with CMDB 200.

BIOL 201 Molecular Biology (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): BCH 110A or BCH 110B or equivalent (may be taken concurrently): BIOI 102 or equivalent: BIOI 113 or BCH 110A or equivalent. Covers the structure and function of biomolecules, replication of DNA, regulation of gene expression at the cellular and molecular level including molecular mechanisms for regulation of gene transcription, posttranscriptional regulation at the level of messenger RNA stability, processing, editing. Methods for gene mapping, and positional cloning. Cross-listed with CMDB 201.

BIOL 203 Cellular Biophysics (3) Lecture, 3 hours. Prerequisite(s): BIOI 200/CMDB 200; BIOI 201/CMDB 201. CHEM 109 or equivalent; or consent of instructor. Biophysical principles that determine cellular structure and function including diffusion, electrochemical gradients, transport, macromolecular interactions, and genetic recombination. Illustrative examples are used to highlight the importance of these principles in modern cell biology and physiology.

BIOL 221 Microbial Genetics (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOI 107A; BIOI 102. In-depth coverage of the genetics of microbes. Emphasizes the primary data and the foundation of modern techniques using viruses, archae, prokaryotes, and eukaryotes. Includes genome sequences and organization, plasmas and other vectors, and mutation and genetic screens. Also covers transposable elements, recombination, and regulation of gene expression, development, and pathogenesis. Cross-listed with MCBL 221 and PLPA 226. Borkovich

BIOL 250 Special Topics in Biology (1-2) Seminar, 1-2 hours. Prerequisite(s): graduate standing and consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each staff member. Course content will emphasize recent advances in the special topic and will vary according to instructor. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

BIOL 252 General Colloquium in Biology (1) Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): graduate standing. Oral reports by visiting scholars, faculty, and students on current research topics in Genetics, Genomics, and Bioinformatics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIOL 261 Seminar in Genetics, Genomics, and Bioinformatics (1) Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports by visiting scholars, faculty, and students on current research topics in Genetics, Genomics, and Bioinformatics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIOL 289 Special Topics in Neuroscience (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BCH 289, CHEM 289, ENTM 289, NRSC 289, and PSYC 289.

EEOB 210 Organismal Biology (4) Lecture, 4 hours. Prerequisite(s): At least one upper division undergraduate course that covers the principles of physiology (such as animal physiology, plant physiology, human physiology, or comparative anatomy and physiology), or a similar course, AND an upper division undergraduate course that covers the principles of evolution, or a similar course, OR consent of instructor. Explores the historical development of modern ideas in organismal biology. Topics include homeostasis, scaling, energetics, structure-function relationships, control
systems, and response systems. Examines recent research in the context of the classic studies.

**EEOB 211 Foundations of Ecology (4)** Lecture, 4 hours. Prerequisite(s): BIOL 116 or consent of instructor. Examination of the history, theory, and interrelationships of fundamental ecological principles through readings and discussions of classic and recent literature. Topics include quantitative, population, community, ecosystem, evolutionary, and conservation ecology.

**EEOB 212 Ecological Systems in Space and Time (4)** Lecture, 3 hours; field, 30 hours per quarter. Prerequisite(s): One upper-division undergraduate course in population or community ecology or paleoecology, or consent of instructor. Focuses on how ecological systems are interpreted and reconciled at the community, landscape, and paleontological scales. Addresses the role of extrinsic factors operating at each of these scales. Also examines the historical development of our understanding of ecological systems at various scales. Cross-listed with ENTM 212 and GEO 212.

**EEOB 213 Behavioral Ecology (4)** Lecture, 4 hours. Prerequisite(s): BIOL 160 or consent of instructor. Examines animal behavior in an evolutionary context. Traces the historical development of the study of behavior, drawing from ethology, comparative psychology, and sociobiology. Topics include evolution of sociality, sexual selection, predator-prey behavior, and parental care.

**EEOB 214 Evolutionary Genetics (4)** Lecture, 4 hours. Prerequisite(s): BIOL 108 or consent of instructor. Traces the historical development of modern ideas in evolutionary genetics. Focuses on the influence of Fisher, Haldane, and Wright on current views of genetic variation in natural populations, by examining recent research in the context of their classic works.

**EEOB 215 Advanced Methods of Data Analysis in Evolution, Ecology, and Behavior (4)** Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): PSYC 212 or STAT 100B or equivalent or consent of instructor. Introduces students to new methods of data analysis in the fields of evolution, ecology, and behavior. Covers theory and practical application using relevant examples. Topics include maximum likelihood, randomization, the jackknife, bootstrapping, Monte Carlo approaches, and meta-analysis.

**EEOB 216 The Theory of Evolution (4)** Lecture, 4 hours. Prerequisite(s): BIOL 105 or consent of instructor. Traces the historical development of modern ideas in evolutionary theory. Focuses on the influence of Darwin and the various authors of the modern synthesis on current views of macroevolution by examining recent research in the context of their classic works.

**EEOB 217 Advanced Population and Community Ecology (4)** Lecture, 4 hours. Prerequisite(s): One upper-division undergraduate course in population or community ecology, or consent of instructor. Traces the development of the major concepts in ecology. Focuses on the influence of pioneers in the field, historical roots of key concepts, and key controversies. Evaluates current research with reference to these historical origins. Redak

**EEOB 219 Theory of Systematics (4)** Lecture, 4 hours. Prerequisite(s): BIOL 112/BPSC 112/ENTM 112 or equivalent or consent of instructor. Examines topics developed around a series of classical and recent papers on the principles, philosophy, and methodology of modern systematics and phylogenetic methods. Cross-listed with ENTM 219 and GEO 219.

**EEOB 220 Evolutionary Physiology (4)** S, Even Years Lecture, 4 hours. Prerequisite(s): an upper-division course in evolution and animal physiology or behavior, an upper-division course in statistics that covers analysis of covariance; or consent of instructor. Covers evolutionary approaches to the study of animal physiology. Includes organ system and organ-system physiology, biomechanics and locomotor mechanisms; cell physiology; the development of physiological systems; and behavioral neuroscience. Altshuler, Garland, Jr.

**EEOB 230 Analysis of Ecological Communities (5)** Lecture, 3 hours; discussion, 2 hours. Prerequisite(s): PSYC 212 or STAT 231B or equivalent; consent of instructor. Covers principles of multivariate analysis and its application to the interpretation of ecological community data. Topics include multiple and partial correlation and regression, detrended and canonical correspondence analysis, multidimensional scaling, similarity indices and cluster analysis, and discriminant analysis.

**EEOB 265 Advances in Population and Evolutionary Biology (1 or 2) Seminar, 1 hour; outside research, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Presentations by visiting scholars, faculty, and students on current research topics in population and evolutionary biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**EEOB 282 Seminar in Genetics and Evolution (2-4)** Seminar, 2-4 hours. Prerequisite(s): graduate standing; consent of instructor. Presentations by students, faculty, and invited scholars on selected topics concerned with the principles of genetics and evolution. Course is repeatable.

**EEOB 283 Seminar in Organismal Biology (1-4)** Seminar, 1-4 hours. Prerequisite(s): graduate standing; consent of instructor. Presentations by students, faculty, and invited scholars on selected topics concerned with the principles of organismal biology, including physiology, behavior, morphology, biomechanics, and related topics. Course is repeatable to a maximum of 18 units.

**EEOB 290 Directed Studies (1-6)** Individual study, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Individual studies on specially selected topics in evolution, ecology, and organismal biology under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**EEOB 291 Individual Study in Coordinated Areas (1-6)** Individual study, 3-18 hours. Prerequisite(s): graduate standing. Provides a program of study designed to advise and assist candidates who are preparing for examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**EEOB 292 Concurrent Analytical Studies in Evolution, Ecology, and Organismal Biology (2-4)** Outside research, 6-12 hours. Prerequisite(s): consent of instructor. Elects concurrently with an appropriate undergraduate course on an individual basis. Devoted to one or more graduate papers based on research or criticism related to the course. Faculty guidance and evaluation provided throughout the quarter. Course is repeatable.

**EEOB 297 Directed Research (1-6)** Outside research, 3-18 hours. Prerequisite(s): graduate standing. Directed research in evolution, ecology, and organismal biology. Experimental studies on specially selected topics under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**EEOB 299 Research for the Thesis or Dissertation (1-12)** Outside research, 3-36 hours. Prerequisite(s): graduate standing. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**Professional Courses**

**BIOL 301 Teaching of Biology at the College Level (1)** Seminar, 1 hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluations required of new Biology Teaching Assistants. Covers instructional methods and classroom/section activities most suitable for teaching Biology.

**Subject abbreviation: BMSC**

**Division of Biomedical Sciences**

Deborah Deas, M.D., M.P.H., the Mark and Pam Rubinarian, UCR School of Medicine; CEO, Clinical Affairs, UCR School of Medicine

Neal L. Schiller, Ph.D., Senior Associate Dean, Student Affairs, UCR School of Medicine; Director, Thomas Haider Program at the UCR School of Medicine; and Salma Haider Endowed Chair in Biomedical Sciences

David Lo, M.D., Ph.D., Senior Associate Dean, Research

Monica J. Carson, Ph.D., Chair Division of Biomedical Sciences

Graduate Student Affairs Office 1682 SOM Education Bldg., (951) 827-4540; biomed.ucr.edu

**Professors**

Monica J. Carson, Ph.D., Neuroimmunology
Iryna M. Ethell, Ph.D., Neuroscience
Byron Ford, Ph.D., Stroke and Brain Injury
David Lo, M.D., Ph.D., Distinguished Professor, Genetics and Mucosal Immunology
Maurizio Pellecchia, Ph.D., Daniel Hays Endowed Chair in Cancer Research

**Associate Professors**

Mary Ann Baker, Ph.D., Neurosciences
Craig V. Byus, Ph.D., Pharmacology (Biomedical Sciences/Biochemistry)
Kathryn DeFea, Ph.D., Cell Biology/Biochemistry
David A. Johnson, Ph.D., Pharmacology
Richard A. Luben, Ph.D., Endocrinology
Anthony W. Norman, Ph.D., Endocrinology (Biomedical Sciences/Biochemistry)
Michael B. Sternerman, M.D., Biomedical Sciences
Daniel S. Straus, Ph.D., Human Genetics (Biomedical Sciences)

**Biomedical Sciences**
University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

B.S. Degree Requirements

The following major requirements apply only to students who, in truly exceptional cases, matriculate into the Thomas Haider Program at the UCR School of Medicine without a UCR baccalaureate degree. These students are eligible to receive a B.S. degree in Biomedical Sciences upon satisfactory completion of the first year of the curriculum leading to the M.D. degree.

Major Requirements

1. Biological Sciences Core Curriculum (65-68 units)

   a) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 005C or equivalent
   b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 112A, CHEM 112B, CHEM 112C or equivalent
   c) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A, PHYS 021B, PHYS 021C or equivalent
   d) MATH 008B or MATH 009A, MATH 009B or equivalent
   e) STAT 100A or equivalent
   f) BCH 100 or BCH 110A or equivalent

2. Courses taken during the first year of medical school (59 units)

   BMSC 231, BMSC 231M, BMSC 232, BMSC 232M, BMSC 233, BMSC 233M, BMSC 234, BMSC 234M, BMSC 235, BMSC 235M

Lower-Division Courses

BMSC 091 Freshman Advising Seminar for Medical Scholars Program Students (1) Seminar, 1 hour. Prerequisite(s): freshman standing in the Medical Scholars Program. Introduction to UCR for students in the Medical Scholars Program. Focuses on learning the necessary survival skills to succeed in college and prepare for a career in the allied health sciences. Graded Satisfactory (S) or No Credit (NC).

BMSC 092 First-Year Seminar for Medical Scholars Program Students: Topics in Health Careers (1) Seminar, 1 hour. Prerequisite(s): freshman standing in the Medical Scholars Program or consent of instructor. A discussion of health careers in biomedical sciences and allied health sciences for students in the Medical Scholars Program. Graded Satisfactory (S) or No Credit (NC).

BMSC 093 Seminar for Medical Scholars Program Students (1) Seminar, 1 hour. Prerequisite(s): lower-division standing in the Medical Scholars Program or consent of instructor. A discussion of special topics in biomedical sciences and allied health sciences as they pertain to students in the Medical Scholars Program. Graded Satisfactory (S) or No Credit (NC). Schiller

BMSC 094 Independent Reading (1-2) Consultation, 1-2 hours. Prerequisite(s): consent of instructor. Independent study under faculty supervision. Possible topics include modern approaches to the pathophysiology of disease, delivery of medical care to the community, or current medical education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

BMSC 097 Research Tutorial in Biomedical Sciences (1-2) Laboratory, 3-6 hours. Prerequisite(s): grade point of 3.0 and consent of instructor. Laboratory tutorial in research related to biomedical sciences. To provide laboratory experience in the areas of physiology, microbiology, molecular biology, pharmacology, cell biology, immunology, biochemistry for exceptional lower-division students. A written report is required at the end of each quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for up to 6 units.

Upper-Division Courses

BMSC 191 Seminar in Biomedical Sciences (2) Seminar, 20 hours per quarter. Prerequisite(s): upper-division standing in the Medical Scholars Program or consent of instructor. Special topics in biomedical sciences, healthcare delivery, cultural competency, biomedical research, and related areas. Course is repeatable to a maximum of 6 units.

BMSC 194 Independent Reading (1-2) Discussion, 1 hour; outside research, 2-3 hours. Prerequisite(s): upper-division standing in and consent of instructor-and Divisional Dean. Independent study involving library projects on topics related to Biomedical Sciences. Independent study will be conducted under faculty supervision. A written report to be graded Satisfactory (S) or No Credit (NC) will be requested. Course is repeatable to a maximum of 4 units.

BMSC 197L Research for Undergraduates (1-3) Laboratory, 3-9 hours. Prerequisite(s): upper-division standing (completion of 60 quarter units) and consent of instructor. An introduction to the methods of research in biomedical sciences. The student will conduct investigation in an area of biomedical sciences under the supervision of a Division of Biomedical Sciences faculty member and submit a written report on his/her work. Course is repeatable.

Graduate Courses

BMSC 202 Molecular Basis of Disease (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Discussion of the molecular basis of disease with special emphasis on new developments and the broad application of approaches and techniques. Course is repeatable with consent of the student's advisory committee; may be applied only once toward core requirements.

BMSC 222 (E-Z) Special Topics in Biomedical Sciences (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. For BMSC 222W: BIOL 128/CBNS 128 or consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each faculty member. Course emphasizes recent advances in the special topic area and varies accordingly. Lecture, 20 hours per quarter. Prerequisite(s): first-year standing in the Biomedical Sciences graduate program or consent of graduate advisor. Covers basic principles of disease processes, genetics, and molecular, cellular, and developmental biology. Course content is approved by by-pass through lectures and discovery in small group discussions and laboratories. Offered in summer only. Course is repeatable.

BMSC 223 (E-Z) Topics in Human Biology and Disease (2-4) For hours and prerequisites, see segment descriptions. Graduate students write a paper on current research relevant to the course theme.

BMSC 226 Inflammation, Autoimmunity, and Pathogen Defense (3) Lecture, 23 hours per quarter; discussion, 8 hours per quarter; laboratory, 8 hours per quarter. Prerequisite(s): consent of course coordinator. An integrated view of the human immune system and inflammation in health and disease. Credit is awarded for only one of BMSC 223E or BMSC 229 or BMSC 231 or MDCL 231. Carson

BMSC 223F Cardiovascular Physiology (4) Lecture, 30.5 hours per quarter; discussion, 11.5 hours per quarter; laboratory, 5 hours per quarter. Prerequisite(s): consent of course coordinator. An integrated view of the human cardiovascular system in health and disease. Credit is awarded for only one of BMSC 223F or BMSC 232 or MDCL 232. Lytle

BMSC 223I Respiratory Physiology (3) Lecture, 22 hours per quarter; discussion, 8 hours per quarter; laboratory, 2 hours per quarter. Prerequisite(s): consent of course coordinator. An integrated view of the human respiratory system in health and disease. Credit is awarded for only one of BMSC 223I or BMSC 232 or MDCL 232. Lytle

BMSC 223J Gastrointestinal Physiology (3) Lecture, 33 hours per quarter; laboratory, 6 hours per quarter. Prerequisite(s): consent of course coordinator. An integrated view of the human gastrointestinal system in health and disease. Credit is awarded for only one of BMSC 223J or BMSC 233.

BMSC 223I-2 Translational Research (Research) (3) Summer Lecture, 67 hours per quarter; discussion, 7 hours per quarter; laboratory, 18 hours per quarter. Prerequisite(s): first-year standing in the Biomedical Sciences graduate program or consent of graduate advisor. Covers basic principles of disease processes, genetics, and molecular, cellular, and developmental biology. Course content is approved by by-pass through lectures and discovery in small group discussions and laboratories. Offered in summer only. Course is repeatable.

BMSC 231 Foundations of Medicine I (7.5) Lecture, 65.5 hours per quarter; discussion, 6 hours per quarter; laboratory, 20.5 hours per quarter. Prerequisite(s): first-year standing in medical school or consent of instructor. Covers basic principles of disease processes, genetics, and molecular, cellular, and developmental biology. Course content is approved by by-pass through lectures and discovery in small group discussions and conferences. Students using this course to fulfill requirements for the B.S. degree in Biomedical Sciences receive a letter grade; others receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of BMSC 231E or BMSC 229 or BMSC 231 or MDCL 231. Carson, Garcia-Castro

BMSC 232 Cardiovascular, Renal, and Respiratory Sciences I (12) Discussion, 9 hours per quarter; laboratory, 19 hours per quarter; lecture, 107 hours per quarter. Prerequisite(s): first-year standing in medical school or the graduate program in Biomedical Sciences or consent of instructor; BMSC 229 or BMSC 231. Covers physiology, pathophysiology.
physical diagnosis, and imaging in the cardiovascular, renal, and respiratory sciences. Instruction is driven by cases and accomplished through lectures and discovery in small group discussions, laboratories, and conferences. Students using this course to fulfill requirements for the B.S. or Ph.D. degree in Biomedical Sciences receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of BMSC 223F or BMSC 223 or MDCL 232 and for only one of BMSC 223F or BMSC 223F or MDCL 232 and for only one of BMSC 223 or BMSC 232 or MDCL 232. Lytle

BMSC 232 Gastrointestinal, Endocrine, and Reproductive Health I (10) Lecture, 85 hours per quarter; discussion, 8 hours per quarter; laboratory, 21 hours per quarter. Prerequisite(s): first-year standing in medical school or the graduate program in Biomedical Sciences or consent of instructor; BMSC 232. Covers biochemical, physiological, and pathological aspects of the gastrointestinal, endocrine, and reproductive systems. Instruction is driven by cases and accomplished through lectures and discovery in small group discussions, laboratories, and conferences. Students using this course to fulfill requirements for the B.S. or Ph.D. degree in Biomedical Sciences receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of BMSC 232J or BMSC 233 or MDCL 233.

Coss, Lo

BMSC 234 Musculoskeletal Medicine (4) Lecture, 36 hours per quarter; discussion, 2 hours per quarter; laboratory, 7 hours per quarter. Prerequisite(s): first-year standing in medical school or the graduate program in Biomedical Sciences or consent of instructor, BMSC 234. Covers the muscle-skeletal system, biology and pathology of the peripheral nervous system, and physical diagnosis. Utilizes lectures and case studies to accomplish course objectives. Promotes discovery of learning by small group discussions, laboratories, and conferences. Students using this course to fulfill requirements for the B.S. or Ph.D. degree in Biomedical Sciences receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of BMSC 234 or MDCL 234.

Ford

BMSC 235 Clinical Neurosciences I (5) Lecture, 42 hours per quarter; discussion, 8 hours per quarter; laboratory, 6 hours per quarter. Prerequisite(s): BMSC 234. Covers neurobiology and provides an introduction to neural systems, as well as neurophysiology, axons, and neuronal processing. Utilizes lectures and case studies to accomplish course objectives. Promotes discovery of learning by small group discussions, laboratories, and conferences. Students using this course to fulfill requirements for the B.S. or Ph.D. degree in Biomedical Sciences receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of BMSC 235 or MDCL 235.

I. Ethell

BMSC 236 Foundations of Medicine II (10) Lecture, 93 hours per quarter; discussion, 8 hours per quarter; laboratory, 10 hours per quarter. Prerequisite(s): second-year standing in medical school or the graduate program in Biomedical Sciences or consent of instructor; BMSC 235. Covers the pathophysiologic, pharmacologic, and physical diagnosis and treatment of infectious diseases, clinical hematology and oncology, and epidemiology and clinical reasoning skills. Instruction involves weekly cases and is presented through lectures and discovery in small group discussions, laboratories, and conferences. Students using this course to fulfill requirements for the Ph.D. degree in Biomedical Sciences receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Schiller

BMSC 251 Colloquium in Biomedical Sciences (1) Colloquium, 1 hour. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Specialized discussions by staff and students of current research topics in biomedical sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BMSC 252 General Seminar in Biomedical Sciences (1) Seminar, 1 hour. Prerequisite(s): graduate standing. Oral presentations by staff and visiting scholars on current research topics in the field of biomedical sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BMSC 254 Graduate Seminar in Biomedical Sciences (1) Seminar, 1 hour. Prerequisite(s): graduate standing. Oral reports by graduate students on current research topics in biomedical sciences. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

BMSC 260A Topics in Translational Biomedical Research (2) Lecture, 2 hours per quarter; discussion, 18 hours per quarter. Prerequisite(s): consent of instructor or graduate advisor; concurrent enrollment in BMSC 232. A survey of the mechanisms of common human diseases at the molecular, cellular and organ system levels and the multidisciplinary approaches used for their investigation. Instructional components include lectures, discovery in problem-based learning sessions, and independent study. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Lytle

BMSC 260B Topics in Translational Biomedical Research (2) Lecture, 2 hours per quarter; discussion, 18 hours per quarter. Prerequisite(s): consent of instructor or graduate advisor; concurrent enrollment in BMSC 234. A survey of the mechanisms of common human diseases at the molecular, cellular and organ system levels and the multidisciplinary approaches used for their investigation. Instructional components include lectures, discovery in problem-based learning sessions, and independent study. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Lytle

BMSC 260C Topics in Translational Biomedical Research (2) Lecture, 2 hours per quarter; discussion, 18 hours per quarter. Prerequisite(s): consent of instructor or graduate advisor; concurrent enrollment in BMSC 234 and BMSC 235. A survey of the mechanisms of common human diseases at the molecular, cellular and organ system levels and the multidisciplinary approaches used for their investigation. Instructional components include lectures, discovery in problem-based learning sessions, and independent study. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Lytle

BMSC 261 Methods in Biomedical Research (1) Tutorial, 3 hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Experimental studies on a specific laboratory technique involved in the study of human disease. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 3 units. Lytle

BMSC 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Directed research in biomedical sciences performed prior to advancement to candidacy in preparation for dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BMSC 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Directed research in biomedical sciences performed prior to advancement to candidacy in preparation for dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BMSC 299 Research for Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Original research in the area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

BMSC 302 Directed Teaching (2) Practicum, 6 hours. Prerequisite(s): graduate standing in Biomedical Sciences. Supervised teaching in medical school courses. Required for all Biomedical Sciences graduate students. Fulfills the teaching portion of the teaching requirement for the Ph.D.; four units are required for the Ph.D. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

Biomedical Sciences Graduate Program

Subject abbreviation: BMSC
Division of Biomedical Sciences

Emma Wilson, Ph.D., Program Director
Graduate Student Affairs Office, Webber Hall 1237
(951) 827-4328; medschool.ucr.edu/graduate

Professors
Michael E. Adams, Ph.D. (Entomology)
Bhavani Anvari, Ph.D. (Bioengineering)
Peter Atkinson, Ph.D. (Entomology)
Monica J. Carson, Ph.D. (Biomedical Sciences)
David A. Eastmond, Ph.D. (Cell Biology and Neuroscience)
Iryna Ethell, Ph.D. (Biomedical Sciences)
Byron Ford, Ph.D. (Biomedical Sciences)
Ted Garland, Ph.D. (Biology)
Cindy Larive, Ph.D. (Chemistry)
Karrie Le Roch, Ph.D. (Cell Biology and Neuroscience)
Xuan Liu, M.D., Ph.D. (Biomedical Sciences)
Neal Lu, M.D., Ph.D. (Biomedical Sciences)
Paul Lyons, M.D. (Medical Genetics)
Manuela M. Martins-Green, Ph.D. (Cell Biology and Neuroscience)
Dimitrios Morikis, Ph.D. (Bioengineering)
Maurizio Pellecchia, Ph.D. (Biomedical Sciences)
Michael C. Perring, Ph.D. (Chemistry)
Victor Rodgers, Ph.D. (Bioengineering)
Wendy Saltzman, Ph.D. (Biology)
Neal L. Schiller, Ph.D. (Biomedical Sciences)
Jerome Schultz, Ph.D. (Bioengineering)
Aaron Seitz, Ph.D. (Biological Sciences)
Francs M. Sladek, Ph.D. (Cell Biology and Neuroscience)
B. Glenn Stanley, Ph.D. (Cell Biology and Neuroscience/Psychology)
Greer Sullivan, M.D. (Psychiatry)
Amea Walker, Ph.D. (Biomedical Sciences)
Yinsheng Wang, Ph.D. (Chemistry)

Associate Professors
Djurdjica Coss, Ph.D. (Biomedical Sciences)
Margarita C. Currás-Collazo, Ph.D. (Cell Biology and Neuroscience)
Scott N. Currie, Ph.D. (Cell Biology and Neuroscience)
Anupama Dahanukar Ph.D. (Entomology)
Martin I. Garcia-Castro, Ph.D. (Biomedical Sciences)
Rong Hai, Ph.D. (Plant Pathology & Microbiology)
Peter W. Hickmott, Ph.D. (Psychology)
Kelly Huffman, Ph.D. (Psychology)
Marcus Kaul, Ph.D. (Neuroscience)
Jiayu Liao, Ph.D. (Bioengineering)
Huinan Liu, Ph.D. (Biomedical Sciences)
Christian S. Lytle, Ph.D. (Biomedical Sciences)
Razak A. Khaleel, Ph.D. (Psychology)
Maurizio Pellecchia, Ph.D. (Biomedical Sciences)
Frances M. Sladek, Ph.D. (Cell Biology and Neuroscience)

PhDs

Byron Ford, Ph.D. (Biomedical Sciences)
Djurdjica Coss, Ph.D. (Biomedical Sciences)
Margarita C. Currás-Collazo, Ph.D. (Cell Biology and Neuroscience)
Scott N. Currie, Ph.D. (Cell Biology and Neuroscience)
Anupama Dahanukar Ph.D. (Entomology)
Martin I. Garcia-Castro, Ph.D. (Biomedical Sciences)
Rong Hai, Ph.D. (Plant Pathology & Microbiology)
Peter W. Hickmott, Ph.D. (Psychology)
Kelly Huffman, Ph.D. (Psychology)
Marcus Kaul, Ph.D. (Neuroscience)
Jiayu Liao, Ph.D. (Bioengineering)
Huinan Liu, Ph.D. (Biomedical Sciences)
Christian S. Lytle, Ph.D. (Biomedical Sciences)
Razak A. Khaleel, Ph.D. (Psychology)
Maurizio Pellecchia, Ph.D. (Biomedical Sciences)
Frances M. Sladek, Ph.D. (Cell Biology and Neuroscience)
B. Glenn Stanley, Ph.D. (Cell Biology and Neuroscience/Psychology)
Greer Sullivan, M.D. (Psychiatry)
Amea Walker, Ph.D. (Biomedical Sciences)
Yinsheng Wang, Ph.D. (Chemistry)

medschool.ucr.edu/graduate
Seema K. Tiwari-Woodruff, Ph.D. (Biomedical Sciences)
Emma Wilson, Ph.D. (Biomedical Sciences)
Wenwan Zhong, Ph.D. (Chemistry)

Graduate Program

The multidisciplinary interdepartmental graduate program in Biomedical Sciences offers graduate instruction leading to a Ph.D. degree or a combined M.D.–Ph.D. degree.

The aim of the graduate program is to provide students with training that crosses traditional boundaries between scientific disciplines and allows them to address modern biomedical research questions. The objective is to train scientists who have a broad knowledge of basic medical sciences, a high degree of expertise in an area of specialization, and effective teaching skills for a medical school or university environment.

The need for scientists who understand the interrelationships of various areas of medical science is readily apparent. For example, it is clearly advantageous for a scientist studying diabetes to understand the disease in depth. This requires a fundamental understanding of endocrinology (hormone secretion and action), cell biology (cell types that produce insulin and upon which insulin acts), biochemistry (insulin-receptor interactions, biochemical pathways regulated by insulin), genetics (hereditary factors in the development of diabetes), immunology (autoimmune mechanisms in diabetes), and anatomy (microvascular pathology). There is a growing need for scientists who can communicate among disciplines so that very effective research collaborations can be developed.

Cell Biology/Physiology research areas include function of transcription factors in development, disease, and in the promotion of regeneration; fluid and electrolyte pathophysiology in cystic fibrosis; molecular genetics of human cell response to environmental carcinogens; tumor suppressor genes in malignant melanoma; factors controlling lymphocyte differentiation; mechanisms of action of cytotoxic lymphokines; physiological aspects of host–parasite interaction; host defense mechanisms in infectious disease; and mucosal immunity and molecular approaches to vaccine development.

Endocrinology/Pharmacology research areas include regulation and actions of the vitamin D endocrine system; mechanism of action of insulin and insulin-like growth factors; prolactin as a growth factor in health and disease; hormonal and electric field regulation of bone development and growth; and molecular mechanisms for carcinogenesis (glioblastoma, breast and prostate cancer).

Neurosciences research areas include studies of the hypothalamic control of homeostatic and sexual function; molecular mechanisms of neurodevelopment, neuronal death and neurodegeneration with emphasis on the following diseases: Alzheimer’s disease, Parkinson’s disease, Autism, Fragile X/ intellectual disability, multiple sclerosis, Huntington’s disease, epilepsy, traumatic brain injury, stroke and pathogen-induced encephalitis.

Admission Applicants should have completed an undergraduate degree in one of the physical or biological sciences and must submit scores from the GRE General Test (verbal and quantitative). (GRE requirement not applicable to UCR Biomedical Sciences students applying for the M.D.–Ph.D.) Courses required for admission include one year each of general chemistry, organic chemistry, physics, and calculus and at least two years of biological sciences. Preferred upper-division courses in biology include vertebrate or human anatomy and physiology, embryology, genetics, cell biology, microbiology, immunology, and neurosciences.

Doctoral Degree

The aim of the graduate program in Biomedical Sciences is to train Ph.D. scientists in a specific area of research specialization who also have enough general knowledge in the basic medical sciences to apply their research expertise to unraveling the basis of disease. This approach includes understanding not only pathogenic manifestations of disease but also the normal physiologic state. To accomplish this, the student completes a core and elective curriculum, the latter tailored to the student’s research interests.

Core requirements include:

1. BMSC 229: Foundations of Translational Research
2. BMSC 232, 233, 234 and 235: Foundations of Medicine Series
3. BMSC 260A, BMSC 260B, BMSC 260C: Topics in Biomedical Research. The entire 3 quarter series is required in the second year of graduate education.
4. BMSC 261: Methods in Biomedical Research. Enrollment required all 3 quarters of the first year of graduate education.
5. BMSC 252: General seminar in Biomedical Sciences (enrollment required each quarter)

M.D.–Ph.D. Combined Degree

Admission The combined degree is offered to students admitted to the medical school and to exceptional students from other four-year LCME-accredited medical schools. Normally, a student completes the first two years of medical school, and then spends approximately three years in the Ph.D. part of the program before completing the M.D. degree. However, the track is also offered to students who have completed the M.D. degree. UCR Biomedical Sciences students may apply for admission concurrently with their applications to the medical school or any time after acceptance to the medical school. For these students only,
137 / Programs and Courses

the MCAT is accepted in lieu of the GRE.
Students from other medical schools should apply in the fall of their sophomore or senior year. Applications from sophomores must be accompanied by official permission for an appropriate leave of absence. The GRE requirement is the same as for regular Ph.D. students.

Master’s Degree
The Biomedical Sciences Graduate Group offers an M.S. degree. No students are admitted directly into the program for work toward the master’s degree. However, a Plan I (Thesis) or Plan II (Comprehensive Examination) M.S. degree is available in special circumstances when work leading to the Ph.D. degree cannot be completed. This decision may be made at the end of the student’s first year of residence or at other times in the student’s career, particularly at the time of the qualifying examination.

Course Descriptions
All Biomedical Sciences courses are listed and described under Biomedical Sciences.

Further information regarding graduate studies in Biomedical Sciences may be obtained from medschool.ucr.edu/graduate/.

Book, Archive, and Manuscript Studies

Designed Emphasis

Subject abbreviation: BAM
College of Humanities, Arts, and Social Sciences
Heidi Brayman Hackel (English), Director
Office, 1202 HMNSS
heidi.braymanhackel@ucr.edu
adriana.craciun@ucr.edu

Advisory Committee & Participating Faculty
Malcolm Baker (Art History)
Thomas Cogswell (History)
Andrea Denny-Brown (English)
Brian Geiger (Center for Bibliographic Studies & Research)
Catherine Gudis (History)
Randolph Head (History)
Robb Hernandez (English)
Kristoffer Neimeier (Libraries)
Deborah Willis (English)

Designed Emphasis Requirements
The Designed Emphasis is a 14-unit interdisciplinary graduate course of study, requiring coursework across at least two departments. Two of the three required courses, if otherwise eligible, may count toward the student’s Ph.D. requirements.

1. Three (3) courses (12 units) selected from the following:
   - Three (3) courses (12 units) selected from the following:
   - 12 units of coursework across at least two departments. Two of the three required courses, if otherwise eligible, may count toward the student’s Ph.D. requirements.

2. MCS280 (2 units): Colloquium on Book, Archive, and Manuscript Studies. Addresses current research topics pertaining to the program. Includes events conducted both on and off campus. Graded Satisfactory (S) or No Credit (NC).

3. Significant Research Product: The Designed Emphasis requires that 4 credits reflect a significant research product. It is the committee’s expectation that students will fulfill this component in at least one of the required courses, typically by writing a research paper appropriate to that discipline’s journal publication or conference presentation conventions. In rare cases in which the research component has not otherwise been met, a student may undertake MCS 280 for 4 units in order to produce a research paper of approximately 25 pages.

All requirements for the Designed Emphasis must be satisfied before a student advances to candidacy in their Ph.D. field; a minimum GPA of 3.0 is required for the award of the Designed Emphasis.

Botany and Plant Sciences

Subject abbreviation: BPSC
College of Natural and Agricultural Sciences
Patricia S. Springer, Ph.D., Chair
Department Office, 2132 Batchelor Hall
Graduate Student Affairs (800) 735-0717 or (951) 827-5688
Undergraduate Advising Center

Professors
Julia N. Bailey-Serres, Ph.D., Genetics
Xue-mei Chen, Ph.D., Distinguished Professor of Plant Cell Biology
Timothy J. Close, Ph.D., Genetics
Sean Cutter, Ph.D., Plant Cell Biology
Katayoon Dehesh, Ph.D., Molecular Biochemistry
Norman C. Eltstrand, Ph.D., Distinguished Professor of Genetics
Thomas A. Eulgem, Ph.D., Plant Cell Biology
Exequiel Ezcurre, Ph.D., Ecology
Janet Frankin, Ph.D., Distinguished Professor of Biogeography
Thomas Girke, Ph.D., Bioinformatics
Darrel Jenerette, Ph.D., Landscape Ecology
Bai-Lian "Larry" Li, Ph.D., Plant Ecology
Adam J. Lukasiewski, Ph.D., Genetics
Eugene A. Nothnagel, Ph.D., Plant Physiology
Mikelai L. Roose, Ph.D., Genetics
Louis Santiago, Ph.D., Physiological Ecosystems
Patricia S. Springer, Ph.D., Genetics
Linda L. Walling, Ph.D., Genetics
Susan Wessler, Ph.D., Distinguished Professor of Genetics
Shizhong Xu, Ph.D., Genetics
Zhenbiao Yang, Ph.D., Plant Cell Biology

Professors Emeriti
Edith B. Allen, Ph.D., Community/Restoration Ecology
Charles W. Coggins, Jr., Ph.D.
Darleen A. DeMason, Ph.D., Botany
Arturo Gómez-Pompa, Ph.D.
Anthony E. Hall, Ph.D.
Robert L. Heath, Ph.D., Plant Physiology and Biophysics
Jodie S. Holt, Ph.D., Plant Physiology
Anthony H. C. Huang, Ph.D., Plant Cell and Molecular Biology
Elizabeth M. Lord, Ph.D., Botany/Developmental Biology
Carol J. Lovatt, Ph.D., Plant Physiology
Natsaha Raikken, Ph.D., Distinguished Professor of Plant Cell Biology
William W. Thomson, Ph.D.
Irwin P. Ting, Ph.D.
J. Giles Waines, Ph.D., Genetics

Associate Professors
Meng Chen, Ph.D., Cell Biology
Vesna B. Gornik, Ph.D., Plant Cell Biology
Amy Litt, Ph.D., Plant Evolution and Development
David Nelson, Ph.D., Genetics

Assistant Professors
Jeffrey Diez, Ph.D., Community Ecology
Juan Pablo Giraldo, Ph.D., Plant Physiology
Zhenyu Jia, Ph.D., Quantitative Genetics
Daniel Koenig, Ph.D., Genetics
Dawn Nagel, Ph.D., Genetics and Genomics
Carolyn G. Rasmussen, Ph.D., Plant Cell Biology
Jaimie Van Norman, Ph.D., Plant Cell and Developmental Biology

Lecturers
Mary Lu Arpaia, Ph.D., Subtropical Horticulture
James Baird, Ph.D., Turfgrass Horticulture
Travis M. Bean, Ph.D., Weed Science
David A. Grantz, Ph.D., Agronomy and Plant Physiology
Peggy A. Mauk, Ph.D., Subtropical Horticulture
Milton E. McGiffen, Jr., Ph.D., Vegetable Crops/Plant Physiology
Alan McHughen, Ph.D., Plant Biotechnology
Donald J. Merhart, Ph.D., Horticulture and Forestry
Philippe E. Roisibnien, Ph.D., Subtropical Crops

Cooperating Faculty
Hailing Jin, Ph.D (Plant Pathology and Microbiology)
Isgouhi Kaloshian, Ph.D. (Nematology)
Joel Sachs, Ph.D. (Botany)
Jason Stajich, Ph.D. (Plant Pathology and Microbiology)

Major
The mission of the interdepartmental Undergraduate Program in Plant Biology is to provide students with a solid background in modern principles and research practices of basic Plant Biology and in their area of specialization.

Courses prerequisite to the major, courses used to satisfy major requirements, and the 11 units (for B.S. degree) related to the major must be taken for letter grades. Students may elect to take other courses on a Satisfactory (S)/No Credit (NC) basis. Refer to the Academic Regulations section of this catalog for additional information on “S/NC” grading.

Information about this program is available on the CNAS UAAC website at cnasstudent.ucr.edu.

Transfer Students
Students planning to transfer to UCR with a major in Plant Biology must have a minimum GPA of 2.7 in transferable college courses and a “C” or higher grades in a year’s sequence of general chemistry and in courses equivalent to our BIOL 005A, BIOL 005B. We also
recommend that transfer students complete a year of college calculus before admission. Exceptions may be granted by the faculty advisor.

**University Requirements**

See Undergraduate Studies section.

**College Requirements**

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the major may also fulfill some of the college’s breadth requirements. Consult with a department advisor for course planning.

**Major Requirements**

The major requirements for the B.S. and B.A. degrees in Plant Biology are as follows:

1. Life Sciences core requirements (69-73 units)

   Students must complete all required courses with a grade of “C-” or better and with a cumulative GPA in the core courses of at least 2.0. Grades of “D” or “F” in two core courses, or in the core courses in two core courses, are grounds for discontinuation from the major.

   a) BIOL 005A, BIOL 051A or BIOL 020, BIOL 005B, BIOL 005C
   b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 008A and CHEM 008LA or CHEM 008B and CHEM 008LB or CHEM 008HB and CHEM 008LB or CHEM 12B, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HL or CHEM 12C
   c) MATH 007A or MATH 009A, MATH 007B or MATH 009B (MATH 009C recommended)
   d) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC
   e) STAT 100A
   f) BCH 100 or BCH 110A (BCH 110A is strongly recommended)

2. Upper-division requirements (36 units for the B.S., 31 units for the B.A.)

   A GPA of at least 2.0 in upper-division courses taken in the field of the major is a graduation requirement. A student is subject to discontinuation from the major whenever the GPA in upper-division course work is below 2.0. Students finding themselves in this circumstance must meet with an advisor.

   a) BIOL 102
   b) BPSC 104/BIOL 104
   c) BIOL 132/BPSC 132, BIOL 143/BPSC 143, BPSC 133
   d) For the B.S. only: Two (2) units of BPSC 195H, BPSC 197, BPSC 198I, or BPSC 199
   e) BPSC 193 with a grade of C- or better

3. A course in genetics, biochemistry, and/or ecology

   a) BIOL 120/MCBL 120/PLPA 120
   b) Additional units from the following to meet either the B.S. or B.A. requirement: BCH 102/BCH 110B, BCH 110C or BIOL 107A, BCH 153/BPSC 153, BCH 155, BCH 162, BCH 183/BPSC 183, BIOL 107B, BIOL 113, BIOL 114, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, BIOL 123/MCBL 123/PLPA 123, BIOL 155/ BPSC 155, BIOL 168, BPSC 138/BIOL 138, BPSC 185, CBNS 101, CBNS 108

4. Plant Pathology, Nematology, and Pest Management

   a) BIOL 120/MCBL 120/PLPA 120
   b) Additional units from the following to meet either the B.S. or B.A. requirement: BCH 183/BPSC 183, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, BIOL 124/MCBL 124, BPSC 146, BPSC 150, BPSC 158, BPSC 166, ENC 134/BPSC 134, ENMT 100/BIO 100, ENMT 109, ENMT 124, ENMT 127/BIO 127, ENMT 129, ENMT 129L, ENSC 100, ENC 120/NEM 120, NEM 159/BIOL 159, PLPA 120/L/ BIOL 120/MCBL 120L, PLPA 123/BIOL 123/MCBL 123, PLPA 134/BIOL 134L, ENSC 104

5. Individualized specialization

   For students who wish to pursue cross-disciplinary education in plant biology. Course selection can be individualized, but needs to be approved by faculty advisor.

**Minor**

The minor in Plant Biology allows students majoring in other departments to obtain in-depth training in Plant Biology. Requirements for the minor in Plant Biology are as follows:

1. BIOL 104/BPSC 104 (4 units)
2. One course (4–5 units) from the following:
   - BIOL 132/BPSC 132, BIOL 138/BPSC 138, BIOL 143/BPSC 143
3. 12 to 20 units from the following:
   - ANTH 170/BPSC 170, BCH 153/BIOL 153/BPSC 153, BCH 183/BPSC 183, BIOL 132/BPSC 132, BIOL 138/BPSC 138, BIOL 143/BPSC 143
   - BIOL 148/BPSC 148, BIOL 155/BPSC 155, BIOL 165/BPSC 165, BPSC 133, BPSC 134/ENSC 134, BPSC 135, BPSC 146, BPSC 150, BPSC 158, BPSC 166, BPSC 190, BPSC 195H, BPSC 197, BPSC 198-I, BPSC 199, PLPA 120/BIO 120/MCBL 120

**Note**

No more than 4 units of BPSC 190–199 may be used to fulfill this requirement. The course used to fulfill the requirement in 2. cannot also be used to fulfill the requirement in 3.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

**Graduate Program**

The Department of Botany and Plant Sciences offers programs leading to the M.S. and Ph.D. degrees in Plant Biology. Research in these programs can focus on basic and/or applied questions.

**Admission**

Applicants who have a baccalaureate degree and who satisfy the general requirements of the university listed in the Graduate Studies section of this catalog are considered for admission to graduate status. Students applying to the M.S. and Ph.D. program must submit GRE General Test scores (verbal, quantitative, and analytical).

Regardless of the area of their major for the baccalaureate degree, students must have had, or complete soon after entering graduate school the following:

1. A year of course work in general biology
2. A year of course work in general chemistry
3. A course in genetics, biochemistry, or ecology
4. A course in calculus
5. Two courses in physics and/or statistics
Credit from these courses does not count toward the graduate degree.

Immediately after being admitted, each student should identify a faculty advisor and consult with that advisor or the graduate advisor regarding educational goals; scheduling initial course work and possible lab rotations; and forming a guidance committee. Further guidance on these matters is provided in the Botany and Plant Sciences Graduate Student Handbook.

Master's Degree
The Department of Botany and Plant Sciences offers programs leading to the M.S. degree in Plant Biology.

The master's degree may be earned under Plan I (Thesis) or Plan II (Comprehensive Examination). Students must meet all general requirements of the Graduate Division. The detailed course program is determined by the guidance committee after considering the specific interests of the student. Department requirements are as follows:

Plan I (Thesis)
1. Three courses from Section I are required. Students who have taken courses comparable to those in Section I during their baccalaureate training may have a portion or all of this section waived. Recommendations for waivers should specify alternative courses and should be sent to the department educational advisory committee for approval. In such instances, however, it is expected that their programs include increased units in courses from Sections II, III, and/or IV.

2. Two courses (6 units) from Section II are required. In fulfilling the Section II requirement, students may use no more than one course cross-listed by Botany and Plant Sciences and another program. If such a cross-listed course is used toward fulfilling the Section II requirement, the same course may not be used toward fulfilling the Section I or III requirements. No more than 4 units may be in professional development courses.

3. At least 3 courses (11-12 units) from Section III are required.

4. Students must complete at least 6 units from Section IV for a research project (297) or literature review (290), which should be described in a report to be submitted for evaluation by the comprehensive examination committee.

5. Comprehensive written and oral examinations

Seminar Requirement All full-time students must enroll in the BPSC 250 seminar during each quarter in which it is offered. Part-time students must take one BPSC 250 seminar for every 12 units of courses. All students must present at least one BPSC 250 seminar and complete at least one quarter of BPSC 240 (or approved similar equivalent that involves substantial student presentations). Students are encouraged to take BPSC 200A and BPSC 200B.

Courses available for fulfilling the requirement for the M.S. degree in Plant Biology:

Section I — Upper-division undergraduate courses:

Section II — Graduate and upper-division undergraduate courses in related departments or programs and professional development courses (i.e., BPSC 200A - BPSC 200B). Applicable courses are approved by the Graduate Educational Advisory Committee. A minimum of 6 units of course work is required. No more than 4 units may be from professional development classes.

Section III —

BCH 205/BPSC 205/MCBL 205/GEN 205/ MCLB 205/PPLA 205, BCH 231/BPSC 231, BPSC 201 (E-Z) (for a maximum of 2 units), BPSC 210, BPSC 221, BPSC 222, BPSC 225 (E-Z), BPSC 230, BPSC 231, BPSC 232, BPSC 234, BPSC 237, BPSC 239, BPSC 240 (only if taken in addition to the required seminar units; see seminar requirement), BPSC 243, BPSC 245, BPSC 246, and BPSC 247

Section IV — Research courses: BPSC 290 and BPSC 297

Section V — Thesis research: BPSC 299, Thesis for Plan I

Normative Time to Degree 7 quarters

Doctoral Degree
The Department of Botany and Plant Sciences offers programs leading to the Ph.D. degree in Plant Biology.

The student must meet the general requirements of the Graduate Division.

Admission Either prior to entering the graduate program or before advancement to candidacy, students must have completed the equivalent of BPSC 104 and one other course from the core plant biology courses (BIOL 107A, BPSC 132, BPSC 135, BPSC 143, BPSC 146). Course requirements for each student are determined by individual guidance committees and by the educational advisory committee. No later than the second quarter in residence, students meet with a guidance committee to (1) determine a course program to be submitted to the educational advisory committee and (2) choose a major area of specialization and two minor areas.

Course Work Guidance committees and students should design individual course programs that meet the specific needs of the student and the requirements of the Ph.D. program. Course programs should prepare students for the qualifying examination and dissertation research. All first-year students must enroll in BPSC 200A and 200B during their first Fall and Spring quarters. Students must take a minimum of 3 graduate-level courses (11-12 units) relevant to the specialization. Graduate courses taken previously may be considered towards fulfilling this requirement. Students' course programs must be approved by the educational advisory committee. At the time of submission of course programs to the educational advisory committee, the area of specialization and two minor areas to be covered on the qualifying examination should be specified. Students may petition to change the course program, area of specialization, or minor areas at any time.

Students entering the Plant Biology Ph.D. program have four choices, as listed below. Students with a general interest in plant biology and/or evolution are encouraged to choose the first.

Ph.D. in Plant Biology Students who choose to obtain a Ph.D. in Plant Biology without one of the following concentrations are encouraged to — with the advice and consent of their Major Professor and Guidance Committee — select a set of graduate-level courses (11-12 U) that is
specifically tailored to their individual research interests and career objectives.

Students can also choose from one of three concentrations:

**Ph.D. in Plant Biology (Concentration in Plant Cell, Molecular, and Developmental Biology)** To earn the concentration in Plant Cell, Molecular, and Developmental Biology (appears on the transcript only), students must complete at least one quarter of BPSC 231, BPSC 232, and BPSC 237. In addition, the required BPSC 240 course must be on a topic related to the concentration.

**Ph.D. in Plant Biology (Concentration in Plant Ecology)** To earn the concentration in Plant Ecology (appears on the transcript only), students must complete at least one quarter of BPSC 245, and two additional courses (7-8 units) from the following list: EEOB 211, EEOB 212, EEOB 217, EEOB 230, BPSC 225J, BPSC 243, BPSC 247, ENMT 241, ENSC 218, ENSC 232, GEO 260, GEO 268 and BPSC 246. In addition, the required BPSC 240 course must be on a topic related to the concentration.

**Ph.D. in Plant Biology (Concentration in Plant Genetics)** To earn the concentration in Plant Genetics (appears on the transcript only), students must complete three graduate-level courses (11-12 units) related to Genetics. Required courses must include two courses from the following list: BPSC 221, BPSC 222, BPSC 225K, BPSC 231, BPSC 234, EEOB 214, BIOL 221/MCBI 221/PLPA 226, GEN 240A. The additional units can be chosen in an area that supports the concentration. In addition, the required BPSC 240 course must be on a topic related to the concentration.

**Written and Oral Qualifying Examinations** Advancement to candidacy depends on the student passing written and oral qualifying examinations. The qualifying examination covers the student's area of specialization and two minor areas. Granting of the degree is contingent upon acceptance of the dissertation by the candidate's dissertation committee and satisfactory oral defense of the dissertation.

**Seminar Requirement** All candidates must enroll in the BPSC 250 seminar during each quarter in which it is offered until advancement to candidacy. After this time, Ph.D candidates must enroll in BPSC 250 seminar two quarters per year until conferment of the degree. The dissertation defense is normally presented in the BPSC 250 seminar series; however, if necessary, a special seminar may be scheduled for the defense. Also, students must present at least one BPSC 250 seminar in addition to the defense of the dissertation. All students must complete at least one quarter of BPSC 240 (or approved equivalent that involves substantial student presentations) during the Ph.D. program.

**Professional Development Training** Ph.D. graduate students must enroll in BPSC 200A and BPSC 200B to fulfill their professional development training requirement.

**Foreign Language Requirement** None

**Teaching Requirement** Students must obtain at least one quarter of teaching experience.

**Normative Time to Degree** 15 quarters

**Normative Time to Candidacy** 2 years

### Lower-Division Courses

**BPSC 011 Plants and Human Affairs** (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction for nonscience and non-Botany majors to the importance of plants and plant products in the shaping of human affairs and civilization. Covers the origin and practice of agriculture, the utilization of plant products, the latest agricultural advances, including genetic engineering, and the current agricultural and social issues. Plants and plant products are examined during class demonstrations and exercises. Close, Huang

**BPSC 021 California’s Cornucopia: Food from the Field to Your Table** (5) S Lecture, 3 hours; discussion, 1 hour; outside activities, 30 hours per quarter. Prerequisite(s): none. Examines California's diverse agricultural products. Addresses related contemporary issues such as crop improvement by biotechnology, climate change, pollution, resource use, and nutrition. Also examines how the interplay of geography, history, and culture shapes the cuisine of a region. Elstrond

**BPSC 031 Spring Wildflowers** (4) S Lecture, 3 hours; laboratory, 3 hours; one Saturday field trip. Prerequisite(s): none. General approach to the study of vegetative and floral features of plants as a means of identification and botanical classification of major plant families in Southern California. Secondary emphasis on the field biology of flowering plants. Kim

**BPSC 050 The Evidence for Evolution** (4) Lecture, 3 hours; extra reading, 3 hours. Introduces and explores the extensive evidence supporting evolution as the driver of biological diversity. Designed for non-science majors and/or those with limited prior knowledge about biology. Includes the scientific method, paleontology, natural selection, genetics, speciation, and the importance of sex. Addresses the broader need for scientific literacy in society. Letter Grade or Satisfactory/No Credit (SNC); no petition required. Cross-listed with ENMT 050. Elstrond, White

**BPSC 097 Lower-Division Research** (1–4) Individual study, 3-12 hours. Prerequisite(s): consent of instructor. Involves special research projects in plant biology performed under faculty supervision. Requires a final written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

### Upper-Division Courses

**BPSC 104 Foundations of Plant Biology** (4) F Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005C. A study of the plant world from cells to ecosystems. Examines the structure and function of organisms from the major plant groups and their role in the biosphere. The laboratory explores the unique properties of plants. Cross-listed with BIOL 104.

**BPSC 112 Systematics** (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C or equivalent. Principles and classification. Topics include phylogenetic and phenetic methods, species concepts, taxonomic characters, evolution, hierarchy of categories, and nomenclature. Cross-listed with BIOL 112 and ENMT 112.

**BPSC 132 Plant Anatomy** (4) W Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A and BIOL 005B; BPSC 104 or BIOL 104; or consent of instructor. Functional and developmental aspects of plant cell, tissue, and organ structure. Covers all aspects of the flowering plant life cycle from germination to pollination and fruit and seed development. Cross-listed with BIOL 132. Springer

**BPSC 133 Taxonomy of Flowering Plants** (5) Lecture, 3 hours; laboratory, 3 hours; three 1-day Saturday field trips. Prerequisite(s): BIOL 005C. Introduces the principles and methods of identifying, naming, and classifying flowering plants. Surveys selected flowering

plant families in California and shows their interrelationships. Kim

**BPSC 134 Soil Conditions and Plant Growth** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 104/BPSC 104 or ENSC 100; or consent of instructor. A study of the chemical, physical, and biological properties of soils and their influence on plant growth and development. Topics include soil-plant water relations, fundamentals of plant mineral nutrition, soil nutrient pools and cycles; soil acidity, alkalinity, salinity, and sodicity; root symbioses; and rhizosphere processes. Cross-listed with ENSC 134.

**BPSC 135 Plant Cell Biology** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005C; BCH 100 or BCH 110A; or consent of instructor. Explores concepts of dynamic plant cell structures and functions as revealed by modern technologies such as genetic manipulation and live-imaging of cellular structures and molecules. Yang

**BPSC 138 Plant Developmental Morphology** (4) W Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BCH 100 or BCH 110A (BCH 100 or BCH 110A may be taken concurrently), BIOL 005B, BIOL 005C, CHEM 080C and CHEM 080C or CHEM 08HC and CHEM 08HC, PHYS 002C, PHYS 002LC, or consent of instructor. Introduces the key areas of research in plant morphology and developmental biology. Emphasizes flowering plants (angiosperms). Cross-listed with BIOL 138. Springer

**BPSC 143 Plant Physiology** (4) W Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 080C or CHEM 08HC and CHEM 08HC, MATH 007B or MATH 009B or MATH 009BC, PHYS 002C, PHYS 002LC, BCH 100 or BCH 110A (BCH 100 or BCH 110A may be taken concurrently), BIOL 104/BPSC 104; or consent of instructor. A survey of the fundamental principles of plant physiology including photosynthesis, respiration, water relations, mineral nutrition, growth, morphogenesis, plant hormones, dormancy, and senescence. Cross-listed with BIOL 143.

**BPSC 146 Plant Ecology** (4) Lecture, 3 hours; laboratory, 18 hours per quarter; field trip, 12 hours per quarter. Prerequisite(s): BIOL 104/BPSC 104 or BIOL 116; STAT 100A; or consent of instructor. A study of the fundamentals of plant ecology. Emphasizes community ecology, environment, life histories, population dynamics, species interactions, succession, ecosystem and landscape ecology, and plant conservation ecology. Allen

**BPSC 148 Quantitative Genetics** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005L, BIOL 005B, BIOL 005C, BIOL 102, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 080C or CHEM 08HC and CHEM 08HC, MATH 007B or MATH 009B or MATH 009BC, PHYS 002C, PHYS 002LC, BCH 100 or BCH 110A (BCH 100 or BCH 110A may be taken concurrently), BIOL 104/BPSC 104; or consent of instructor. Examines approaches to studying the genetic basis of polygenic, metric traits. Includes types of gene action; partitioning of variance, response to selection, and inferring the number and location of quantitative trait loci. Cross-listed with BIOL 148. Xu

**BPSC 150 Genes, Selection, and Populations** (4) W, Even Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102 with a grade of "C-" or better, upper-division standing; or consent of instructor. Considers the conscious manipulation of allelic frequencies in populations as the basis for domestication of crop and animal species. Examines the genetic basis and standard strategies for the improvement of targeted characteristics in populations of plants and animals through selection and introgression of specific genes and gene constructs. Close, Lukaszewski

**BPSC 153 Plant Genomics and Biotechnology Laboratory** (4) F, Even Years Lecture, 1 hour; discussion, 1 hour; laboratory, 6 hours. Prerequisite(s): BCH 110C
addresses plant-specific biochemical processes such as photosynthesis. Cross-listed with BCH 183. Eulgem

BPSC 185 Molecular Evolution (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 108; or consent of instructor; BIOL 108 is recommended. Explores the evolution of genes, proteins, and genomes at the molecular level. Focuses on the processes that drive molecular evolutionary change. Covers basic methods and tools for comparative and phylogenetic analyses of molecular data from an evolutionary perspective. Liu

BPSC 190 Special Studies (1-5) F, W, S variable hours. Library, laboratory or field work designed to meet special curricular needs. A written proposal signed by the supervising faculty member must be approved by the major advisor and the Department Vice Chair. A written report must be filed. Course is repeatable, but total credit toward graduation may not exceed 6 units.

BPSC 193 Senior Seminar (2) W Seminar, 1 hour; lecture, 1 hour. Prerequisite(s): senior standing in Plant Biology. Emphasizes thinking across hierarchical levels and understanding structure-function relationships in plant biology. Includes lectures by instructors and presentation of classical or landmark papers by students. Satisfactory (S) or No Credit (NC) grading is not available. Holt

BPSC 195H Senior Honors Thesis (1-4) F, W, Spring semester. Prerequisite(s): upper-division standing; consent of instructor. Individual research conducted under the direction of a senior Honors thesis under the supervision of a faculty member. Course is repeatable to a maximum of 12 units.

BPSC 197 Research for Undergraduates (1-4) F, W Outside research, 3-12 hours. Prerequisite(s): upper-division standing; consent of instructor. Individual research conducted under the direction of a Botany and Plant Sciences faculty member. A written proposal must be approved by the supervising faculty member and undergraduate advisor. A written report must be filed with the supervising faculty member at the end of the quarter. Course is repeatable.

BPSC 198-I Individual Internship in Botany and Plant Sciences (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): upper-division standing; consent of instructor. An off-campus internship related to plant biology. The student conducts the internship in the public or private sector but is jointly supervised by an off-campus sponsor and a faculty member in Botany and Plant Sciences. Requires an initial written proposal and a final written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

BPSC 199 Senior Research (2-4) F, W, S Laboratory, 6-12 hours. Prerequisite(s): senior status; a GPA of 3.2 or better in upper-division courses in Botany/Plant Science and Biology, or consent of instructor. Individual research on a problem related to Botany/Plant Science. A written proposal signed by the supervising faculty member must be approved by the major advisor and the Department Vice Chair. A written report must be filed with the supervising faculty member. Course is repeatable, but total credit toward graduation may not exceed 9 units.

Graduate Courses

BPSC 200A Plant Biology Core (2) F, W Lecture, 1 hour; practicum, 3 hours. Prerequisite(s): graduate standing in Plant Biology or consent of instructor. Explores plant biology research approaches. Emphasizes critical thinking and advanced planning of hypothesis testing, as well as experimental design and execution, caveats, trade-offs, and options. Presents topics in a case-study approach. Also addresses professional development.

Eulgem

BPSC 200B Plant Biology Core (2) W Lecture, 1 hour; practicum, 3 hours. Prerequisite(s): BPSC 200A. Builds on material covered in BPSC 200A. Focuses on creating complete grant proposals based upon the guidelines of an actual funding source. Presents topics in a case-study approach. Includes peer review of completed proposals. Eulgem

BPSC 201I (E-Z) Methods in Plant Biology (1-2) F, S, laboratory, 3-6 hours. Prerequisite(s): consent of instructor. Explores the theory and principles of instruments and laboratory techniques applicable to research in the plant sciences. Experiments provide experience in the use of laboratory instruments and techniques including applications and limitations. E. Plant Molecular Biology; F. Plant Ecology; G. Plant Systematics; I. Plant Microscopy; J. Plant Physiology; K. Plant Genetics; M. Plant Cell Biology; N. Plant Cytogenetics. Segments are repeatable as content changes.

BPSC 205 Signal Transduction Pathways in Microbes and Plants (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in the biological sciences, BIOL 107A or BIOL 113 or BIOL 114 or CNS 101; or consent of instructor. Advanced topics in signal transduction pathways that regulate growth and development in plants and prokaryotic and eukaryotic microbes. Areas covered include two-component regulatory systems; quorum sensing; signaling via small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; response to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, CMD 205, GEN 205, MBCL 205, and PLPA 205.

BPSC 210 Methods in Arabidopsis Research (4) F, Odd Years Lecture, 1 hour; discussion, 1 hour, laboratory, 6 hours. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102; consent of instructor. A study of modern techniques used in Arabidopsis research. Topics include plant growth conditions, pest control, genetic crosses, chemical and insertional mutagenesis, genetic mapping techniques, nucleic acid isolation and manipulation, transformation, and internet resources. Eulgem

BPSC 222 Origins of Agriculture and Crop Evolution (3) W, Odd Years Lecture, 3 hours. Prerequisite(s): BIOL 102, BIOL 104/BPSC 104, consent of instructor; BIOL 104/BPSC 104 or consent of instructor. Analysis of origins of agriculture in the Near East, China, the New World, and Africa. Survey of domestication and evolution of major crop plants and animals.

Waines

BPSC 225 (E-Z) Advanced Topics in Plant Biology (2) F, W Lecture, 2 hours. Prerequisite(s): graduate standing; consent of instructor. A rapidly changing field that includes development of new techniques and a long list of selected topics in plant biology. E. Agricultural Plant Biology; F. Plant Cell Biology; G. Plant Development; I. Plant Evolution and Systematics; J. Plant Ecology; K. Plant Genetics; M. Plant Molecular Biology; N. Plant Biochemistry and Physiology Each segment is repeatable as its content changes. Springer

BPSC 230 Molecular Plant-Microbial Interactions (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BCH 100; BIOL 110/MCB 150/PLPA 120, or equivalents. A study of the physiology of host-pathogen interactions with emphasis on the metabolism of diseased plants, nature of pathogenicity, and defense mechanisms in plants. Cross-listed with CMDB 230, GEN 230, and PLPA 230.

BPSC 231 The Plant Genome (4) W Lecture, 3 hours;
discussion, 1 hour. Prerequisite(s): BCH 100, BIOL 107A; or BCH 110A, BCH 110B, BCH 110C; or consent of instructor. Gives students an appreciation for the structure of the plant nuclear, chloroplast, and mitochondrial genome. Gene structure, regulation of gene expression, transposons, and methods of gene introduction are also emphasized. Cross-listed with BCH 231. Bailey-Serres, Eugen, Walling

BPSC 232 Plant Development (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102; BIOL 104/BPSC 104; or consent of instructor. An examination of plant development, with emphasis on genetic mechanisms utilized in patterning plant forms. Topics are taken from current literature and focus on molecular and cellular mechanisms. Springer

BPSC 234 Statistical Genomics (4) F, Even Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102, STAT 231B; or consent of instructor. Examines statistical methods of genome analysis. Topics include screening for genetic markers, linkage analysis, linkage disequilibrium, and mapping genes for complex diseases and quantitative traits. Covers statistical techniques including analysis of least squares and maximum likelihood, Bayesian analysis, and Markov chain Monte Carlo algorithm. Cross-listed with GEN 234. Xu

BPSC 237 Plant Cell Biology (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 107A or BIOL 143/BPSC 143 or BCH 100 or CBNS 101 or their equivalents, or consent of instructor. Studies the structure, function, and dynamics of plant cell division, expansion, and specialization. Emphasis on aspects unique to plants including cytokinetic and cell plate dynamics during cytokinesis; intracellular trafficking and wall dynamics during expansion; and targeting to chloroplasts and vacuoles during specialization. Raikhel, Yang

BPSC 239 Advanced Plant Physiology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 143/ BPSC 143 or consent of instructor. Examines advances in plant physiology, with emphasis on carbon and nitrogen metabolism, mineral nutrition, solute transport and phloem translocation, plant growth regulators, and secondary compounds in relation to growth and development. Lovatt

BPSC 240 Special Topics in Plant Biology (2) F, W, S Seminar, 2 hours. Prerequisite(s): consent of instructor. Discussion of current literature within special areas of plant science. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 243 Plant Physiological Ecology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 143/ BPSC 143; BPSC 146 or equivalent; or consent of instructor. Analyzes adaptations and responses of plants to their environment, with emphasis on the physical environment, photosynthesis, temperature and water relations, growth and allocation, and plant interactions. Santiago

BPSC 245 Advanced Plant Ecology (4) F, Even Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 090C or MATH 09HC; STAT 110 or STAT 231A or equivalent; an undergraduate course in ecology; or consent of instructor. Explores the fundamental ecological concepts, theoretical developments, quantitative methods, or conceptual results involved in multiscalar plant ecological studies. Emphasizes plant strategies, vegetation processes, ecosystem properties, and terrestrial landscapes and their interaction with environmental change and human land use. Li

BPSC 246 Landscape Ecology (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 116 or BPSC 146, STAT 231A; or consent of instructor. Introduces landscape ecology both as a sub-discipline of ecology and an interdisciplinary approach for environmental research. Includes identification of spatial patterns, pattern-process relationships, and scaling. Analyzes population, community, and ecosystem dynamics in connection with landscape functioning. Evaluates landscape theory and methods for applications in species conservation, pollution, and climate change. Jenerette

BPSC 247 Ecological Theory and Modeling (4) W, Even Years Lecture, 2 hours; discussion, 2 hours. Prerequisite(s): MATH 099C or MATH 09HC; STAT 110 or STAT 231B or equivalent; an undergraduate course in ecology; or consent of instructor. Explores the fundamental ecological theory and modeling methodology with emphasis on the ecosystem and landscape levels. Synthesizes current research developments in the context of their classic works. Li

BPSC 250 Seminar in Plant Biology (1) F, W, S Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Intensive study of selected topics in plant biology. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

BPSC 252 Special Topics in Botany/Plant Science (1) F, W, S Seminar, 1 hour. Prerequisite(s): graduate standing and consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each staff member. Course content will emphasize recent advances in the special topic area and will vary accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 260 Seminar in Plant Physiology, Botany, or Genetics (1) W Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Lectures, discussions, and demonstrations by students, faculty, and invited scholars on selected subjects concerned with the principles of plant physiology, botany, or genetics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 261 Seminar in Genetics, Genomics, and Bioinformatics (1) W Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports by visiting scholars, faculty, and students on current research topics in Genetics, Genomics, and Bioinformatics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BIOL 261, ENTM 261, GEN 261, and PLPA 261.

BPSC 290 Directed Studies (1-6) F, W, S Individual study, 3-18 hours. Prerequisite(s): consent of instructor. Library, laboratory, or field studies conducted under the direction of a faculty member. Designed to meet specific curricular needs in areas of plant biology not covered by formal course work and outside of required directed dissertation or thesis research. Not intended to replace BPSC 297 or BPSC 299. Students who complete assigned extra work receive letter grades; other students receive Satisfactory (S) or No Credit (NC) grades. Course is repeatable to a maximum of 42 units.

BPSC 291 Individual Study in Coordinated Areas (1-6) F, W, S Prerequisite(s): graduate standing. A program of study designed to advise and assist candidates who are preparing for examinations. Up to 6 units may be taken prior to the master's degree. Up to 12 units may be taken prior to advancement to candidacy for the Ph.D. Graded Satisfactory (S) or No Credit (NC). Course is repeatable upon recommendation of the instructor.

BPSC 292 Concurrent and Advanced Studies in Botany and Plant Sciences (1-4) F, W, S Outside research, 3-12 hours. Prerequisite(s): consent of instructor. Elects concurrently with an appropriate undergraduate course, but on an individual basis. Devoted to one or more graduate projects based on research and criticism related to the course. Faculty guidance and evaluation is provided throughout the quarter. Course is repeatable.

BPSC 297 Directed Research (1-6) F, W, S Outside research, 3-18 hours. Prerequisite(s): graduate standing or consent of instructor. Individual research conducted under the direction of a Botany and Plant Sciences faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 299 Research for Thesis or Dissertation (1-12) F, W, S Thesis, 3-36 hours. Prerequisite(s): graduate standing. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

BPSC 302 Teaching Practicum (1-4) F, W, S Prerequisite(s): graduate standing and appointment as Teaching Assistant. Supervised teaching of Botany/Plant Science courses including laboratory and/or discussion sections. Graded Satisfactory (S) or No Credit (NC). Course is repeatable for credit, but units not applicable toward degree unit requirements.

Business Administration

Subject abbreviation: BUS

The School of Business Administration

Yunzeng Wang, Ph.D., Dean
Office, 142 Anderson Hall
(951) 827-2932

Undergraduate Business Programs Office
2340 Olmsted Hall
(951) 827-4551; fax: (951) 827-5061
soba.ucr.edu

Professors

Subramanian ‘Bala’ Balachander, Ph.D. Albert O. Stetley Chair (Marketing)
Y. Peter Chung, Ph.D. (Finance)
Mohsen El-Hafi, Ph.D. (Operations and Supply Chain Management)
Jeray ‘John’ Haleblian, Ph.D. Associate Dean and Department Chair (Management)
Jean Helwege, Ph.D. (Finance)
Woody M. Liao, Ph.D. (Accounting)
Birendra Mishra, Ph.D. Associate Dean for the Academic Graduate Programs (Accounting)
Theodore Mock, Ph.D. Distinguished Professor (Accounting)
Jorge Silva-Risso, Ph.D. (Marketing)
Richard Smith, Ph.D. Philip L. Boyd Chair (Finance)
Yunzeng Wang, Ph.D. Dean’s Distinguished Scholar (Operations and Supply Chain Management)

Professors Emeriti

Bajs M. Dodin, Ph.D. (Operations and Supply Chain Management)
David Meyers, Ph.D. (Finance)
Kathleen Montgomery, Ph.D. Distinguished Professor (Management)
Michael Moore, Ph.D. (Accounting)
Rannan Rapoport, Ph.D. Distinguished Professor (Management)
Waymond Rodgers, Ph.D. (Accounting and Information Systems)
David Stewart, Ph.D. Distinguished Professor (Marketing)

Associate Professors

Long Gao, Ph.D. (Operations and Supply Chain Management)
Elodie Goodman, Ph.D. (Operations and Supply Chain Management)
Michael Haseluhn, Ph.D. (Management)
Yawen Jiao, Ph.D. (Finance)
Thomas Kramer, Ph.D. (Marketing)
Major Requirements

The following are requirements leading to the B.S. degree in Business Administration. At least 50 percent of business course requirements must be completed at UCR.

University Requirements

See Undergraduate Studies section.

College Requirements

Students must fulfill all breadth requirements of the College of Humanities, Arts, and Social Sciences or the Intersegmental General Education Transfer Curriculum prior to transferring to the UC.

Major Requirements

The following are requirements leading to the B.S. degree in Business Administration. At least 50 percent of business course requirements must be completed at UCR.

Business Administration Major

1. Preparation for Business Administration major (8 courses [at least 32 units])

   Major prerequisites (non-BUS courses may be used to satisfy breadth requirements for the School of Business Administration):

   (1) BUS 010
   (2) BUS 020
   (3) ECON 002
   (4) ECON 003
   (5) CS 008
   (6) STAT 048
   (7) MATH 022
   (8) ECON 102 or ECON 103

   The major requirements for the B.S. in Business Administration are as follows:

   2. Upper-division major requirements (18 courses [at least 72 units]):

      Core courses (at least 10 courses [at least 40 units]):

      BUS 100W, BUS 101, BUS 102, BUS 103, BUS 104/STAT 104, BUS 105, BUS 106/ECON 134, BUS 107, BUS 108, BUS 109

      Concentration (At least 20 units): Students in the Business Administration major (BADM) will be required to declare a concentration at least three quarters prior to graduation, provided they are allowed to change their concentration, if justified. The Office of Undergraduate Business Programs will manage the process. Students can declare one concentration.

      Choose five courses from one of the concentrations listed below. Courses completed to meet upper division core requirements may not be used to meet concentration requirements.


      Finance: BUS 132 and at least four of the following: BUS 131, BUS 134, BUS 135, BUS 136, BUS 137, BUS 138, BUS 139, BUS 140E, BUS 147

      Information Systems: BUS 125, BUS 128, BUS 171, BUS 172, BUS 173, BUS 174, BUS 175

      Management: BUS 143, BUS 144, BUS 145, BUS 146, BUS 147, BUS 148, BUS 150, BUS 154, BUS 155, BUS 156, BUS 157, ANTH 105/BUS 158, BUS 173

      Marketing: BUS 111, BUS 112, BUS 113, BUS 114, BUS 115, BUS 116, BUS 117, BUS 118, BUS 119, BUS 124, BUS 126

      Operations and Supply Chain Management: BUS 122, BUS 123, BUS 124, BUS 125, BUS 126, BUS 127/STAT 127, BUS 128, BUS 129, BUS 130, BUS 173

      An additional 3 courses (at least 12 units) of Business Administration elective courses from BUS 111-BUS 199H, excluding BUS
190. Courses completed to satisfy the five-course concentration requirement may not be used to meet this requirement. Related courses outside of Business Administration may be approved to satisfy their requirement with the approval of the Associate Dean or Assistant Dean of Undergraduate Student Affairs of SoBA.

**Majors with Administrative Studies Components**

B.A. degrees are offered in Art History, Economics, History, Political Science, and Sociology with Administrative Studies. A B.S. degree is offered in Sociology with Economics, History, Political Science, and Majors with Administrative Studies requirements are listed under respective departmental listings.

1. All requirements of the College of Humanities, Arts, and Social Sciences
2. Specified requirements of the relevant department, to include at least 36 upper-division units in that discipline

**Administrative Studies requirements (37 units)**

a) Four lower-division courses (17 units)
   - (1) BUS 010, BUS 020
   - (2) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   - (3) CS 008 (may be used to satisfy breadth requirements)
   - (4) BUS 100W-BUS 199H, excluding BUS 190.

b) Two upper-division courses (8 units) from the list below:
   - (1) ECON 102 or ECON 104A or ECON 130 or ECON 162/BUS 162
   - (2) PSYC 140 or PSYC 142
   - (3) SOC 150 or SOC 151 or SOC 171
   - (4) POSC 181 or POSC 182 or POSC 183
   - (5) ANTH 127 or ANTH 131

These two courses must be outside the discipline of the relevant major and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.

c) A three-course track (12 units) in Business Administration courses, from one of the following:
   - (1) Organizations (General): BUS 100, BUS 107, BUS 176/SOC 176, BUS 15B/ANTH 105, SOC 150, SOC 151
   - (2) Human Resources Management/Labor Relations: BUS 100, BUS 107, BUS 152/ECON 152, BUS 153/ECON 153, BUS 155, BUS 157, PSYC 142
   - (3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, POSC 186
   - (4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114 or BUS 117
   - (5) Managerial Accounting/Taxation: BUS 108, and two from BUS 166, BUS 168A, or BUS 168B

(7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
(8) Management Information Systems: BUS 101, BUS 171, BUS 173
(9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127

**Minor**

Students declaring a minor in Business Administration will petition the Undergraduate Business Programs Office at least three quarters prior to graduation. That office will publicize the deadlines each quarter to all colleges and major departments.

Prerequisites for the minor in Business Administration are as follows:

1. Three lower-division courses (14 units) (must be completed with no grade lower than “C”):
   - BUS 020, ECON 003, STAT 048

Requirements for the minor in Business Administration are as follows:

2. Six upper-division courses (24 units):
   - a) Four courses from the following: BUS 101, BUS 102, BUS 103, BUS 104/STAT 104, BUS 105, BUS 106/ECON 134, BUS 108
   - b) Two additional upper-division Business Administration courses from BUS 100W-BUS 199H, excluding BUS 190. Courses completed to satisfy the four course requirement in section “a)” above may not be used to meet this requirement.

**Lower-Division Courses**

**BUS 001 Personal Finance (4)** Lecture, 3 hours; workshop, 1 hour. Prerequisite(s): none. Provides students with tools necessary to analyze the decision to finance their UCR education with student loans. Topics include personal budgets, student loans, interest rates, career planning, auto and health insurance, and other issues related to financing higher education.

**BUS 010 Introduction to Business (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Provides an overview of the field of business administration. Explores business goals and strategies, functional areas of business and their integration in policy and decision making, social responsibility, computers in business, and business trends and challenges including the international dimension.

**BUS 020 Financial Accounting and Reporting (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A study of the concepts and techniques for measurement and communication of financial information. Includes interpretation of financial statements.

**BUS 021 Generation of Financial Accounting Information (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020 with a grade of “C” or better. A detailed study of the process of measuring, recording, and communicating financial accounting information.

**Upper-Division Courses**

**BUS 100 Management Communication (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Covers the theory and practice of communication in a business environment. Topics include written and oral presentations, interpersonal skills, teamwork in a multicultural setting, and effective use of communication technologies.

**BUS 100W Management Writing and Communication (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 001B with a grade of “C” or better, upper-division standing or consent of instructor. Focuses on writing and communication methods in a business environment. Topics include written and oral presentations, interpersonal skills, teamwork in a multicultural setting, and effective use of communication technologies. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C.

**BUS 101 Information Technology Management (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 008 or equivalent; upper-division standing. Topics include computer hardware and software, business data processing, databases, telecommunications, systems analysis and design, cost-benefit analysis, and systems applications in business. Includes database and spreadsheet projects.

**BUS 102 Ethics and Law in Business and Society (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Analyzes the legal, ethical, political, and social aspects of the business environment. Topics include ethics and social responsibility, government regulation, corporate governance, and global management issues.

**BUS 103 Marketing and Distribution Management (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the role of marketing in society with emphasis on concepts, marketing methods, and institutions.

**BUS 104 Decision Analysis and Management Science (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 008 or equivalent; STAT 048 or STAT 100A or equivalent; upper-division standing. A survey of deterministic and probabilistic models for decision making. Topics include linear programming and extensions, networks, dynamic programming, decision trees, queuing models, and simulation. Explores the application of these models in decision making. Emphasizes use of the computer. Cross-listed with STAT 104.

**BUS 105 Production and Operations Management (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 104/STAT 104 or equivalent. Deals with the issues of design and control of production systems in manufacturing and service organizations. Covers product and process selection, capacity planning, location and layout design, project and job scheduling, inventory control, material planning, and quality control.

**BUS 106 Introduction to Financial Management (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020; ECON 002; ECON 003; ECON 101 or STAT 048; upper-division standing. An introduction to financial management and financial institutions. Includes time value of money, stock and bond valuation, risk and return, portfolio theory, capital budgeting, capital structure, dividend policy, and financial databases. Cross-listed with ECON 134.

**BUS 107 Organizational Behavior (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Studies organizations from the behavioral science perspective. Topics include motivation, leadership, communication, groups, organization structure and culture, and control in complex organizations.
BUS 108 Financial Evaluation and Managerial Analysis (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020 or equivalent; upper-division standing. Study of accounting data used for managerial planning and control in business operations. Provides an introduction to manufacturing operations and cost accounting systems, cost-volume-profit analysis, relevant costing, standard costing and variance analysis, as well as budgeting.

BUS 109 Competitive and Strategic Analysis (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): senior standing in Business Administration. An integrative course analyzing fundamental principles of strategic decision-making processes in organizations, the interrelationships among functional areas, and how decision making is affected by internal and external environments. Teamwork and case studies are emphasized.

BUS 111 Services Marketing (4)
Lecture, 3 hours; outside project, 3 hours. Prerequisite(s): BUS 103. Covers the marketing of services and ideas. Focuses on marketing for service organizations such as hotels, hospitals, and banks. Provides understanding of the broader role of service provision for both service firms and goods firms.

BUS 112 Consumer Behavior (4)
Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 103. Covers the marketing of services and ideas. Focuses on marketing for service organizations such as hotels, hospitals, and banks. Provides understanding of the broader role of service provision for both service firms and goods firms.

BUS 113 Marketing Institutions (4)
Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 103. Focuses on marketing strategies relating to the delivery of consumer goods and services, the main topic being the management of marketing activities within the channels of distribution, especially in retail and wholesale institutions.

BUS 114 Marketing in a Global Environment (4)
Lecture, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): BUS 103. Covers the theory and practice of marketing across national borders. Provides an understanding of global marketing environments and examines the development of marketing strategies to maximize growth of global companies.

BUS 115 Marketing Research (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 103. Covers types and sources of marketing information, the marketing research process, and techniques of data collection and analysis, including consumer and customer evaluation and test marketing. Examines both quantitative and qualitative research with analysis of the values and limitations of data. Emphasis is placed on evaluation and interpretation of results.

BUS 116 Pricing Strategy and Management (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 103 or consent of instructor. Integrates theory and practice into a framework for making pricing decisions. Prepares for addressing strategic and tactical pricing issues. Includes customer demand and price sensitivity, psychological reaction to price, segmented pricing, price promotions, bundling, online pricing, dynamic pricing, competitive reaction, profitability analysis, and pricing strategy development.

BUS 117 Advertising (4)
Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 103. Covers the basic concepts and functions of advertising, with emphasis on media selection, message design, and effectiveness measurement.

BUS 118 Electronic Marketing (4)
Lecture, 3 hours; outside project, 3 hours. Prerequisite(s): BUS 103. An introduction to the role of electronic commerce in business-to-consumer and business-to-business marketing. Covers the application of traditional marketing principles to an electronic commerce environment and new marketing techniques made possible by this environment.

BUS 119 Database Marketing (4)
Lecture, 3 hours; individual study, 2 hours; extra reading, 1 hour. Prerequisite(s): BUS 103. Examines marketing cases and develops data analytical skills for managerial decision making. Utilizes statistical software to manage, display, and analyze marketing information, including consumer survey, relationship management, scanner, and socioeconomic data. Topics include attitude measurement, market segmentation and targeting, competition analysis, market performance analysis, and store location choice.

BUS 122 Linear Programming with Applications (4)
Lecture, 3 hours; homework problems and projects, 3 hours. Prerequisite(s): BUS 104/STAT 104 or equivalent. Integrates computer simulation and optimization techniques to solve problems in education, business, health care, and other fields. Notes the interrelationships among these problems and reinforces analytical skills and the ability to intelligently use information for making decisions under uncertainty.

BUS 123 Spreadsheet Modeling for Decision-Making (4)
Lecture, 3 hours; written work, 3 hours. Prerequisite(s): BUS 104/STAT 104 or consent of instructor. Introduces the fundamental techniques of using data to make informed management decisions in the presence of uncertainty of advanced Microsoft Excel functionality. Uses spreadsheet modeling for decision analysis and optimization applications. Enhances and reinforces analytical skills and the ability to intelligently use information for making decisions under uncertainty.

BUS 124 Business Analytics (4)
Lecture, 3 hours; term paper, 1 hour; written work, 2 hours. Prerequisite(s): STAT 048 or consent of instructor. Provides fundamental concepts and tools needed to understand the emerging role of business analytics in organizations. Applies basic business analytics tools in a spreadsheet environment. Introduces market-leading techniques that help identify and manage key data from business processes. Provides the essential tools required for data mining and business process re-engineering.

BUS 125 Simulation for Business (4)
Lecture, 3 hours; extra reading, 1.5 hours; outside projects, 1.5 hours. Prerequisite(s): BUS 104/STAT 104, STAT 048, or equivalents. Introduces a tool for analyzing complex systems. Analyzes and discusses the theory and practice of modeling through simulation. Topics include modeling uncertainty and collecting input data, Monte Carlo simulation techniques, model validation, and sensitivity analysis. Examines applications in finance, marketing, operations, and supply chain management.

BUS 126 Practical Business Forecasting (4)
Lecture, 3 hours; assigned problems, 3 hours. Prerequisite(s): STAT 048 or STAT 100A or equivalent; upper-division standing. Teaches how forecasts are developed and utilized. Emphasizes common forecasting methods used in business and uses specific cases to illustrate the selected methods. Applications to business include forecasting sales, production, inventory, macroeconomic factors such as interest and exchange rates, and other aspects of both short- and long-term business planning.

BUS 127 Introduction to Quality Improvements (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 048 or STAT 100A or consent of instructor. Explores Deming's 14 points for management, graphical methods, fishbone diagram, Pareto analysis, control charts for attributes and variables, cusum and moving average charts, process-capability, economic design, acceptance sampling, Taguchi method, parameter design, tolerance design, reliability, hazard rate, censoring, and accelerated life testing. Cross-listed with STAT 127.

BUS 128 Project Planning and Control (4)
Lecture, 3 hours; assigned problems and field project, 3 hours. Prerequisite(s): BUS 104/STAT 104 or consent of instructor. Covers issues related to planning and control. Explores the differences between projects and production systems; breakdown structures of project organization and work; sequencing and budgeting; resource management; project evaluation and control; and use of current project management software. Includes application of methodology to a real-world project.

BUS 129 Supply Chain Management (4)
Lecture, 3 hours; assignments and projects. Prerequisite(s): BUS 105. Focuses on management of the distribution of goods and services from plants, ports, and vendors to customers. Key topics include transportation, inventories, warehousing, materials handling, order processing, packaging, pricing, customer service standards, and warehouse and retail location.

BUS 130 Supply Chain Modeling (4)
Lecture, 3 hours; homework problems and preparation for presentations, 3 hours. Prerequisite(s): BUS 104/STAT 104 or BUS 105. Covers the modeling and analysis of decision problems in supply chain management. Includes logistics network design, integration of supply chain operations, and supply and sourcing decisions. Utilizes the electronic spreadsheet as the principal vehicle to solve the practical problems of interest to companies, particularly the modeling of key problems as large-scale optimization problems.

BUS 131 Fixed-income Securities (4)
Lecture, 3 hours; outside research, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Covers fixed-income securities and basic analytical tools in fixed-income markets. Topics include relative pricing of fixed-income securities, yield-curve estimation, securities with embedded options, and trading strategies. Utilizes instruments such as interest rate swaps, mortgage-backed securities, and credit derivatives.

BUS 132 Foundations of Finance (4)
Lecture, 3 hours; written work, 3 hours. Prerequisite(s): BUS 020; ECON 101 or STAT 048; one of the following: ECON 102, ECON 103, ECON 104 or ECON 105A; upper-division standing. Covers the mathematical and economic foundations of finance. Topics include intertemporal production and consumption, fertilizer separation, risk and return, two-fund separation, standard asset-pricing models, arbitrage, derivatives concepts and parity relationships, and international finance parity relationships.

BUS 134 Corporate Finance (4)
Lecture, 3 hours; term paper, 2 hours; extra reading, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Examines capital budgeting under uncertainty, cost of capital, capital structure, and basics of corporate governance. May cover other related topics. Provides an understanding of the theoretical issues related to these topics. Emphasizes formulating optimal financial decisions. May include case-method teaching and data analysis.

BUS 135 Corporate Financial Policy (4)
Lecture, 3 hours; term paper, 2 hours; extra reading, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Covers application of option pricing in corporate finance, financial planning, working capital management, mergers and acquisitions, and risk management. May cover other related topics. Emphasizes formulating optimal financial decisions. May include case-method teaching and data analysis.

BUS 136 Investments: Security Analysis and Portfolio Management (4)
Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Provides a thorough study of the investment process. Topics include portfolio design and evaluation, asset-pricing models, term structure, and portfolio performance valuation. Discusses empirical uses of securities data and empirical issues in testing asset pricing models.
BUS 137 Investments: Derivatives Markets (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Covers option market characteristics, option pricing theories, and speculative strategies used in local, national, and international markets. Analyzes other derivatives instruments including futures, forwards, and swaps. Discusses empirical uses of derivatives relative to derivatives markets.

BUS 138 International Finance (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better; upper-division standing. A survey of international financial institutions and the financial factors that affect the modern multinational corporation. Covers trade and international investment theories and practices. Topics include the international financial systems, balance of payments, foreign exchange markets, measurement of foreign exchange risk, hedging, international asset pricing, and trade financing.

BUS 139 Real Estate Investments (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better. Analysis of real estate development including consideration of market analysis, financing, design and construction, loan contracts, mortgage risks, and investment analysis.

BUS 140 (E-Z) Current Topics in Finance (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better. Addresses contemporary issues in finance. Includes financial markets, private equity, asset pricing, performance evaluation, derivative securities, market micro structure, corporate finance, corporate control and governance, and the global economy. Explores recent developments in theoretical, empirical, and applied finance. Also addresses the regulatory and ethical environment of finance. Each segment is repeatable as its topics change to a maximum of 8 units.

BUS 141 Trading Strategies (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 106; BUS 132; BUS 136; STAT 048 or equivalent, or consent of instructor. Introduces stock market anomalies. Includes ways to predict market strength, to profit, and to understanding the risk and trading costs of performing such trading strategies. Considers the most well-known empirical deviations from the capital asset pricing model (CAPM) and trading strategies.

BUS 143 Judgment and Decision Making (4) Lecture, 3 hours; written work and group presentation, 3 hours. Prerequisite(s): senior standing. Covers decision making, including thinking and judgments; information selection and evaluation; learning and memory; the social side of judgment and decision making; fairness, moral obligations, and social dilemmas; and decision making in organizations.

BUS 144 Negotiation Fundamentals (4) Lecture, 3 hours; outside projects, 3 hours. Prerequisite(s): senior standing. Develops an understanding of the theory and practical applications of negotiation strategies. Studies negotiating behaviors, win-win negotiations, and relationship building. Includes case studies and role-playing exercises.

BUS 145 Conflict and Cooperation in Groups (4) Lecture, 3 hours; assigned problems, 3 hours. Prerequisite(s): STAT 048 or STAT 101A; senior standing. A general survey of the major concepts and techniques of group theory. Illustrates the basic concepts of games in extensive and strategic form. Also addresses the solution concept of the Nash equilibrium for non-cooperative games with major findings of experimental research. Reviews selected applications in business and economics.

BUS 146 Introduction to Entrepreneurship (4) Lecture, 30 hours per quarter; outside research, 30 hours per quarter. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better; upper-division standing. Discusses the nature of entrepreneurship and its role in the economy. Topics include identifying and evaluating business opportunities, creating a team, and acquiring financial and other necessary resources.

BUS 147 Entrepreneurial Finance (4) Lecture, 30 hours per quarter; outside research, 30 hours per quarter. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Focuses on the financial strategies and processes underlying a broad spectrum of entrepreneurial issues and opportunities. Topics include an understanding of opportunity recognition skills, funding, techniques, and institutions involved in the financing of new ventures. Includes financial modeling, cash needs assessment, valuation, deal structure, financing alternatives, simulation, and harvesting.

BUS 148 Business Plan Development (4) Lecture, 30 hours per quarter; outside research, 30 hours per quarter. Prerequisite(s): BUS 146. Covers the process of developing a business plan. Provides students with skills necessary to assess new venture opportunities and convert them into businesses.

BUS 149 Advanced Topics in Management and Decision-Making (4) Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers advanced topics in management and decision-making. Includes incentives and motivation, social labor, the psychology of money, competition and market behavior, grey market activities and their influence, and the application of decision-making in groups, other-regarding preferences, and welfare inferences and well-being.

BUS 150 Corporate Strategic Analysis in Multi-Business Firms (4) Lecture, 3 hours; written work, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the distinct challenges multi-business organizations face when creating and reviewing their corporate-level strategies. Topics include mergers and acquisitions, alliances, outsourcing, reorganizations, diversification, and change implementation. Emphasizes how top management can identify opportunities, define the corporate headquarter role, and create value for the businesses it holds.

BUS 153 Labor Economics (4) Lecture, 3 hours; individual study, 3 hours; extra reading, 1 hour. Prerequisite(s): ECON 102 or ECON 104A. An analysis of labor demand, labor supply, and the structure of wages. Emphasizes neoclassical, institutional, and radical perspectives. Cross-listed with ECON 153.

BUS 154 Business Law (4) Lecture, 3 hours; extra reading, 1.5 hours; term paper, 1.5 hours. Prerequisite(s): upper-division standing. Studies law as an integral part of the business environment, a process derived from and changing with the larger society. Areas covered include contracts, torts, agency, partnership, corporations, and bankruptcy.

BUS 155 Managing Human Resources (4) Lecture, 3 hours; extra reading, 2 hours; projects, 2 hours. Prerequisite(s): BUS 107; upper-division standing. Applies a strategic planning approach to managing relations between an organization and its human resources. Topics include processes of forecasting and job analysis, environmental scanning, recruitment and selection, evaluation and compensation, and dispute resolution.

BUS 156 Leadership Development (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): BUS 107; upper-division standing. Analyzes leadership theory and practice through lectures, self-analysis instruments, and discussions of independent field experiences. Surveys areas such as leadership theory, leadership style, oral and written communication, ethical leadership, interpersonal conflict management, and the dynamics of culture, and gender in organization leadership.

BUS 157 Managing Work Force Diversity (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing. BUS 155 or PSYC 142 is recommended. Covers management issues triggered by the increasing participation of women and minorities in the work force. Topics include work role stereotyping, workplace representation and segregation, culturally based leadership and communication styles, work-family conflicts, and related legislative initiatives.

BUS 158 Organizations as Cultural Systems (4) Lecture, 6 hours; extra reading and written exercises, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of culture in the formation and management of complex bureaucratic organizations. Covers types of organizations and organizational cultures, the impact of the cultural environment, and problems posed by rapid cultural change. Offered in summer only. Cross-listed with ANTH 105.

BUS 160 Industrial Organization (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 104B. A study of the organization and structure of the American industrial system. Emphasizes production and pricing behavior and policies. Also addresses market structure and public policies regulating or influencing market behavior. Cross-listed with ECON 160.

BUS 161 Forensic and Fraud Auditing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 165B. An introduction to forensic accounting and fraud examination and how they pertain to both civil and criminal matters. Covers the characteristics of fraud, fraud prevention and detection, investigative techniques, asset recovery, and the use of information technology.

BUS 162 Managerial Economics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 102 or ECON 104A. Examines applications of economic analysis to problems of management, especially of capital. Emphasis is on production economics and cost analysis. Cross-listed with ECON 162.

BUS 163A Intermediate Financial Accounting (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 021 or equivalent. In-depth study of financial accounting theory and practice. Develops an understanding of accounting concepts and generally accepted accounting principles and the ability to apply them to diverse situations. Prerequisite(s): BUS 165B. An introduction to forensic accounting and fraud examination and how they pertain to both civil and criminal matters. Covers the characteristics of fraud, fraud prevention and detection, investigative techniques, asset recovery, and the use of information technology.

BUS 165B Intermediate Financial Accounting (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165A or equivalent. Continuation of study of financial accounting theory and practice. Topics include principal financial statements and accounting and valuation of various assets.

BUS 165C Intermediate Financial Accounting (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165B or equivalent. Continuation of study of financial accounting theory and practice. Covers the conceptual discussion and procedural presentation of financial accounting topics as well as recent developments in accounting valuation and reporting practices promulgated by practitioners in industry and public accountants.

BUS 166 Accounting Information Systems (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 101, BUS 108, or equivalents. Study of the concepts and techniques in the design and implementation of accounting information systems within companies’ operating environments. Emphasis is on the effects of the computer on these systems.

BUS 167 Advanced Financial Accounting (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165C (may be taken concurrently). Covers advanced
accounting topics such as consolidated financial statements, accounting for multinational corporations, partnership accounting, and accounting for nonprofit organizations.

BUS 168A Individual Taxation (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 108 or equivalent. Concentrates primarily on the basic provisions of the federal income taxes imposed on individuals and the accounting for those taxes. While the major emphasis is on current tax provisions and tax planning, consideration is also given to the legislative and judicial development of these provisions.

BUS 168B Federal Taxation for Corporations, Partnerships, Estates, and Trusts (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 101 or equivalent. Covers tax research, corporate taxation, partnership taxation, transfer taxes, income taxation of estates and trusts, international taxation, and tax administration.

BUS 169A Auditing (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165B. Covers the auditing environment, the auditor’s legal liability, audit responsibilities and objectives, audit evidence, audit planning and documentation, the auditor’s report, and management letters.

BUS 169B Quality Assurance in Auditing (4) Lecture, 3 hours; case analyses, 3 hours. Prerequisite(s): BUS 169A. Covers the audit process (internal control, compliance tests, substantive evidence gathering, electronic data processing auditing) and the audit procedures for various types of accounts such as sales, cash, accounts receivable, payroll, inventory, and capital acquisitions.

BUS 170 Financial Statement Valuation (4) Lecture, 3 hours; research, 1 hour; individual study, 2 hours. Prerequisite(s): BUS 165B. Explains weighted average cost of capital as used in operating income based, revenue based, and market based valuation methods. Requires research to determine valuation of an existing publicly held company under all three methods. Also considers off balance sheet financing, credit risk analysis, and minority interests. Letter grade only.

BUS 171 Systems Analysis and Design (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 101 or equivalent. Involves detailed analysis, specification, design, and implementation of computer-based information systems. Includes economic analyses, evaluation of alternatives, analysis or design tools, and systems project management and planning. Case studies are used.

BUS 172 Information Economics (4) Lecture, 3 hours; assigned cases and project, 3 hours. Prerequisite(s): BUS 103, ECON 003. Discusses economic concepts and strategies related to the network economy. Topics include economic issues surrounding information goods, competition in electronic business, pricing strategies, and intellectual property protections. Examines business strategies for the information (software) and infrastructure (hardware) elements of electronic business.

BUS 173 Introduction to Databases for Management (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 101 or equivalent. Covers physical and conceptual aspects of those management systems, including familiarity with the variety of database systems based on different data models. Examines the role of database systems in management information systems (MIS) and issues in database design for effective support of MIS. Requires the use of a database package.

BUS 174 Electronic Commerce (4) Lecture, 3 hours; extra reading, 2 hours; project, 1 hour. Prerequisite(s): BUS 101. Reviews the technological evolution of electronic commerce (EC). Investigates how EC can be used to interact with customers, other organizations, and those within the organization. Studies technical innovations, provides a critical evaluation of strategies, and examines current applications and their impact on the business environment.

BUS 175 Business Data Communications (4) Lecture, 3 hours; extra reading, 3 hours, Prerequisite(s): BUS 101. Surveys components of telecommunication systems; examines major design and analysis issues in the development and implementation of computer communication systems. Studies both voice and data communication systems including local area networks, wireless systems, satellite systems, and distributed computer and database systems. Emphasizes evaluation of these systems for business purposes.

BUS 176 The Sociology of Work in Organizations (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): ECON 001 or ECON 001H or consent of instructor. Emphasizes the roles of individuals in organizations. Topics include the effects of jobs on workers, long-term trends in the nature of work, and differences in work among major segments of the labor force. Cross-listed with SOC 176.

BUS 178 International Trade (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104. A study of the pure theory of trade, trade policy, and international factor movements. Includes illustrative applications to current issues and problems. Cross-listed with ECON 178.

BUS 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and program chair. A project to be undertaken under faculty supervision. Course is repeatable to a maximum of 12 units.

BUS 198-I Individual Internship in Business Administration (1-12) Seminar, 1 hour; internship, 3-36 hours; term paper, 1-11 hours. Prerequisite(s): upper-division standing in Business Administration; consent of instructor. Active participation in the work of a business concern or a public or quasi-public agency combining academic instruction and supervised field experience. A maximum of 4 quarter units may be counted toward the degree requirements for Business Administration. Course is repeatable to a maximum of 16 units.

BUS 199H Senior Honors Research (1-5) Seminar, 1 hour; extra reading, 2-12 hours; term paper, 2-12 hours. Prerequisite(s): senior standing with a major in Business Administration; admission to the University Honors Program or consent of instructor. Involves research in business administration under faculty supervision. Students submit a written report. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is awarded. Course is repeatable to a maximum of 12 units.

Cell Biology and Neuroscience

Subject abbreviation: CBNS
College of Natural and Agricultural Sciences

Manuela Martins-Green, Ph.D., Chair
Department Office, 2710 Life Sciences, Psychology Bldg.
(951) 827-5903; cbns.ucr.edu

Professors
Michael E. Adams, Ph.D. (Cell Biology and Neuroscience/Entomology)
David A. Eastmond, Ph.D.
Sanjeev S. Gill, Ph.D.
Karine G. Le Roch, Ph.D.
Manuela Martins-Green, Ph.D.
Frances M. Sladek, Ph.D.

B. Glenn Stanley, Ph.D. (Cell Biology and Neuroscience/Psychology)
Prudence Talbot, Ph.D.
Raphael Zidovetzki, Ph.D.

Professors Emeriti
Katharine D. Atkinson, Ph.D.

Associate Professors
Jeffrey B. Bachant, Ph.D.
Margarita C. Cumnis-Collazo, Ph.D.
Scott N. Curne, Ph.D.
Todd Fiacco, Ph.D.
Constance I. Nugent, Ph.D.
Nicole zur Nieden, Ph.D.

Assistant Professors
Garrett R. Anderson, Ph.D.
WeiFeng Gu, Ph.D.
Sachiko Haga-Yamanaka, Ph.D.
Jin-Hyeong Cho, M.D., Ph.D.
Fedor V. Karginov, Ph.D.
Martin Riccomagno, Ph.D.
Hongdin Yang, Ph.D.

Adjunct Associate Professor
André Obenaus, Ph.D.

Adjunct Assistant Professor
I-Chueh Huang, Ph.D.
Shu-Wei Sun, Ph.D.

Research in the Department of Molecular, Cell and Systems Biology uses multidisciplinary approaches to understanding basic cellular processes in various tissues, including the nervous system, as well as more integrative levels of analysis, including behavior. Areas of research represented in the department include the following:

- Biophysical properties of excitable membranes
- DNA repair
- Transcriptional regulation
- Mechanisms of toxicity
- Insect development
- Membrane transport
- Mechanisms of mitotic chromosome transmission
- Telomere maintenance
- Synaptic structure and function
- Changes in nervous system with experience
- Interactions of nervous and endocrine systems
- Reproductive biology and fertilization
- Chemokine function in wound healing and tumor development
- Glia-neuron signaling and sensory and motor integrative processes
- RNA Biology

Undergraduate Curriculum

Students interested in cell, molecular, and developmental biology can obtain training through the interdepartmental major in Cell, Molecular, and Developmental Biology leading to the B.S. degree. Students interested in neuroscience can obtain training in behavioral neuroscience, neurobiology, and neurochemistry through the Neuroscience major leading to the B.A. or B.S. degree. The Neuroscience major is an intercollege major offered by the College of Humanities, Arts, and Social Sciences and the College of Natural
and Agricultural Sciences. See Cell, Molecular, and Developmental Biology section and Neuroscience Undergraduate Major section, respectively.

Graduate Curriculum

Courses and research opportunities are offered by the interdepartmental graduate programs in Cell, Molecular, and Developmental Biology; Environmental Toxicology; and Neuroscience. See the respective graduate program section.

Lower-Division Course

CBNS 004 Concepts in Medical Cell Biology (3) Lecture, 1 hour; workshop, 4 hours. Prerequisite(s): CHEM 001A or CHEM 013A (may be taken concurrently). Introduces fundamental concepts in molecular cell biology, with emphasis on human health and disease. Modules involve lectures and interactive, problem-oriented discussions with faculty. Through classical and contemporary examples, modules acquaint students with the scientific process and how it leads to insights into human biology. Credit is not awarded for CBNS 004 if it has already been awarded for BIOL 005A.

Upper-Division Courses

CBNS 101 Fundamentals of Cell Biology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08LCH and BCH 100 or BCH 110A (BCH 100 or BCH 110A may be taken concurrently). Introduces the principles of eukaryotic cell biology. Includes an examination of the molecules and systems that mediate cell function and an overview of membrane architecture and function, cell signaling and signal transduction, the cytoskeleton, organelles, protein targeting and secretion, and the nucleus and nuclear transport. Credit is not awarded for CBNS 101 if it has already been awarded for BIOL 113 or BIOL 114.

CBNS 106 Introduction to Neuroscience (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A and BIOL 005B with grades of "C-" or better, CHEM 001A, CHEM 003A, CHEM 003C, or consent of instructor. An introduction to cellular, organismal, and behavioral neuroscience for science majors. Topics include structure and functions of the brain, neurons, and synapses; sensory systems and perception; control of movement; neurobiology of hormones and sexual behavior; biohythms; learning; memory; and psychoses.

CBNS 108 Introduction to Developmental Biology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 102, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08LCH; or consent of instructor. Emphasizes common principles and key concepts that govern development of multiple eukaryotic systems, and how genes control cell behavior during development.

CBNS 116 Human Neuroanatomy: Structure-Function Relationships (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 with a grade of "C-" or better or consent of instructor. Provides in-depth study of human functional neuroanatomy including gross anatomy of the brain and spinal cord, microscopic anatomy of cellular components, and fine structure of the nervous system at the electron microscope (EM) level. Emphasizes understanding the neuroanatomy of key structures (e.g., hypothalamus, brainstem, hippocampus). Faccio

CBNS 120 Cellular Neuroscience: Membrane and Synaptic Phenomena (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 or consent of instructor. An examination of cellular and molecular mechanisms of nervous system function using concepts drawn from the study of vertebrates and invertebrates with an emphasis on mammalian systems. Cross-listed with PSYC 120.

CBNS 120L Neuroscience Laboratory (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): CBNS 120/PSYC 120 or concurrent enrollment. Laboratory experiments using electrophysiological, chemical, and anatomical research methods fundamental to understanding neurons and neural systems. Cross-listed with PSYC 120L.

CBNS 121 Developmental Neuroscience (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 or consent of instructor. A study of the development of nervous systems. Examines the cellular and molecular mechanisms of neural development and the determinants of cell birth and death, axonal pathfinding, neuronal connections, and development of neural systems underlying behavior. Cross-listed with PSYC 121.

CBNS 124 Systems Neuroscience (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 with a grade of "C-" or better or consent of instructor. A study of the structure and function of motor and sensory systems in vertebrate and invertebrate nervous systems. Cross-listed with PSYC 124.

CBNS 125 Neuropharmacology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 120/PSYC 120; previous or concurrent enrollment in CBNS 101L or PSYC 101L and CBNS 124/PSYC 124 recommended. Emphasis on neural systems, mechanisms, and pharmacological agents and effects, which are fundamental to neural information processing. Cross-listed with PSYC 125.

CBNS 126 Neuroscience of Learning and Memory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 or PSYC 110 or consent of instructor. Covers mechanisms of learning and memory across levels of analysis, including genetic, neuronal, systems and theory. Topics include the multiple memory systems, memory consolidation, working memory, emotional memory, recognition memory, spatial memory, and human amnesia. Cross-listed with PSYC 126.

CBNS 127 Behavioral Control Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 120/PSYC 120; CBNS 124/PSYC 124 strongly recommended. Emphasis on the effects of the endocrine system operation from the processing of sensory inputs for object recognition and localization to the organization of central patterns for generation of sequenced motor output. Cross-listed with PSYC 127.

CBNS 128 Immunology (3) Lecture, 3 hours. Prerequisite: BIOL 005C, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A. A study of humoral and cellular immunology. Topics include lymphoid systems, cells, antigens, antibodies, antibody formation, cellular immunity, and tumor and transplantation immunology. Diseases and altered immune states associated with each topic are discussed in detail. Cross-listed with BIOL 128.

CBNS 129 Brain Control of Bodily Functions (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 124/PSYC 124 with a grade of "C-" or better or consent of instructor. Emphasizes principles of organization and function related to endocrine and other physiological systems. Selected topics include control of breathing, body water, temperature, cardiovascular function, and the stress response.

CBNS 130L Computational Neuroscience Laboratory: Introduction to Brain Modeling Techniques (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): CBNS 120/PSYC 120 or consent of instructor. Introduces computer modeling techniques used to study neurons and neural systems. Selected topics include biophysical models of single neurons, small neural circuits, synaptic interactions, and larger scale network models.

CBNS 133 Scientific Writing for Cell, Molecular and Developmental Biologists (4) S Lecture, 2 hours; written work, 6 hours. Prerequisite(s): BIOL 102, BIOL 107A, CBNS 101; a major in Cell, Molecular, and Developmental Biology, or consent of instructor. An introductory course in scientific writings. Includes preparing scientific manuscripts, research proposals, and other types of technical presentations. Satisfactory (S) or No Credit (NC) grading is not available. Bachant

CBNS 135 Educational Outreach Training in Neuroscience (4) W Lecture, 10 hours per quarter; discussion, 10 hours per quarter; laboratory, 20 hours per quarter; activity, 20 hours per quarter; written work, 20 hours per quarter. Prerequisite(s): CBNS 120/PSYC 120 and CBNS 124/PSYC 124 with grades of "C-" or better and upper division standing in Neuroscience. Introduction to multiple approaches and activities that can be used when teaching neuroscience concepts. Builds proficiency in organizational and presentation skills, as well as provides opportunities for educational outreach. Topics include components of oral presentation, models of teaching and learning styles, and published successes in neuroscience outreach. Satisfactory (S) or No Credit (NC) grading is not available.

CBNS 150 Cancer Biology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A or CBNS 101 (may be taken concurrently with consent of instructor). Explores the origin, development, and treatment of cancer with emphasis on molecular mechanisms. Covers topics such as oncogenes, tumor suppressors, cell cycle and differentiation, AIDS, and hereditary and environmental factors in the development of cancer. Cross-listed with ENTH 150.

CBNS 165 Stem Cell Biology (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 101 or consent of instructor. An introduction to various stem cells, their characteristics, and their niches. Explores the molecular concepts of stem cell self-renewal and tissue and organ development. Illustrates their application in therapies and explains routine methods used in stem cell biology. Reviews current governmental regulations and ethics. zur Nieden

CBNS 169 Human Embryology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C or consent of instructor. An in-depth study of normal human development from conception through the end of the prenatal period. Demonstrations use microscopic and other materials specifically adapted for the course. Some consideration is given to abnormal development.

CBNS 190 Special Studies (1-4) Individual study, 3-12 hours. Prerequisite(s): upper-division standing; consent of instructor and department chair. Individual study to meet special curricular needs. Grading basis to be determined in consultation with the instructor and department chair. Course is repeatable to a maximum of 12 units.

CBNS 194 Independent Reading (1-2) Individual study, 3-6 hours. Prerequisite(s): consent of instructor. Individual reading under faculty direction. Course is repeatable to a maximum of 4 units.

CBNS 197 Research for Undergraduates (1-4) Outside research, 3-12 hours. Prerequisite(s): either sophomore standing and one course in Cell Biology and Neuroscience or upper-division standing; consent of instructor. An introduction to laboratory research conducted under faculty supervision. Students who submit a written report or give an oral presentation receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CBNS 198-I Individual Internship (1-12) F, W, S. Summer internship, 2-24 hours per week, 1-12 hours. Prerequisite(s): consent of instructor. Explores career development within the context of cell, molecular, and developmental biology or health sciences. Includes supervision by an off-campus sponsor and an
on-campus faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**CBNS 199 Senior Research (1-4)** Outside research, 3-12 hours. Prerequisite(s): senior standing; consent of instructor. Original research undertaken under the direction of a faculty member. Students who submit a written report or give an oral presentation receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

---

**Cell, Molecular and Behavioral Neuroscience Designated Emphasis**

**Subject abbreviation: CMBN**

School of Medicine

Iryna Ethell (Biomedical Sciences), Co-Director
Khaleel Razak (Psychology), Co-Director
iryna.ethell@ucr.edu
khaleel@ucr.edu

Advisory Committee & Participating Faculty

Devin Binder (Biomedical Sciences)
Monica Carson (Biomedical Sciences)
Djurdjica Coss (Biomedical Sciences)
Nicholas DiPatrizio (Biomedical Sciences)
Iryna Ethell (Biomedical Sciences)
Martin Garcia-Castro (Biomedical Sciences)
David Lo (Biomedical Sciences)
Ilihem Messaoudi Power (Biomedical Sciences)
Emma Wilson (Biomedical Sciences)
Seema Tiwari-Woodruff (Biomedical Sciences)
Sika Zheng (Biomedical Sciences)
Peter Hickmott (Psychology)
Kelly Huffman (Psychology)
Edward Korzus (Psychology)
Khaleel Razak (Psychology)
Aaron Seitz (Psychology)
Glenn Stanley (Psychology)
Michael Adams (Cell Biology and Neuroscience)
Margarita Currás-Collazo (Cell Biology and Neuroscience)
Scott Currie (Cell Biology and Neuroscience)
Todd Facco (Cell Biology and Neuroscience)
Anupama Dahanukar (Entomology)
Anandasankar Ray (Entomology)

**Designated Emphasis Requirements**

The Designated Emphasis is an interdisciplinary graduate program of study to enhance student training in the field through a focused coursework across at least two departments. The program is optional and the courses used for the DE may not be counted toward MS or PhD requirements.

1. Three (3) courses (12 units) with a focus in basic principles of cell, molecular and behavioral neuroscience will be selected from:

NRSC 200A Fundamentals in Neuroscience, Molecular and Cellular Mechanisms,
NRSC 200B Fundamentals in Neuroscience, Neural and Hormonal Systems,
NRSC 200C Fundamentals in Neuroscience, Neural Control of Behavior

NRSC 201 Graduate Neuroscience Lab

PSYC 203A Overview of Cognitive Science and Perception

PSYC 203B Attention and Memory

PSYC 207C Processes of Cognitive Development

PSYC 208 Research Methods in Development

PSYC 233 Research Methods in Cognitive Science

CBMS 106 Introduction to Neuroscience

CBNS 108 Introduction to Developmental Biology

CBNS 116 Cellular Neuroscience: Structure-Function Relationship

CBNS 120 Cellular Neuroscience: Membrane and synaptic Phenomena CBNS 121 Developmental Neuroscience

CBNS 124 Systems Neuroscience

CBNS 125 Neuropharmacology

CBNS 126 Neuroscience of Learning and Memory

CBNS 127 Behavioral Control Systems

CBNS 129 Human Neuropsychology

PSYC 112 Neural Mechanisms of Animal Behavior

PSYC 117 Cognitive Neuroscience of Memory and Consciousness

Students must select courses with relevant content in consultation with the Designated Emphasis Advisory Committee comprising of three participating faculty including student’s major professor. Students must select courses from at least two different departments. Undergraduate course taken to fulfill the requirement must be accompanied by a 292 course taken in the same quarter with extra work agreed upon by professor and student.

2. BMSC 222 (2 units): Special Topics in Biomedical Sciences with emphasis in neurologic diseases. The course will address the research pertaining to the student’s interest and prepare trainees in applying the knowledge of basic principles in neuroscience to the pathophysiology of neurologic disease. Graded Satisfactory (S) or No Credit (NC)

3. Research Project: students will write a review article on a selected neuroscience topic. The review will be evaluated by the Designated Emphasis Advisory Committee. It is the committee’s expectation that student will fulfill this component by submitting the review article for the journal publication. Successful completion of this review is required for the Designated Emphasis completion.

All requirements for the Designated Emphasis must be satisfied no later than one calendar year from the quarter in which candidate advances to candidacy in their PhD field; a minimum GPA of 3.0 is required for the Designated Emphasis completion.

---

**Cell, Molecular, and Developmental Biology**

**Subject abbreviation: CMDB**

**College of Natural and Agricultural Sciences**

Howard Judelson, CMDB Undergraduate Steering Committee Chair

Program Office, 1223 Pierce Hall
(951) 827-7294

Undergraduate Program Faculty

**Professors**

Michael Adams, Ph.D. (Cell Biology and Neuroscience/Entomology)
Peter W. Atkinson, Ph.D. (Entomology)
Julia Bailey-Serres, Ph.D. (Botany and Plant Sciences)
Xuewei Chen, Ph.D. (Botany and Plant Sciences)
David Eastmond, Ph.D. (Cell Biology and Neuroscience)
Brian Federici, Ph.D. (Entomology)
Sarajeet S. Gill, Ph.D. (Cell Biology and Neuroscience)
Hailing Jin, Ph.D. (Plant Pathology and Microbiology)
Howard Judelson, Ph.D. (Plant Pathology and Microbiology)
Karine G. Le Roch, Ph.D. (Cell Biology and Neuroscience)
Wenbo Ma, Ph.D. (Plant Pathology and Microbiology)
Morris F. Maduro, Ph.D. (Biology)
Manuela Martins-Green, Ph.D. (Cell Biology and Neuroscience)
Dmitri Maslov, Ph.D. (Biolog)
Eugene Nothnagel, Ph.D. (Botany and Plant Sciences)
A.L.N. Rao, Ph.D. (Plant Pathology and Microbiology)
Frances Sladek, Ph.D. (Cell Biology and Neuroscience)
Mark Springer, Ph.D. (Biolog)
Patricia S. Springer, Ph.D. (Botany and Plant Sciences)
Prudence Talbot, Ph.D. (Cell Biology and Neuroscience)
Linda L. Wailing, Ph.D. (Botany and Plant Sciences)
Raphael Zidovetzki, Ph.D. (Cell Biology and Neuroscience)

**Professors Emeriti**

Leah Haimo, Ph.D. (Biolog)
Bradley Hymann, Ph.D. (Biolog)
Thomas Miller, Ph.D. (Entomology)

**Associate Professors**

Jeffrey B. Bachant, Ph.D. (Cell Biology and Neuroscience)
Margarita Currás-Collazo, Ph.D. (Cell Biology and Neuroscience)
Anupama Dahanukar, Ph.D. (Entomology)
Venugopala Reddy Gonnah, Ph.D. (Botany and Plant Sciences)
Constantine Nugent, Ph.D. (Cell Biology and Neuroscience)
Anandasankar Ray, Ph.D. (Entomology)

**Assistant Professors**

Meng Chen, Ph.D. (Botany and Plant Science)
Jun-Hyung Cho, Ph.D. (Cell Biology and Neuroscience)
Juan Pablo Giraldo, Ph.D. (Botany and Plant Science)
Wefeng Gu, Ph.D. (Cell Biology and Neuroscience)
Ted Karginov, Ph.D. (Cell Biology and Neuroscience)
Amy Lit, Ph.D. (Botany and Plant Science)
Major
The Cell, Molecular and Developmental Biology major is designed to prepare students for diverse and exciting careers that include research, professional programs in the health sciences, and biotechnology. Course work is structured so that students first receive a solid grounding in the basic genetic and biological principles. Subsequent course requirements expand upon these themes and include courses in cell biology, molecular biology, developmental biology and genetics. Problem-based learning is employed throughout the curriculum to produce graduates with the analytical and critical thinking skills necessary to become successful researchers and professionals. After completing required core courses, students take intermediate level courses that lay the foundation for more advanced undergraduate courses. Several mechanisms exist to tailor the curriculum to the needs of the individual student, including by choosing either Disciplinary or Health Science track options.

Both the Disciplinary and Health Science tracks can lead to B.A. or B.S. degrees. They have similar major requirements, but the B.A. degree requires 12 additional units of Humanities and Social Sciences courses and 16 units in a foreign language (see College Breadth Requirements).

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Natural and Agricultural Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements
Some of the following requirements for the Cell, Molecular and Developmental Biology major may also fulfill the College’s breadth requirements. Consult with an advisor for course planning.

1. Life Sciences core curriculum (72-76 units)
   a) BIOL 005A, BIOL 051A or BIOL 020, BIOL 005B, BIOL 005C
   b) CHEM 001A, CHEM 011B, CHEM 011C, CHEM 011A, CHEM 011B, CHEM 011C
   c) CHEM 008A, CHEM 008B, CHEM 008C, CHEM 008A, CHEM 008B, CHEM 008C, CHEM 008H, CHEM 008A, CHEM 008H, CHEM 008B, CHEM 008H, CHEM 008LA, CHEM 008HLB, CHEM 008HLC
   d) PHYS 002A, PHYS 002B, PHYS 002A, PHYS 002B, PHYS 002C, PHYS 002C
   e) MATH 007A or MATH 009A, MATH 007B or MATH 009B
   f) STAT 100A
   g) BCH 100, or BCH 110A and BCH 110B

2. Upper-division requirements (48 units)
   a) Major core (16 units) BIOL 102, BIOL 107A, CBNS 101, CBNS 108
   b) Major electives (24 units from the following).

   - Cellular emphasis. At least one of the following is required: BIOL 113, BIOL 114; BIOL 121/MCBL 121, BIOL 128/CBNS 128; BPSC 135, CBNS 116; CBNS 120/PSYC 120; CBNS 165.

   - Molecular emphasis. At least one of the following is required: BCH 180A; BCH 180B; BIOL 107B; BIOL 119; BIOL 124/MCBL 124; BIOL 155/BPSC 155; CBNS 150/ENTX 150.

   - Developmental emphasis. At least one of the following is required: BCH 183; BIOL 123/MCBL 123; BIOL 132/BPSC 132; BIOL 138/BPSC 138; BIOL 168; CBNS 121/PSYC 121; CBNS 169.

   - Laboratory course: Two courses in a biological science are required. Courses including at least 3 hours of lab per week are eligible, including combined lecture and lab classes. Eligible classes include BCH 153/BIOL 153/BPSC 153; BIEN 155; BIOL 118; BIOL 121/MCBL 121; BIOL 104/BPSC 104; BIOL 132/BPSC 132; BIOL 138/BPSC 138; BIOL 143/BPSC 143; BIOL 161A; CBNS 120L/ PSYC 120L; MCB 125; and others. Students in the Health Science Track may substitute one laboratory course with a course in ethics.

   - Note: A maximum of 8 units of 190-199 courses, including no more than 4 units of 198 courses, may be counted towards the 180 unit graduation requirement, using CBNS 198-199, I or equivalent.

   - Additional major elective units beyond the 32 required in 2b may be counted towards the 180 unit graduation requirement, using CBNS 198-199, I or equivalent.

   - Ethics: A course is strongly recommended, such as PHIL 009 or PHIL 167.

   - When selecting electives in the natural sciences, students are recommended to include classes in an area of microbiology (e.g. BIOL 157, BIOL 171, ENSC 133/MCBL 133/SWSC 133, ENSC 141/MCBL 141/SWSC 141). Students are recommended, such as CBNS 126/BPSC 126; CBNS 127/PSYC 127; PSYC 129; PSYC 178; or PSYC 179.

Sample Program Outlines
1. Bachelor of Science Degree (Disciplinary track)

The sample program for B.S. students provides a solid science background for students interested in research or teaching careers in biomedical science. Undergraduate laboratory research is strongly recommended as an important element in the program.

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASC 093</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 001A, 001B</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 001A, 001B, 011A, 011B, 011C</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 005A or 020</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH 007A or MATH 009A, MATH 007B or MATH 009B</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>15</td>
<td>14</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 002A, 002B, 002C, 002L, 021B, 021C</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 005C, 102</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 008A, 008B, 008C, 008A, 008B, 008C, 008LC</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Human/Soc. Sci. Elect.</td>
<td>2</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Total Units</td>
<td>15</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 107A</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBNS 101</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The sample program for B.S. students with a Science track)

2. Bachelor of Science Degree (Health Science tracks)

The sample program for B.S. students with a professional emphasis provides a very strong science background, with recommended elective course choices emphasizing biomedical pertinence. Additionally, a foreign language is recommended, as well as Community Service (for course credit). Further breadth may be developed by electing Humanities and Social Science course options within the major depth requirement.

3. Bachelor of Arts Degree (Disciplinary or Health Science tracks)

The sample program for B.A. students provides a broad-based education that builds on the strong foundation in science, with emphasis in humanities, social sciences, and foreign language.

Cell, Molecular, and Developmental Biology Graduate Program
Subject abbreviation: CMDB
College of Natural and Agricultural Sciences
Morris F. Maduro, Ph.D., Director
Graduate Program, 1140 Batchelor Hall
(800) 735-0717 or (951) 827-7378
cmdb.ucr.edu
Graduate Program Faculty
Professors
Michael Adams, Ph.D. (Cell Biology and Neuroscience/Entomology)
Peter W. Atkinson, Ph.D. (Entomology)
Julia Bailey-Serres, Ph.D. (Botany and Plant Sciences)
Katherine Borkovich, Ph.D. (Plant Pathology and Microbiology)
Richard Cardullo, Ph.D. (Biology)
Monica J. Carson, Ph.D. (School of Medicine)
Xuemei Chen, Ph.D. (Botany and Plant Sciences)
Shou-Wei Ding, Ph.D. (Plant Pathology and Microbiology)
Iryna M. Ethell, Ph.D. (School of Medicine)
Brian Federici, Ph.D. (Entomology)
Sarjeeet S. Gill, Ph.D. (Cell Biology and Neuroscience)
Hailing Jin, Ph.D. (Plant Pathology and Microbiology)
Howard Judelson, Ph.D. (Plant Pathology and Microbiology)
Isgouhi Kaloshian, Ph.D. (Nematology)
Paul Larsen, Ph.D. (Biochemistry)
Karine G. Le Roch, Ph.D. (Cell Biology and Neuroscience)
Xuan Liu, Ph.D. (Biochemistry)
David Lo, Ph.D., M.D. (School of Medicine)
Wendao Ma, Ph.D. (Plant Pathology and Microbiology)
Morris F. Maduro, Ph.D. (Biology)
Manuela Martins-Green, Ph.D. (Cell Biology and Neuroscience)
Dmitri Maslov, Ph.D. (Biology)
Ashok Mulchandani, Ph.D. (Chemical Engineering)
Eugene Nothnagel, Ph.D. (Botany and Plant Sciences)
Michael Porrung, Ph.D. (President's Chair (Chemistry)
Alexander Raikhel (Entomology)
A.L.N. Rao, Ph.D. (Plant Pathology and Microbiology)
Neal L. Schiller, Ph.D. (School of Medicine)
Frances Sladek, Ph.D. (Cell Biology and Neuroscience)
Patricia S. Springer, Ph.D. (Botany and Plant Sciences)
**Program Overview**

The Cell, Molecular, and Developmental Biology Graduate Program is an interdisciplinary program offering M.S. and Ph.D. degrees to students seeking advanced training in these disciplines. The program focuses on the bridge between basic and applied research and on the interface between cell, molecular, and developmental biology. Participating faculty are drawn from numerous biological sciences departments whose research interests in cell, molecular, and developmental biology span biomedical to agricultural problems, and students in the program benefit from unique training opportunities.

Students seeking admission into the program should meet all general requirements of the Graduate Division as printed in the Graduate Studies section of this catalog. The Cell, Molecular, and Developmental Biology program offers the M.S. and Ph.D. degrees in Cell, Molecular, and Developmental Biology.

**Admission**

Applicants should have adequate undergraduate course work in chemistry (two years), physics (one year), calculus (one year), and biology (one year). Applicants with strong academic records but with deficiencies in preparation for graduate training may be admitted and must rectify undergraduate deficiencies early in the first two years of residence. Applicants must submit GRE General Test scores (verbal, quantitative, and analytical).

**Course Work**

All students must complete the following core of course work:

1. **CMDB 203**
2. One graduate-level course in cell biology (BIOL 200/CMDB 200, BPSC 237, or NRSC 200A/PSYC 200A)
3. One graduate-level course in molecular biology (BIOL 201/CMDB 201, BCH 211, BSPP 231/BCH 231, BMSC 202, or NRSC 200B/PSYC 200B)
4. One graduate-level course in developmental biology (BSPP 232, CMDB 202)
5. **GDIV 403** Research and Scholarship Ethics (1 unit; may be taken any time prior to graduation).

Each student must enroll in the program seminars (CMDB 257, CMDB 258) each time they are offered. Upon entry into the program, each student meets with a guidance committee, which recommends a course of study commensurate with the student's interests and background.

**Master's Degree**

The Cell, Molecular, and Developmental Biology program offers an M.S. degree.

**Plan I (Thesis)**

Students complete the course work above, enroll in one graduate seminar course in cell, molecular, or developmental biology (BCH 230(E-Z), BIOL 281(E-Z)/CMDB 281(E-Z), BPSC 240, BCHP 289/BIOI 289/NRSC 289/PSYC 289), and undertake a research project leading to a thesis.

Each student must complete 36 units of course work, of which at least 24 units must be in the graduate series (200 level) in the biological sciences. No more than 12 units in courses numbered 290–299 may be taken to fulfill the 24-unit requirement. Candidates for the M.S. degree must defend their thesis at a public oral presentation.

**Normative Time to Degree**

Two years

**Doctoral Degree**

The Cell, Molecular, and Developmental Biology program offers a Ph.D. degree.

**Degree Requirements**

1. Completion of the course work listed above
2. One additional graduate course in cell, molecular, and developmental biology
3. One graduate seminar course in cell, molecular, or developmental biology (BCH 230(E-Z), BIOL 281(E-Z)/CMDB 281(E-Z), BPSC 240, BCHP 289/BIOI 289/NRSC 289/PSYC 289)
4. A research project leading to a dissertation
5. Oral public defense of dissertation

**Written and Oral Qualifying Examinations**

Doctoral students are advanced to candidacy following successful completion of written and oral qualifying examinations. Students write a proposal detailing the rationale, specific aims, and approaches to be undertaken for their proposed dissertation research prior to taking the oral qualifying examination.

**Professional Development Training**

Ph.D. graduate students fulfill their professional development training requirement through the following activities:

1) Responsible conduction of research: One-time mandatory enrollment in GDIV 403
2) Teaching: One-time mandatory orientation in the Teaching Assistant Development Program administered through Graduate Division (must be fulfilled prior to classroom instruction).
3) Safety training: Mandatory laboratory safety training administered through Environmental Health and Safety. Additional training may be mandated for some research activities.
4) Presentations, scientific interactions and intellectual development: Enrollment each quarter in CMDB 257 Seminar in Cell, Molecular and Developmental Biology. Part of the professional development in this course involves luncheon meetings between the speakers and students following the seminar. CMDB also offers opportunities for participation and presentation in intra-mural research seminars.
5) Research Training: Individual research training in major professor laboratories is associated with enrollment in CMDB 250,
function and chromosome maintenance, mitotic chromosome segregation, and checkpoint surveillance mechanisms. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BCH 204 and ENTX 204.

CMDB 205 Signal Transduction Pathways in Microbes and Plants (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): standing in the biological sciences, BIOL 110A or BIOL 110B or BIOL 113 or BIOL 114 or CBNS 101; or consent of instructor. Advanced topics in signal transduction pathways that regulate growth and development in plants and prokaryotic and eukaryotic microbes. Areas covered include two-component regulatory systems, quorum sensing, signaling via small and heterotrophic G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPS 205, GEN 205, MCBL 205, and PLPA 205.

CMDB 206 Gene Silencing (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): standing in the biological sciences, BIOL 102 or equivalent or consent of instructor. An in-depth coverage of mechanisms, functions, and applications of RNAi and related gene regulatory pathways guided by small RNAs such as siRNAs and miRNAs in plants and animals. Cross-listed with GEN 206 and MCBL 206.

CMDB 207 Stem Cell Biology and Disease (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): standing in the biological sciences, BIOL 102 or equivalent or consent of instructor. Introduces animal and human stem cell biology and the application of stem cell biology to medicine.

CMDB 208 Bioethics (1) Discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduces bioethics, with an emphasis on the medical and social implications of stem cell biology. Crinan on charge

CMDB 209 Ribonucleic Acid (RNA) Biology (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 102A or CBNS 101 or equivalent; or consent of instructor. A comprehensive overview of the multiple functions of RNA such as ribozyme (RNA) in the cell. Topics include mRNA, rRNA, and RNA function and metabolism; RNA catalysis and the "RNA world"; eukaryotic and bacterial non-coding RNAs; and bacterial riboswitches. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BCH 209 and GEN 209.

CMDB 210 Molecular Biology of Human Disease Vectors (3) Lecture, 2 hours; seminar, 1 hour. Prerequisite(s): consent of instructor. Covers the molecular aspects of vectors transmitting most dangerous human diseases. Involves lectures and student presentations about current issues in molecular biology and genomics of vector insects and pathogens they transmit. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with ENTM 210 and MCBL 210. Raikhel

CMDB 211 Laboratory in Human Embryonic Stem Cell Culture (2) Lecture, 5 hours per quarter, workshop, 40 hours per quarter; workshop, 5 hours per quarter. Prerequisite(s): consent of instructor. Introduces the methods used to culture human embryonic stem cells (hESC) in vitro. Provides hands-on experience in plating, passaging, culturing, differentiation, and freezing of hESC. Additional topics include staining colonies of hESC for pluripotency markers (including alkaline phosphatase); labeling colonies using immunohistochemistry; and performing chromosome squashes for evaluation of aneuploidy. Graded Satisfactory (S) or No Credit (NC). Taibot, zur Nieden

CMDB 220 Chemical Genomics Design Studio (2) Lecture, 1 hour; practicum, 4 hours. Prerequisite(s): course work in cell biology, genetics, combinatorial chemistry; or consent of instructor, graduate standing. Explores chemical genomic research approaches. Emphasizes critical thinking; advanced planning of time-consuming tests of hypotheses and experimental caveats, trade-offs, and options. Taught in a case-study approach, teams consist of students with engineering, biology, computational sciences, and chemical backgrounds. Teams generate an interdisciplinary chemical genomic research project. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BIEN 220. Schultz

CMDB 230 Molecular Plant-Microbial Interactions (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 100, BIOL 110A/MCBL 110, BIOL 120 or equivalents. A study of the physiology of host-pathogen interactions with emphasis on the metabolism of diseased plants, nature of pathogenicity, and defense mechanisms in plants. Cross-listed with BPSC 230, GEN 230, and PLPA 230. Eulgem, Jin

CMDB 250 Special Topics in Cell, Molecular, and Developmental Biology (1-2) F, W, S Seminar, 1-2 hours. Prerequisite(s): graduate standing, Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each participant. Content emphasizes recent advances in the topic area and varies accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CMDB 255 Stem Cell Biology (1) Discussion, 10 hours per quarter. Prerequisite(s): standing or consent of instructor. Presents research data to an interdisciplinary group of stem cell biologists. Covers fundamental presentation skills and answering questions about research data. Fosters discussion of stem cell biology. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CMDB 256 Seminar in Stem Cell Biology (1) Seminar, 1 hour. Prerequisite(s): standing or consent of instructor. Provides opportunities to meet stem cell researchers from other campuses and learn about the latest developments in animal and human stem cell research. Includes investigators who focus on the potential application of stem cells to medicine. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CMDB 257 Seminar in Cell, Molecular, and Developmental Biology (1) F, W Seminar, 1 hour. Prerequisite(s): standing or consent of instructor. Taught by visiting scholars. Cross-listed with CMDB faculty and CMDB students on current research in cell, molecular, and developmental biology. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 30 units.

CMDB 258 Graduate Student Seminar in Cell, Molecular, and Developmental Biology (1) W Seminar, 10 hours per quarter; one 1-day seminar. Prerequisite(s): graduate standing in Cell, Molecular, and Developmental Biology. An interdisciplinary seminar consisting of student presentations of original research and discussion of current research topics in cell, molecular, and developmental biology. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 30 units.

CMDB 281 (E-Z) Seminar in Cell Development, Structure, and Function (2) F, W, S Seminar, 2 hours. Prerequisite(s): standing or consent of instructor. Lectures, discussions, and demonstrations by students, faculty, and invited scholars on selected topics concerned with the principles of cell development, structure, and function. E. Cell Biology; F. Molecular Biology; G. Developmental Biology. Segments are repeatable. Cross-listed with BIOL 281 (E-Z).

CMDB 290 Directed Studies (1-6) Individual study, 3-18 hours. Prerequisite(s): standing or consent of instructor and graduate advisor. Individual study, directed by a faculty member, of specially...
selected topics in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CMDB 292 Concurrent Analytical Studies in Cell, Molecular, and Developmental Biology (2-4) Outside research, 6-12 hours. Prerequisite(s): graduate standing. Elected concurrently with an appropriate undergraduate course, but on an individual basis. Students are required to submit one or more graduate papers based on research or criticism related to the course. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CMDB 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing. Research and experimental studies conducted under the supervision of a faculty member on specially selected topics in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CMDB 299 Research for the Thesis or Dissertation (1-12) Outside research, 9-36 hours. Prerequisite(s): graduate standing. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

CMDB 301 Teaching of Cell, Molecular, and Developmental Biology at the College Level (1) Seminar, 1 hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluations required of new teaching assistants. Covers instructional methods and classroom/section activities most suitable for teaching Biology. Conducted by the Teaching Assistant Development Program. Graded Satisfactory (S) or No Credit (NC).

CHASS FIRST/ Chemical and Environmental Engineering / 154

Subject abbreviation: CHFY
College of Humanities, Arts, and Social Sciences
Geoff Cohen Ph.D., Director
1609 Humanities and Social Sciences
(951) 827-7831; Chassf1rst.ucr.edu

Committee in Charge
Steven Brint, Ph.D. (Sociology)
Peter Graham, Ph.D. (Philosophy)
Michael Jayme, M.F.A. (Creative Writing)
Vorris Nunly, Ph.D. (English)
Georgia Warnke, Ph.D. (Political Science)

CHASS FIRST provides first-year students with courses designed to help with the transition to UCR, a major research university setting, which involves high academic standards and rigorous course work. The courses offer students the resources and tools necessary to excel in the first year and beyond. They take place within a "learning-communities" framework so that students can successfully integrate into campus life.

Lower-Division Courses

CHFY 001 (E-Z) CHASS FIRST Humanities Course (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): first-year freshman standing in the College of Humanities, Arts, and Social Sciences. A College of Humanities, Arts, and Social Sciences course designed to introduce students to the humanities and to academic life. Segments of CHFY 001 (E-Z), CHFY 002 (E-Z), and/or CHFY 003 (E-Z) may be thematically and pedagogically linked.

CHFY 002 (E-Z) CHASS FIRST Fine Arts Course (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): first-year freshman standing in the College of Humanities, Arts, and Social Sciences course designed to introduce students to the fine arts and to academic life. Segments of CHFY 001 (E-Z), CHFY 002 (E-Z), and/or CHFY 003 (E-Z) may be thematically and pedagogically linked.

CHFY 003 (E-Z) CHASS FIRST Social Science Course (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): first-year freshman standing in the College of Humanities, Arts, and Social Sciences. A College of Humanities, Arts, and Social Sciences course designed to introduce students to the social sciences and to academic life. Segments of CHFY 001 (E-Z), CHFY 002 (E-Z), and/or CHFY 003 (E-Z) may be thematically and pedagogically linked.

CHFY 007 CHASS FIRST Learning Community Work- shop (2) Workshop, 1 hour; activity, 3 hours. Prerequisite(s): first-year freshman standing in the College of Humanities, Arts, and Social Sciences. A workshop linked to a CHASS FIRST Learning Community lecture course. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

CHFY 010 CHASS Gateway Lecture Course (5) Lecture, 3 hours; discussion, 1 hour; workshop, 1 hour. Prerequisite(s): first-year freshman standing in the College of Humanities, Arts, and Social Sciences. A College of Humanities, Arts, and Social Sciences course designed to introduce freshmen to the College's annual theme.

CHFY 020 Theory and Practice of Peer Instruction (4) Seminar, 4 hours. Prerequisite(s): consent of the CHASS FIRST Academic Advisor. An intensive examination of study development theory, retention models, and pedagogy related to peer-to-peer instruction.

Upper-Division Course

CHFY 198-I CHASS FIRST Individual Internship (1-4) Consultation, .5-2 hours; internship, 3-12 hours; written work, 1-4 hours. Prerequisite(s): approval of the CHASS FIRST Academic Coordinator. Provides on-campus opportunities in the CHASS FIRST office to acquire skills and experience for future endeavors. Course is repeatable to a maximum of 8 units.

Chemical and Environmental Engineering

Subject abbreviations: CEE, CHE, ENVE
The Marian and Rosemary Bourns College of Engineering
Charles Wyman, Ph.D., Chair
Department Office, A220 Bourns Hall
(951) 827-2859; cee.ucr.edu

Professors
Harvey Blanch, Ph.D.
David R. Cocker, Ph.D.
David Ksialius, Ph.D.
Ashok K. Mulchandani, Ph.D. W. Ruel Johnson Chair in Environmental Engineering
Sharon Walker, Ph.D. John Babbage Chair in Environmental Engineering
Jianzhong Wu, Ph.D.
Charles Wyman, Ph.D. Ford Motor Company Chair in Environmental Engineering

Professor Emeritus
Joseph M. Norbeck, Ph.D.
Associate Professors
Ian Wheeldon, Ph.D.
Assistant Professors
Kelley Barsanti, Ph.D.
Xin Ge, Ph.D.
Juchen Guo, Ph.D.
Haizhou Liu, Ph.D.
Bryan Wong, Ph.D.
Ruxue Yan, Ph.D.

Adjunct Professors
Mark Thomas Durbin, Ph.D.
Wayne Miller, Ph.D.
Joon Min, Ph.D.

Adjunct Associate Professors
Kanok Boriboonsomsin, Ph.D.
Chan Seung Park, Ph.D.

Adjunct Assistant Professors
Kanok Boriboonsomsin, Ph.D.
Kent Johnson, Ph.D.
Georgios Karavalakis, Ph.D.
Rajeev Kumar, Ph.D.
Mark Matsumoto, Ph.D.

Cooperating Faculty
Matthew J. Barth, Ph.D. (Electrical and Computer Engineering)
Ariel Dinar, Ph.D. (Environmental Sciences)
Boniface Fokwa, Ph.D. (Chemistry)
Heejung Jung, Ph.D. (Mechanical Engineering)
Yin Yadong, Ph.D. (Chemistry)
Francisco Zaera, Ph.D. (Chemistry)

Majors
The Department of Chemical and Environmental Engineering offers B.S. degrees in Chemical Engineering and in Environmental Engineering, and M.S. and Ph.D. degrees in Chemical and Environmental Engineering. For more details, see cee.ucr.edu.

Chemical Engineering focuses on transforming raw materials into useful everyday products. Chemical engineers turn the discoveries of chemists and physicists into commercial realities. They find work in a variety of fields including pharmaceuticals, materials, chemical, fuels, pollution control, medicine, and nuclear and electronic industries. At UCR, the B.S. degree in Chemical Engineering offers students three options: Biochemical Engineering, focusing on biochemical processes; Nanotechnology, focusing on nanoscale processes; or Chemical Engineering, emphasizing traditional chemical engineering issues.

The program’s educational objectives are to produce graduates who attain high levels of technical expertise to enable their achievement in diverse chemical engineering practice and research, or in allied careers, prepare them for graduate level education, and enable them to be successful members of the professional community, for the benefit of our constituents.

The Chemical Engineering B.S. degree program at UCR is accredited by the Engineering Accreditation Commission of ABET, abet.org.

Environmental Engineering deals with design and construction of processes and equipment intended to lessen the impact of man’s activities on the environment. With the growing importance of environmental quality, the environmental engineer plays a pivotal role in modern industrial activity. Environmental engineers are involved in a wide range of activities including the design of alternative
fueled vehicles, the development of renewable energy sources, the design of equipment for solid waste collection and disposal, municipal and industrial wastewater treatment, air pollution control systems, and hazardous waste management. At UCR, the B.S. degree in Environmental Engineering allows students to concentrate on air and/or water quality.

The program's educational objectives are to produce graduates who attain high levels of technical expertise to enable their achievement in diverse environmental engineering practice and research, or in allied careers, prepare them to be successful members of the professional community, for the benefit of our constituents.

The Environmental Engineering B.S. degree program at UCR is accredited by the Engineering Accreditation Commission of ABET, abet.org.

All undergraduates in the College of Engineering must see an advisor at least annually. Visit student.engr.ucr.edu for details.

University Requirements

See Undergraduate Studies section.

College Requirements

See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The Chemical Engineering major and the Environmental Engineering major use the following major requirements to satisfy the college's Natural Sciences and Mathematics breadth requirement.

1. BIOL 005A, BIOL 05LA
2. CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
3. MATH 008B or MATH 009A

Major Requirements

Chemical Engineering

Students must choose either a Biochemical Engineering, Chemical Engineering or Nanotechnology option.

1. Lower-division requirements (75 units)
   a) BIOL 005A, BIOL 05LA
   b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 008A, CHEM 008B, CHEM 008C, CHEM 08LA, CHEM 08LB, CHEM 08LC
   c) CS 010
   d) MATH 008B or MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   e) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (63 units)
   a) CEE 158
   b) CHE 100, CHE 110A, CHE 110B, CHE 114, CHE 116, CHE 117, CHE 118, CHE 120, CHE 122, CHE 160B, CHE 160C, CHE 175A, CHE 175B
   c) CHE 130/ENVE 130, CHE 160A/ENVE 160A

   d) ENGR 118

3. Option requirements: choose one option
   a) Biochemical Engineering option (19 units)
      1) CEE 010
      2) BCH 110A/BCH 100
      3) CHE 124, CHE 124L, CHE 140
      4) Four (4) units of technical electives chosen from BIEN 125, BIEN 140A/CEE 140A, BIEN 159/CEE 159, BIOL 121/MCBL 121, CEE 125, CEE 132, CEE 135, CHE 102, CHE 150
   b) Chemical Engineering option (17 units)
      1) CEE 010
      2) Sixteen (16) units of technical electives chosen from CEE 125, CEE 132, CEE 135, CHE 102, CHE 131, CHE 136, CHE 171, ENVE 120, ENVE 133, ENVE 134, ENVE 138
   c) Nanotechnology option (20 units)
      1) CEE 010
      2) CHE 105
      3) CHE 161
      4) CHE 135
      5) Eight (8) units of technical electives chosen from CHE 102, CHE 131, CHE 171, ENVE 133, ME 114, MSE 160, MSE 161

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

Environmental Engineering

Students must choose either an Air Pollution Control Technology or a Water Pollution Control Technology option.

1. Lower-division requirements (76 units)
   a) BIOL 005A, BIOL 05LA
   b) CEE 010
   c) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, CHEM 008A, CHEM 008B, CHEM 008C, CHEM 08LA, CHEM 08LB, CHEM 08LC
   d) CS 010
   e) MATH 008B or MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   f) ME 010
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (69 units)
   a) CEE 158
   b) CHE 100, CHE 114, CHE 120
   c) ENGR 118
   d) ENSC 100/SWSC 100
   e) ENVE 120, ENVE 133, ENVE 135, ENVE 142, ENVE 146, ENVE 160B, ENVE 160C, ENVE 171, ENVE 175A, ENVE 175B
   f) ENVE 130/CHE 130, ENVE 160A/CHE 160A

3. Option requirements: choose one option (12 units)
   a) Air Pollution Control Technology option
      1) CHE 116
      2) ENVE 134
   b) Water Pollution Control Technology option
      1) CHE 124 or ENVE 121
      2) Choose one from CHE 125, CHE 116, ENSC 136, ENSC 163
      3) Choose one from CEE 132, ENSC 155, ENVE 144/ENSC 144, ENVE 145

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

Graduate Program

The Graduate Program in Chemical and Environmental Engineering offers training leading to the degrees of M.S. and Ph.D. in Chemical and Environmental Engineering. Fields of specialization include biochemical engineering and bioengineering, environmental biotechnology, air quality systems engineering, water quality systems engineering, thermodynamics, advanced materials, and nanotechnology.

Combined B.S. + M.S. Five-Year Program

The college offers combined B.S.+ M.S. programs in both Chemical Engineering and Environmental Engineering designed to lead to a Bachelor of Science degree as well as a Master of Science degree in five years. Applicants for this program must have a high school GPA above 3.6, a combined SAT Reasoning score above 1950 (or ACT plus Writing equivalent), complete the Entry Level Writing Requirement before matriculation, and have sufficient mathematics preparation to enroll in calculus in their first quarter as freshmen.

Interested students who are entering their junior year should check with their academic advisor for information on eligibility and other details.

Admission

Applicants should have a degree in chemical and environmental engineering or closely related fields, have a satisfactory overall GPA from their undergraduate studies, good letters of recommendation, and high scores on the GRE General Test. Normally, students admitted to regular standing have satisfied all prerequisite course work. Under special circumstances, students who have not completed all undergraduate requirements may be admitted provided that the deficiencies are corrected to the satisfaction of the student’s advisory committee within the first year of graduate study. Courses taken for this purpose do not count towards an advanced degree. International students, permanent residents, and even U.S. citizens whose native language is not English and who do not have a bachelor’s or postgraduate degree from an institution
where English is the exclusive language of instruction must complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 (paper-based test), 213 (computer-based), or 80 (internet-based).

**Language Requirement** All students whose native language is not English must achieve a “clear pass” on the TAST or SPEAK test before the completion of their first year or they will be asked to leave the program. However, for those who receive a “conditional pass,” a departmental committee will evaluate their English proficiency before a final decision is made.

**Course Work** To ensure that advanced degree recipients in the graduate program have advanced knowledge in mathematics and chemical engineering principles that form the foundation for chemical and environmental engineering, a core course program has been implemented. All M.S. and Ph.D. students must participate in the core course program. Students who have completed these (or equivalent) courses elsewhere may petition to have the core course requirement waived or some of their units transferred (see the Graduate Division policy for transferring course units). Competency in these areas will be tested as part of the comprehensive exam for M.S. students and in the written preliminary examination for Ph.D. students. The current core courses are as follows:

- **CEE 200 (Advanced Engineering Computa-**

- **tions)**

- **CEE 202 (Transport Phenomena)**

- **CEE 204 (Advanced Kinetics and Reaction Engineering)**

- **CEE 206 (Advanced Chemical Engineering Thermodynamics)**

**Academic Appeals Process** Policies and procedures relating to Academic Appeals can be found through the UCR Graduate Division link, graduate.ucr.edu/academic_affairs.html.

Incoming students without a B.S. degree in chemical or environmental engineering must demonstrate competency in these areas either by taking the appropriate undergraduate courses and/or by passing the written preliminary exam. At UCR, the required courses are CHE 100, CHE 110A, CHE 110B, ENVE 171, CHE 114, CHE 116, CHE 121, CHE 130, and ENGR 118. Students may also be required to take some of the above courses to satisfy the prerequisites of the core graduate courses.

Each quarter, all M.S. and Ph.D. students in residence must enroll in CEE 286 (Colloquium in Chemical and Environmental Engineering). In addition, all M.S. and Ph.D. students must participate each year in the CEE Graduate Student Symposium, usually held just before the beginning of the fall quarter.

**Professional Development Training**

1. Two sessions of CEE 286 each quarter will be dedicated to professional development. The subjects will include but are not limited to: research ethics, scientific and technical writing, academic careers, employment opportunities beyond academia, and professional networking.

2. A weekly one hour networking meeting with a visiting colloquia speaker.

3. Fall quarter fellowship/grant writing workshops. Focus will be on ongoing domestic students applying for NSF graduate fellowships.

**Master’s Degree**

The Department of Chemical and Environmental Engineering offers the M.S. degree in Chemical and Environmental Engineering.

**Plan I (Thesis)** requires completion of a minimum of 36 units of approved course work including the core courses and submission of an acceptable M.S. thesis. At least 24 of these units must be in regular lecture graduate courses (200-series courses). No more than 4 units of CEE 290 or CEE 297 combined and 6 units of CEE 286 or special topics courses (CEE 250 or CEE 260 series) may apply towards the 36 units.

**Plan II (Comprehensive Examination)** requires completion of a minimum of 36 units of approved course work including the core courses and successful passage of a comprehensive examination. At least 28 of these units must be in regular lecture graduate courses (200-series courses), and none may be in courses numbered CEE 286, CEE 290, CEE 297, CEE 299, or CEE 302.

**Examination** - The exam consists of three written tests in three different areas emphasizing graduate level fundamental knowledge and breadth of the study area rather than specifics covered in individual courses. Exams areas can include, but are not limited to:

1. Advanced Air Pollution Control and Engineering
2. Advanced Chemical Engineering Thermodynamics
3. Advanced Kinetics and Reaction Engineering
4. Physical and Chemical Separation Processes
5. Transport Phenomena

An oral follow-up session may be requested by the examination committee following its evaluation of the written exam. No more than two attempts to pass the exam are allowed. Students who fail the exam once and then want to switch to the thesis plan should contact the graduate advisor. Students who fail the exam twice may not switch to the thesis plan.

The Comprehensive Exam is only offered once a year during the Spring quarter. Students should state intent to take the exam twice at the end of their first year with the concurrence of the graduate committee. After review of the nominations, the dean of the Graduate Division appoints the committee on behalf of the Graduate Council.

The committee, once approved by the graduate dean, rather than the department, becomes responsible for the student’s academic guidance and evaluation. The chairman of the committee is the director of the candidate’s research and is normally a faculty member of the CEE department or a cooperating faculty member. A member may be appointed who is a researcher on campus, from off-campus, or a visiting lecturer within the department; however, a memo indicating the academic degree and affiliation of the nominated member, as well as a curriculum vitae, must accompany such a request. (Memos need not accompany the nomination of an adjunct faculty member.) After the committee is formed, the committee must approve the subject of the thesis. A joint meeting of the committee members and the student should be held before work on the thesis is begun to ensure the topic is clear and acceptable to all. Once the thesis is completed, all three members of the committee must approve the thesis and sign the title page. Students must give a departmental seminar presentation of their thesis work to the department and members of the academic community before completing the thesis.

**Normative Time to Degree** 6 quarters

**Doctoral Degree**

The Department of Chemical and Environmental Engineering offers the Ph.D. degree in Chemical and Environmental Engineering. Satisfying the requirements for the degree consists of four parts:

1. Successful completion of an approved program of course work
2. Passing a written preliminary examination
3. Approval of a dissertation proposal
4. Defense and approval of the dissertation

**Course Work** Upon choosing a faculty advisor, each Ph.D. student is appointed a Ph.D. advisory committee consisting of two CEE faculty members and the faculty advisor. This advisory committee is responsible for guiding the students in formulating their research activities and preparing for the preliminary and qualifying exams.

The program of course work is formulated by each student and a faculty advisor in the first or second quarter after admission to the program and must be approved by the student's advisor and advisory committee. Every student must complete a program of study that includes:

1. A major area of study intended to increase the student’s depth of knowledge in an engineering research specialty and
2. A minor area of study intended to support and increase the student's breadth of knowledge in the major area

The CEE graduate program requires a coherent program of

1. Sixteen (16) units of core courses and
2. Eight (8) units of graduate and/or upper-division work approved by the advisory committee

None of these credits may be in courses numbered between CEE 250 and CEE 270, CEE 286, CEE 290, CEE 297, CEE 299, or CEE 302.

Preliminary Examination The preliminary examination tests students’ understanding of the fundamental principles of chemical and environmental engineering at the undergraduate level. This comprehensive examination consists of three written tests in three different areas selected from the following five subjects:

1. Thermodynamics
2. Kinetics
3. Transport (heat and mass transfer, fluid dynamics)
4. Air pollution control and engineering
5. Water quality engineering

The three subjects selected should be closely connected to the student’s undergraduate training and approved by the student’s advisory committee. Students who fail all three subjects on the preliminary exam must leave the Ph.D. program.

Preliminary Examination Retest - Students who fail one or two subjects of the exam are granted a final attempt to pass a make-up written examination that includes an oral defense of their answers in front of a faculty committee. Students who fail one or two subjects after the retest must enroll in remedial undergraduate courses and pass with a grade of “B+” or better. Credits from these remedial courses do not count toward the Ph.D. course work requirement. Students who fail all three subjects after the retest must leave the Ph.D. program.

Teaching Requirement All students must be employed as teaching assistants for at least one quarter. All TAs must take CEE 302 (Teaching Practicum) to help them learn effective teaching methods such as handling discussion sections; preparing and handling laboratory sections; preparing and grading homework, examinations, and lab reports; and student relations.

Oral Qualifying Examination Selection of the Qualifying Committee is as follows: 2 members are selected by the Graduate Committee. 2 members are selected by the student, and the student’s advisor will chair the committee. All members of the qualifying committee are expected to have the appropriate expertise to guide and evaluate a candidate’s research. No more than 1 member can be a non-academic senate member. After review of the nominations, the dean of the Graduate Division appoints the committee on behalf of the Graduate Council. This committee becomes responsible for the student’s academic guidance and evaluation until advancement to candidacy and administers the qualifying examination.

Dissertation Proposal After successful completion of the written preliminary examination, each student, with advisement from an advisor, prepares a dissertation proposal. Typically, students submit a dissertation proposal to their qualifying committee within one year after successfully completing the written preliminary examination. The proposal should clearly demonstrate the student’s adequate preparation for the completion of the thesis research, which includes but is not limited to a thorough review of the pertinent literature, a presentation and discussion of the candidate’s own research, and a detailed research plan with sufficient breadth and depth for the completion of the thesis. The qualifying committee chair schedules an oral defense normally within one month of the written proposal submission. The presentation is given only to the dissertation committee members.

The oral presentation/defense of the proposal focuses on the dissertation problem. Students should demonstrate considerable depth of knowledge in the student’s area of specialization and a clear understanding of the research methods that are needed for successful completion of the dissertation research. The oral presentation/defense begins with a presentation by students on their dissertation topic and is followed by questions and suggestions from the qualifying committee.

On the basis of the written proposal and oral defense, the qualifying committee decides whether the student should be advanced to candidacy, asked to modify and enhance the proposal, or requested to withdraw from the program.

Dissertation and Final Oral Examination Following advancement to candidacy, students formally focus on their dissertation research. The progress of the dissertation is monitored by the student’s dissertation committee. Candidates should interact frequently with members of their dissertation committee to ensure that dissertation progress is acceptable.

The graduate committee nominates and approves the dissertation committee after consideration of the suggestions made by the student and thesis advisor. The dissertation committee consists of a minimum of three UCR Academic Senate members. The chair and majority of members must be from Chemical and Environmental Engineering. All committee members should be in a position to offer guidance and be able to judge the scholarship of the dissertation work. Upon recommendation of the graduate advisor, doctoral dissertation committees are appointed by the dean of the Graduate Division.

After completing the dissertation research, students must submit a written copy of the dissertation for approval for defense by the student’s dissertation committee. Once a draft has been approved, an oral defense of the dissertation is scheduled. This defense consists of a seminar open to the entire academic community, followed by a question-and-answer period conducted by the dissertation committee.

Students must complete at least six quarters in residence at the UC with a GPA of 3.00 or better in all 100- and 200-level course work related to the degree.

Normative Time to Degree Three years for students with a UCR M.S. degree in Chemical and Environmental Engineering (five years for those without an M.S. degree in Chemical and Environmental Engineering)

Lower-Division Courses

CEE 010 Introduction to Chemical and Environmental Engineering (1) Lecture, 1 hour. Prerequisite(s): none. An introduction to chemical and environmental engineering for engineering and nongeengineers majors. Aims to enrich an appreciation of chemical, biochemical, and environmental engineering. Discusses typical careers, key applications, latest developments and the need to engage in lifelong learning in the field. Graded Satisfactory (S) or No Credit (NC).

CEE 011 Introduction to Bioengineering (2) Lecture, 1 hour, laboratory, 3 hours. An introduction to bioengineering for engineering and nongeengineers majors. Discusses the application of concepts and methods of the physical sciences and mathematics to problems in the life sciences. Covers typical careers, key applications, latest developments in the field, and the need to engage in lifelong learning. Provides hands-on experiences and includes a field trip. Graded Satisfactory (S) or No Credit (NC).

Upper-Division Courses

CEE 125 Analytical Methods for Chemical and Environmental Engineers (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): CEE 010 (CEE 010 may be taken concurrently); CHEM 001C and CHEM 01LC; CHEM 088A and CHEM 08HA or CHEM 08HA and CHEM 08HLA; PHYS 040C. Examines chromatographic separations, mass spectrometry, atomic absorption, and electrophoresis. Presents total carbon analysis as an introduction to analytical methods and their use in the chemical and environmental engineering fields.

CEE 132 Green Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 110A or ENVE 171, senior standing or consent of instructor. An introduction to the design, commercialization, and use of feasible and economical processes and products that minimize risks to human health and the environment. Topics cover environmental risk assessment; regulations; chemical process flow-sheet analysis for pollution prevention; product life-cycle assessment; and industrial ecology. Credit is awarded for only one of CEE 132 or CEE 232.

CEE 135 Chemistry of Materials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; PHYS 040C. An introduction to the synthesis, structure, properties, and performance of modern materials. Topics include the science of materials, bonding and structure, the strength of materials, electrons in materials, semiconductors, superconductors, and optical properties of materials.

CEE 136 Aerosol Technology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): concurrent enrollment in CHE 120. Explores the physical and chemical properties of aerosol and its relationship to ambient air quality, control technology, health impacts, and global climate change. Introduces the principles of aerosol measurement and aerosol measurement technology.

CEE 140A Biomaterials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 101 or BCH 100, MATH 010B, PHYS 040B; or consent of instructor. Covers the principles of materials science and engineering with attention given to topics in bioengineering. Explores atomic structures, hard treatment, fundamentals of corrosion, manufacturing processes, and characterization of materials. Cross-listed with BIEN 140A.
Chemical Engineering Upper-Division Courses

CHE 100 Engineering Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C, MATH 046 (or concurrent enrollment), PHYS 040B, or consent of instructor. An introduction to engineering thermodynamics with emphasis on chemical and environmental engineering systems. Topics include concepts of equilibrium, temperature, and reversibility; the first law and concept of energy; and the second law and concept of entropy. Also examines equations of state, thermodynamic properties, and engineering applications used in the analysis and design of closed and open systems. Credit is awarded for only one of CHE 100 or ME 100A.

CHE 102 Catalytic Reaction Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 122 or consent of instructor. Principles of surface chemistry and heterogeneous catalysis. Catalyzed reaction kinetics, heterogeneous reactions, diffusion and heterogeneous catalysis, analysis and design of heterogeneous reactors.

CHE 105 Introduction to Nanoscale Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 135, MATH 010A, PHYS 040C, or consent of instructor. An introduction to nanotechnology engineering and its various applications. Includes electromagnetic waves and quantum mechanics; synthesis of nanostructures; assembly of nanostructures; and traditional and nontraditional methods of nanolithography and interactions between electronic and optical properties. Also covers organic heterostructures, nanotubes, and quantum computing.

CHE 110A Chemical Process Analysis (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C, MATH 009C, PHYS 040B, or consent of instructor. Introduces the principles of conservation of mass in chemical process systems. Topics include the development of steady-state mass balances, and application of mass balances to existing industrial processes.

CHE 110B Chemical Process Analysis (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): CHEM 110A with a grade of "C-" or better; or consent of instructor. Applies principles of conservation of energy to chemical process systems. Topics include the development of steady-state and unsteady-state energy balances as well as combined mass and energy balances in industrial processes.

CHE 114 Applied Fluid Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 110A or ENVE 171, MATH 010A, MATH 046, PHYS 040B; or consent of instructor. An introduction to fluid statics, fluid flow, and flow of compressible and incompressible fluids in conduits and open-channel flow. Also covers flow past immersed bodies, transportation and metering of fluids, and agitation and mixing of liquids. Credit is awarded for only one of CHE 114 or ME 115.

CHE 116 Heat Transfer (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 100, CHEM 114 with a grade of "C-" or better; or consent of instructor. An analysis of heat transfer for Chemical Engineering and Environmental Engineering majors. Topics include steady- and unsteady-state heat conduction, forced convection, basic radiation heat transfer, and design of heat exchangers. Credit is awarded for only one of CHE 116 or ME 116A.

CHE 117 Separation Processes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 116, CHEM 120; or consent of instructor. Covers fundamental concepts and practical techniques for designing equipment based on equilibrium stage processes. Explores gas-liquid absorption, distillation, liquid-liquid extraction, solid-liquid extraction, humidification, drying, and membrane processes.

CHE 118 Process Dynamics and Control (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 117, CHEM 122, ENGR 118; or consent of instructor. Fundamentals of process control. Feedback and feedforward control of dynamic processes. Frequency response analysis. Introduction to multivariable control.

CHE 120 Mass Transfer (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 114 with a grade of "C-" or better, MATH 046; or consent of instructor. Introduction to analysis of mass transfer in systems of interest to chemical and environmental engineering practice. Explores transport of matter by diffusion, free, and forced convection.

CHE 122 Chemical Engineering Kinetics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 100, CHEM 110B, CHEM 120 (may be taken concurrently), ENGR 118; or consent of instructor. Introduction to homogeneous and heterogeneous kinetics and reactor design for chemical and biochemical processes.

CHE 124 Biochemical Engineering Principles (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110A, BIOL 121/MCB 121 (BIOL 121/MCB 121 may be taken concurrently), CHEM 120, CHEM 122; or consent of instructor. Examines the principles of biochemical engineering. Topics include kinetics of enzymatic and microbial reactions; growth, batch and continuous culture reactors, product formulation, and nutrient utilization. Also studies oxygen transfer, bioreactor scale-up, air and media sterilization, fundamentalsof bioreactor design, and bioseparations.

CHE 124L Biochemical Engineering Laboratory (2) Laboratory, 6 hours. Prerequisite(s): CHEM 124 or consent of instructor. Laboratory practices in biochemical engineering. Topics include microbial kinetics and biologically mediated reactions, oxygen transfer coefficients. Batch and continuous culturing, air and media sterilization, bioseparations.

CHE 130 Advanced Engineering Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 100 or consent of instructor. Advanced study of chemical thermodynamics and their applications to chemical and environmental engineering processes. Applies principles for the thermodynamic behavior of pure solutions and mixtures, phases, and chemical equilibria for homogeneous and heterogeneous systems to a variety of processes common to chemical and environmental engineering. Cross-listed with ENVE 130.

CHE 131 Electrochemical Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 100, CHEM 120, CHEM 122; or consent of instructor. Explores role of thermodynamics, charge transfer kinetics, and mass transfer on behavior of electrochemical systems. Includes cell thermodynamics, faradaic and non-faradaic rate processes, ionic transport, nucleation and growth theories. Shows applications to chemical sensors, batteries, corrosion, and thin film deposition. Provides in-class demonstrations to illustrate concepts.

CHE 136 Advanced Topics in Heat Transfer (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 116, CHEM 120. Advanced study of the computational and theoretical methods associated with heat transfer, fluid flow, and other related processes. Topics include phenomena of heat conduction, convection, and the calculation of flow fields.

CHE 140 Cell Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CHEM 124 or consent of instructor. Introduction to genetic and environmental manipulation of cells for production of proteins and for enhanced biocatalytic and synthetic activities. Covers gene and protein expression in different host systems, posttranslational processing, metabolic controls and kinetics, <i>in vivo</i> NMR spectroscopy, cell modeling, and sensitivity analysis. Credit is awarded for only one of CEE 210 or CHE 140.

CHE 150 Biosensors (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): BCH 184 or CHE 124 or consent of instructor. Introduces the fundamentals and applications of biosensors. Topics on enzyme-, whole-cell-, tissue-, and amperometric-based electrochemical, optical, and piezoelectric biosensors for applications in bioprocess monitoring and control, environmental monitoring, and health care are covered.

CHE 160A Chemical and Environmental Engineering Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): CHEM 114, CHEM 120. Involves laboratory exercises in chemical and environmental engineering. Experiments cover physical measurements, fluid mechanics, and mass transfer. Emphasizes experimental design, analysis of results, and preparation of engineering reports. Cross-listed with ENVE 160A.

CHE 160B Chemical Engineering Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): CHEM 116, CHEM 122. Consists of laboratory exercises in chemical engineering. Includes experiments in physical measurements, heat transfer analysis, and chemical kinetics. Emphasis is on experimental design, analysis of results, and preparation of engineering reports.

CHE 160C Chemical Engineering Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): CHEM 117, CHEM 118 (CHEM 117 and CHEM 118 may be taken concurrently), CHEM 122. Consists of laboratory exercises in chemical engineering. Includes experiments and simulations in separation processes and in process control. Emphasis is on experimental design, analysis of results, and preparation of engineering reports.

CHE 161 Nanotechnology Processing Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): CHEM 100 or consent of instructor. An introduction to growth and characterization techniques that involve nanomaterials and devices. Includes preparing thin films; synthesizing Au and CdSe nanoparticles; synthesizing carbon nanotubes; synthesizing alumina nanotemplate; synthesizing gold and nickel nanowires;
and assembling of nanowires. Also includes imaging samples with optical, scanning electron microscope, scanning tunneling microscope, and atomic force microscope.

CHE 171 Pollution Control for Chemical Engineers (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CHE 117 or consent of instructor. Principles of industrial pollution control in chemical engineering plants. Regulations, criteria, measurements, and pollution control systems associated with air, wastewater, and solid waste management.

CHE 175A Chemical Process Design (4) Lecture, 1 hour; laboratory, 6 hours; consultation, 1 hour. Prerequisite(s): CHE 117, CHE 122, MATH 0108, senior standing in Chemical Engineering. CHE 118 (may be taken concurrently). Introduction to chemical process plant design procedures through economic analysis and actual design of chemical processes. Addresses practical applications to current chemical and biochemical processes and economic constraints. Concentrates on general design considerations and economic principles. Graded In Progress (IP) until CHE 175A and CHE 175B are completed, at which time a final, letter grade is assigned.

CHE 175B Chemical Process Design (4) Lecture, 1 hour; laboratory, 6 hours; consultation, 1 hour. Prerequisite(s): CHE 175A; senior standing in Chemical Engineering. Introduction to chemical process plant design procedures through economic analysis and actual design of chemical processes. Topics address practical applications to current chemical and biochemical processes and economic constraints. Students complete a detailed analysis and process design of the projects begun in CHE 175A. A final report and oral presentation are required. Satisfactory (S) or No Credit (NC) grading is not available.

CHE 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and department chair. Individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

Environmental Engineering

Upper-Division Courses

ENVE 120 Unit Operations and Processes in Environmental Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENVE 112 or CHEM 114 or consent of instructor. Introduction to physical and chemical processes used for drinking water and wastewater treatment. Topics include coagulation and flocculation, sedimentation, granular-medium filtration, membrane desalination, and disinfection. Credit is awarded for only one of CEE 225 or ENVE 120.

ENVE 121 Biological Unit Processes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENVE 120, ENVE 142. An introduction to the theory and design of biological unit processes used in environmental engineering. Covers suspended growth processes, attached growth processes, digestion processes, and nutrient removal systems. Credit is awarded for only one of CEE 226 or ENVE 121.

ENVE 130 Advanced Engineering Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 100 or consent of instructor. Advanced study of chemical thermodynamics and their applications to chemical and environmental engineering processes. Applies principles for the thermodynamic behavior of pure solutions and mixtures, phases, and chemical equilibria for homogeneous systems to a variety of processes common to chemical and environmental engineering. Cross-listed with CHE 130.

ENVE 133 Fundamentals of Air Pollution Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 110A or ENVE 171; CHE 114; CHEM 008B and CHEM 081B or CHEM 084H and CHEM 084LC; MATH 046; PHYS 040B; or consent of instructor. Covers principles, modeling, and design of systems for atmospheric emission control of pollutants such as photochemical smog and by-products of combustion. Explores the effects of air pollution on health. Credit is awarded for only one of CEE 243 or ENVE 133.

ENVE 134 Technology of Air Pollution Control (4) Lecture, 4 hours. Prerequisite(s): ENVE 133. Processes and design of control technologies for gaseous and particulate pollutants. Methods and design of ambient air quality measurements and air pollution source sampling for both gaseous and particulate pollutants.

ENVE 135 Fate and Transport of Environmental Contaminants (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 120; CHEM 008B and CHEM 081B or CHEM 084H and CHEM 084LB; ENGR 118; ENVE 133; ENVE 142; or consent of instructor. Covers fate and transport of contaminants in the air, water, and soil environments. Addresses description and modeling of advection, dispersion, phase transfer, and chemical transformation mechanisms.

ENVE 138 Combustion Engineering (4) Lecture, 4 hours. Prerequisite(s): CHE 114, ENVE 133. Covers the fundamental development of the engineering and design principles and the combustion of solid fuels, liquid fuels, and gases, and the associated emission control technology. Includes aspects of fuels, lubricants, instrumentation, chemistry of combustion, and kinetics related to the understanding of engineering processes, engine design, and emission control.

ENVE 140 Aquatic Chemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 100, ENVE 142; or consent of instructor. An introduction to the chemical principles and equilibrium models used to describe the behavior of natural waters systems, water and wastewater treatment processes, and pollutant transformations in the aqueous environment. Topics include acid-base chemistry, precipitation, complexation, and redox reactions. Credit is awarded for only one of CEE 241 or ENVE 140.

ENVE 142 Water Quality Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 114 or ENVE 171; or consent of instructor. An introduction to the engineering aspects of water quality management. Addresses water quality characterization and modeling techniques for natural and engineered systems. Discusses application of chemical equilibrium and kinetic models to water quality.

ENVE 144 Solid Waste Management (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 002 or both BIOL 005A and BIOL 051A; both CHEM 001C and CHEM 011C or both CHEM 011C and CHEM 111C; either both ENSC 001 (or ENSC 001H) and ENSC 002 (or ENSC 002H) or ENVE 171; MATH 009B (or MATH 099B); or consent of instructor. A study of the characteristics, collection, transportation, processing, disposal, recycling, and composting of municipal solid waste. Emphasizes accepted management strategies and design procedures for recovering or disposing solid wastes while protecting public and environmental well-being. Cross-listed with ENSC 144.

ENVE 145 Hazardous Waste Management (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENVE 130 and ENVE 142. Advanced course in the study of physio-chemical, thermal, and biological treatment of hazardous waste. Emphasis is placed on the technical understanding and design of physical, biological, and thermal treatment methods; transportation of hazardous waste; and hazardous waste characterization and site assessment.

ENVE 146 Water Quality Systems Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 114 or consent of instructor. Analysis and design of water conveyance systems including water distribution networks, wastewater and storm water collection systems, structures for flow measurement and control, and pumps and pump stations. Includes projects to develop design process skills including problem specification, modeling, and analysis.

ENVE 160A Chemical and Environmental Engineering Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): CHE 114, CHE 120. Involves laboratory exercises in environmental engineering. Experiments cover physical measurements, fluid mechanics, and mass transfer. Emphasizes experimental design, analysis of results, and preparation of engineering reports. Cross-listed with CHE 160A.

ENVE 160B Environmental Engineering Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): ENVE 133. Consists of laboratory exercises in environmental engineering. Includes experiments in physical measurements, water quality, and unit operations and processes. Emphasis is on experimental design, analysis of results, and preparation of engineering reports.

ENVE 160C Environmental Engineering Laboratory (3) Laboratory, 6 hours; written work, 3 hours. Prerequisite(s): ENVE 120, ENVE 142. Consists of laboratory exercises in environmental engineering. Includes experiments in physical measurements, water quality, and unit operations and processes. Emphasis is on experimental design, analysis of results, and preparation of engineering reports.

ENVE 171 Fundamentals of Environmental Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C, MATH 009C, PHYS 040B; or consent of instructor. An introduction to mass and energy balances. Includes an overview of contaminants and their effects on human health and the environment. Provides a basic understanding of contaminants, their sources, and their movement and fate in the environment.

ENVE 175A Senior Design Project (4) Lecture, 1 hour; laboratory, 6 hours; consultation, 1 hour. Prerequisite(s): senior standing in Environmental Engineering. Under the direction of a faculty member, students (individually or in small teams with shared responsibilities) propose, design, build, and test environmental engineering devices or systems. A written report, giving details of the project and test results, and an oral presentation of the design aspects are required. Graded In Progress (IP) until ENVE 175A and ENVE 175B are completed, at which time a final, letter grade is assigned.

ENVE 175B Senior Design Project (4) Lecture, 1 hour; laboratory, 6 hours; consultation, 1 hour. Prerequisite(s): senior standing in Environmental Engineering. ENVE 175A. Under the direction of a faculty member, students (individually or in small teams with shared responsibilities) propose, design, build, and test environmental engineering devices or systems. A written report, giving details of the project and test results, and an oral presentation of the design aspects are required. Satisfactory (S) or No Credit (NC) grading is not available.

ENVE 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and department chair. Individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

Graduate Courses

CEE 200 Advanced Engineering Computation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGR 118 or consent of instructor. Problem-solving techniques for basic engineering systems including...
heat and mass transfer, coupled reactions, fluid flow potential, and control.

CEE 202 Transport Phenomena (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 114, CHE 116, CHE 120, ENGR 118; or consent of instructor. Topics include transport phenomena, potential flow, and boundary layer theories with applications to simultaneous heat, momentum, and mass transfer. Introduces numerical techniques used to solve advanced transport phenomena problems.

CEE 203 Biomass Conversion to Fuels, Chemicals, Materials, and Power (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): CHE 102 or consent of instructor. Provides current and future sustainable technologies for energy production. Includes key physical and chemical principles governing performance. Considers economics and life cycle implications of technologies and integrated systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CEE 204 Advanced Kinetics and Reaction Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 102 or consent of instructor. Emphasizes kinetics and mechanisms of heterogeneous reactions in different types of reactors. Specific topics include gas-solid noncatalytic reactions, catalytic surfaces and catalyst characterization, and adsorption, diffusion, reaction, and heat transfer in porous catalysts.

CEE 206 Advanced Chemical Engineering Thermo-dynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 102 or consent of instructor. Application of the laws of thermodynamics to phase and chemical reaction equilibrium. Introduction to statistical thermodynamics, molecular simulations, and the evaluation of thermodynamic properties from molecular simulations.

CEE 210 Cell Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CHE 124 or consent of instructor. Introduction to genetic and environmental manipulation of cells for production of proteins and for enhanced biocatalytic and synthetic activities. Topics include cloning and gene expression in different host systems, posttranslational processing, metabolic controls and pathways, and protein analysis. Use of nuclear magnetic resonance spectroscopy, cell modeling, and sensitivity analysis. Credit is awarded for only one of CEE 210 or CHE 140.

CEE 212 Bioseparations and Bioprocess Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 124 or consent of instructor. Examines fundamentals of separation processes used to isolate and purify biochemical products such as whole cells, enzymes, food additives, and pharmaceuticals. Covers selected aspects of biochemical engineering such as microbial interactions, economics, and mathematical modeling of bioprocesses.

CEE 220 Modeling Chemical, Biochemical, and Environ-mental Processes (4) Lecture, 2 hours; discussion, 2 hours. Prerequisite(s): graduate standing in Chemical and Environmental Engineering or consent of instructor. Introduces simulation software and the use of numerical models to solve dynamic chemical, biochemical, and environmental problems. Topics include model formulation and development, model sensitivity studies, and application of simulations to chemical, biochemical, and environmental processes.

CEE 221 Introduction to Microfluidics (4) Lecture, 4 hours. Prerequisite(s): CHE 160A/ENVE 160A or consent of instructor. Provides a theoretical and practical introduction to microfluidic devices. Covers traditional and new methods for making microfluidic devices and assembly of components into systems. Emphasizes the considerations underlying the design or operation of devices based on pressure-driven or electrokinetic flow. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CEE 225 Physical-Chemical Separation Processes (4) Lecture, 4 hours. Prerequisite(s): graduate standing in Chemical and Environmental Engineering or consent of instructor. CEE 225 online section; enrollment in the Online Master-in-Science in Engineering program. Covers concepts of physical and chemical processes relevant to engineered and natural environmental systems. Topics include basic colloid chemistry, DLVO theory, coagulation and flocculation, mechanisms of particle removal in soils and transport in porous media, absorption, disinfection, control of disinfection by-products, and advanced treatment processes such as membranes. Credit is awarded for only one of CEE 225 or ENVE 120.

CEE 226 Biological Unit Processes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 120, ENVE 142; or consent of instructor. CEE 226 online section; enrollment in the Online Master-in-Science in Engineering program. Theory and design of biological unit processes used in environmental engineering. Suspended growth processes, attached growth processes, digestion processes, and nutrient removal systems are covered. Credit is awarded for CEE 226 if already awarded for ENVE 121.

CEE 230 Biosensors (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): BCH 110A, BCH 110B, BIOL 121/MCB 121. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CEE 231 Scattering and Reflectometry for Environmen-tal, Material, and Biological Applications (4) Lecture, 3 hours; discussion, 5 hours per quarter. Prerequisite(s): CHE 102 or equivalent. Covers the fundamental and applications of biosensors. Covers enzyme-, whole cell-, tissue-, and antibody- or antigen-based electrochemical, optical, and piezoelectric biosensors. Applies such knowledge to bioprocess monitoring and control, environmental monitoring, and health care.

CEE 232 Green Engineering (4) Lecture, 3 hours; dis-cussion, 1 hour. Prerequisite(s): CHE 120 or consent of instructor. A study of the design, commercialization, and use of feasible and economical processes and products that minimize risks to human health and the environment. Topics include environmental issues, risk assessment, and regulations; flow of chemical and manufacturing unit processes and flow-sheet analysis for pollution prevention; product life-cycle assessment; and industrial ecology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CEE 233 Advanced Air Pollution Control and Engi-neering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CEE 202, CEE 206, CHEM 008A and CHEM 080A or CHEM 080B. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor. Covers principles necessary to understand the atmospheric behavior of air pollutants. Topics include gas- and aerosol-phase chemistry, atmospheric diffusion, removal processes and residence times, and their relationship to global gas transport and reaction.

CEE 234 Vehicle Emissions Control Technology, Meas-urement Procedures, and Alternative Fuels (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers the nature of gaseous and particulate emissions and the technical aspects of energy efficiency from mobile sources.

Chemical and Environmental Engineering / 160

CCEE 236 Energy Production, Use, Economics, and Sustainability (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides insights into current and future sustainable energy production technologies including key governing physical and chemical principles. Considers economics and life cycle implications of energy options. Also examines current and projected energy use patterns and environmental impacts. Considers energy policies that can facilitate introduction of sustainable energy production systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CCEE 241 Aquatic Chemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 100; ENVE 142; or consent of instructor. CEE 241 online section; enrollment in the Online Master-in-Science in Engineering program. Chemical principles and equilibrium models used to describe the behavior of natural water systems, water and wastewater treatment processes, and pollutant transformations in the aqueous environment. Topics include acid-base chemistry, precipitation, complexion, and redox reactions. Credit is not awarded to CEE 241 if already awarded to ENVE 140.

CCEE 242 Pilot Plant Laboratory (4) Lecture, 1 hour; laboratory, 9 hours. Prerequisite(s): ENVE 120, ENVE 121; or consent of instructor. Laboratory investigations of physical, chemical, and biological processes for water treatment, wastewater treatment, and soil remediation.

CCEE 243 Advanced Water Treatment Technologies (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. CEE 243 online section; enrollment in the Online Master-in-Science in Engineering program. Fundamentals of advanced water treatment processes emphasizing membrane separation, advanced oxidation processes, and the application of nanomaterials in environmental engineering applications. Credit is only awarded for one of CEE 243 or ENVE 133.

CCEE 245 Advanced Hydraulic Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 114, ENVE 142 (ENVE 142 may be taken concurrently); or consent of instructor. An introduction to the basic methods of hydraulic engineering for water quality control. Topics include design and analysis of basic flow and water containment structures, sanitary and storm sewers, pumps and valves, and pipe networks. Emphasis is given to design projects aimed at developing skills in problem specification, modeling, and analysis. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CCEE 246 Surface and Interface Phenomena (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 114, CHEM 120, ENVE 142 (ENVE 142 may be taken concurrently); or consent of instructor. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CCEE 247 Molecular Thermodynamics of Complex Fluids (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHE 200 or equivalent, CHEM 206, MIE 204/PHYS 212A; or consent of instructor. Introduces recent developments in applied thermodynamics and molecular simulations. Emphasizes current concerns in chemical and environmental engineering such as colloids, polymers, biomacromolecules, and fluids under inhomogeneous conditions.

CCEE 249 Integration of Computational and Experimen-tal Biology (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005B, MATH 010B, MATH 046, PHYS 040C; graduate standing. BIEN 249/CEE 249 online section; enrollment in the Online Master-in-Science in Engineering program. A multidisciplinary introduction to computational methods used to
analyze experimental biological data. Introduction to mathematical concepts needed to understand protein structure and dynamics, protein-protein interactions (structures and networks), gene regulatory networks, signal transduction networks, metabolic networks, and kinetic modeling of cellular processes. Also covers techniques used to derive experimental data. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BIEN 240.

CxEE 250 Special Topics in Chemical and Environmental Engineering (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Seminar in selected topics in chemical and environmental engineering directed by graduate students, staff, faculty, and invited speakers. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 251 Microbial Engineering and Environmental Biotechnology (1 or 2) Seminar, 1-2 hours. Discusses the recent development of novel biocatalysts and biological materials for degrading toxic pollutants or synthesizing environmentally friendly chemicals. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 253 Biodegradation and Bioremediation (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Reviews current research. Special emphasis is placed on biological techniques for air pollution control, bioremediation of methyl tert-butyl ether, and molecular techniques for microorganism monitoring. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

CxEE 254 Organic Electronic Materials (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. A study of design, synthesis, purification, manufacture, and application of carbon-based electronic materials. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with CHEM 257.

CxEE 255 Special Topics in Water Quality Engineering (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Involves reports and discussion by students, faculty, and visiting scholars on current research topics in water quality engineering. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 256 Special Topics in Particulate Measurement and Air Quality (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Topics include atmospheric chemistry, aerosol science, colloid science, and measurement techniques used for source and ambient sampling of gases and aerosols. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

CxEE 257 Special Topics of Bio-Nanotechnology (1-2) Seminar, 1 hour; consultation, 0-1 hour. Prerequisite(s): graduate standing or consent of instructor. Focuses on the application of nanotechnology for further developments in bioengineering and medicine. Students complete presentations on the latest developments in nanotechnology. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 258 Biosensing and Biotodetoxification (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Involves oral presentations and intensive small-group discussions of current literature on biological detoxification of hazardous chemicals and biologi-
cal-based sensors for environmental, clinical, food quality, and process monitoring. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CxEE 259 Special Topics in Materials Electrochemistry (1) Seminar, 1 hour. Prerequisite(s): graduate standing. Topics include nanoelectrochemical systems, electrochemistry, bioelectrochemistry, magnetic materials, spintronics, and nanoelectromechanical systems (MEMS/ NEMS), nanosensor arrays, nanoelectronics, corrosion, fuel cells, batteries, thermoelectric materials, electroenzymology, electrodeposition, electroless deposition, and synthesis of nanowires. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable as topics change.

CxEE 260 Structural Ordering in Colloidal Dispersions (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Introduces recent advances in understanding intercolloidal forces and self-assembly of colloidal particles for the fabrication of new materials. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 261 Special Topics in Zeolites, Fuel Cells, and Nanstructured Materials (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Covers design, synthesis, and engineering of zeolite thin films for applications in solid-state electronics and in aerogel development. Graded Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 262 Special Topics in Systems Biology (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Consists of oral presentations and intense small-group discussions of the current literature and research on computational and experimental aspects of systems biology. Explores high-throughput experiments, experimental design, numerical methods, model development, written and oral presentation skills, ethics, and laboratory techniques. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CxEE 263 Membrane Separations (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemical and Environmental Engineering or consent of instructor. Covers theoretical and practical concepts of membrane separation processes. Topics may include basic membrane transport theory, membrane materials and formation processes, advanced colloid and surface chemistry, Derjaguin-Landau-Verwey-Overbeek (DLVO) theory on colloid stability, colloidal hydrodynamics, and transport in porous media. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CxEE 265 Special Topics in Microbial Fate and Transport in Aquatic Environments (1 or 2) Seminar, 1 hour; individual study, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the theoretical and applied research currently being conducted in the area of microbial pathogen transport in natural and engineered environments. Topics include the theory of colloid transport and filtration, quantification and analysis of microbial adhesion or deposition kinetics, and whole-cell and molecular-scale microbial analysis techniques. Students who give class presentations receive credit for 2 units; other students who receive credit for 1 unit. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CxEE 266 Special Topics in Biological Conversion of Biomass (1 or 2) Seminar, 1 hour; individual study, 0-3 hours. Prerequisite(s): graduate standing. Consists of oral presentations and small-group discussions of current and historic literature on biological conversion of biomass to fuels and chemicals. Students who make presentations receive credit for 2 units; other students receive credit for 1 unit. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change.

CxEE 267 Special Topics in Biomanufacturing (2) Seminar, 2 hours. Prerequisite(s): graduate standing. Introduces recent advances in biomimetics, biocatalysis, and bio-inspired materials for nanotechnologies, as well as for energy storage and conversion applications. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 18 units.

CxEE 268 Special Topics in Environmental Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing. Addresses the key role that environmental chemical processes play in water quality, and the development of strategies for the treatment and reuse of contaminated natural resources. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 18 units.

CxEE 269 Special Topics in Aerosols and Climate (2) Seminar, 2 hours. Prerequisite(s): graduate standing. Introduces research at the interface of particle a-
Professional Course

CEE 302 Teaching Practicum (1-4) Seminar, 1-4 hours. Prerequisites: appointment as a teaching assistant or associate in Chemical and Environmental Engineering. Topics include effective teaching methods such as those involved in leading discussion sections, preparing and grading examinations, and student-instructor relations in lower- and upper-division Chemical Engineering and Environmental Engineering courses. Required each quarter of teaching assistants and associates in Chemical and Environmental Engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Chemistry

Subject abbreviation: CHEM

College of Natural and Agricultural Sciences

Jingsong Zhang, Ph.D., Chair
Leonard Mueller, Ph.D., Vice Chair
Department Office, 248 Chemical Sciences
(951) 827-3789; chem.ucr.edu

Distinguished Professors
Michael Prrung, Ph.D.
Francisco Zaera, Ph.D.

Professors
Christopher J. Bardeen, Ph.D.
Ludwig Bartels, Ph.D.
Quan "Jason" Cheng, Ph.D.
Eric L. Chronister, Ph.D.
Pengyun Feng, Ph.D.
Ryan Julian, Ph.D.
Cynthia K. Larav, Ph.D.
Thomas H. Morton, Ph.D.
Leonard J. Mueller, Ph.D.
Christopher Y. Switzer, Ph.D.
Kathryn Unhich, Ph.D.
Yinsheng Wang, Ph.D.
Yadong Yin, Ph.D.
Jingsong Zhang, Ph.D.
Wenwan Zhong, Ph.D.

Professors Emeriti
David F. Bociak, Ph.D.
Walter J. Deal, Ph.D.
Everal B. Fleischer, Ph.D.
George K. Helmkamp, Ph.D.
Francois Mathey, Ph.D.
Mark Midland, Ph.D.
Robert C. Neuman, Jr., Ph.D.
William H. Okamura, Ph.D.
William H. Ortung, Ph.D.
James N. Pitts, Jr., Ph.D.
Dallas L. Rabenstein, Ph.D.
Christopher A. Reed, Ph.D.
Michael F. Rettig, Ph.D.
Donald T. Sawyer, Ph.D.
Hartland H. Schmidt, Ph.D.
Gary W. Scott, Ph.D.
Charles L. Wilkins, Ph.D.
Richard M. Wing, Ph.D.

Associate Professors
Gregory J. D. Bruno, Ph.D.
Chia-en A. Chang, Ph.D.
Richard Hooley, Ph.D.
De-en Jiang, Ph.D.
Catharine Larsen, Ph.D.
Vincent Lavello, Ph.D.
Michael J. Marsella, Ph.D.

Assistant Professors
Matthew Cornley, Ph.D.
Boniace Folewa, Ph.D.
Joseph Generex, Ph.D.
W. Hill Harman, Ph.D.
David Martin, Ph.D.
Ming Lee Tang, Ph.D.
Min Xue, Ph.D.
Haofei Zhang, Ph.D.

Cooperating Faculty
Roya Bahreini, Ph.D. (Atmospheric Science)
Richard J. Debey, Ph.D. (Biochemistry)
Juan Pablo Giraldo (Plant Physiology)
Jocelyn G. Miller, Ph.D. (Entomology)
Mihir Ozkan, Ph.D. (Electrical and Computer Engineering)
Valentine Vulve, Ph.D. (Bioengineering)

Major

The Department of Chemistry offers a B.S. and B.A. degree in Chemistry and a B.S. in Chemistry with a Chemical Physics option or an Environmental Chemistry option.

The B.S. program is certified by the American Chemical Society and is designed for students interested in a professionally oriented major leading most often to a career or advanced study in chemistry.

The B.A. program is designed for students who wish to obtain a broad educational background with less intensive emphasis on chemistry. In this program, students have increased ease in meeting requirements for such areas as premedical, predental, or prepharmaceutical science; education; and administration. Check careers.ucr.edu.

A Chemical Physics option is available for students who wish to prepare for admission to a graduate program in chemical physics.

The Environmental Chemistry option is available for students who wish to become familiar with environmental processes and problems related to air, water, and soil, and to apply their chemical knowledge working in environmental-related areas. This option also prepares students for admission to a graduate program emphasizing environmental chemistry.

Pre-Health Science Chemistry majors in either the B.S. or B.A. programs can prepare for admission to medical, pharmacy, or dental schools by carefully planning their programs of study. Students planning to apply for postgraduate studies in the health sciences should make it a special point to consult with their Chemistry advisor early in their studies at UCR. Check hpac.ucr.edu.

Teaching Credential

Teachers in the public schools in California must have a credential approved by the State Commission on Teacher Credentialing. The credential requires an undergraduate major, baccalaureate degree, and completion of a graduate credential program such as that offered by the Graduate School of Education at UCR (see Education in this catalog and education.ucr.edu).

UCR has an approved undergraduate program for Chemistry majors who plan to get a Multiple Subjects Credential and teach in the elementary (K-6) grades. A breadth of course work is necessary, in addition to the specified requirements for the major. Students are urged to start early, preferably as freshmen, selecting courses most helpful for this career. Details and counseling on the Bridge to Teaching Program, a preparation program for the multiple subjects credential, are available in the Office of Interdisciplinary Programs, 3111 Interdisciplinary Building South (INTS), (951) 827-1584; lsnid.ucr.edu. Details and counseling on other programs are available in the Graduate School of Education and education.ucr.edu/programs.html.

UCR does not yet have a state-approved undergraduate program for chemistry majors who wish to teach at the secondary level. The Teaching Credential in Science, chemistry emphasis, is required for chemistry teachers, grades 7-12. Students who plan to get this credential must take the commission’s subject-matter assessment examination and should make certain their academic program includes preparatory coursework. The examination includes chemistry in depth and general science with introductory, college-level biology, chemistry, physics, and geoscience (geology, meteorology, oceanography, astronomy).

Further information about courses, requirements, and examinations can be obtained in orientation meetings and the Graduate School of Education (1124 Sproul Hall).

California Teach-Science/Mathematics Initiative (CaTEACH-SMI) California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities, such as the SMI & Alpha Center Apprentice Programs, to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources which includes the National Science Foundation (NSF) Noyce Scholarship Program to promote planning and professional development towards a science/mathematics education career.

For more information about the CaTEACH-SMI program, please visit smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at facebook.com/ScienceMathInitiativeAtUcr.

Transfer Students

Students transferring to the Chemistry major must complete courses comparable to the following one-year sequences before they transfer:

1. General chemistry, equivalent to CHEM 001A, CHEM 001B, CHEM 001C, CHEM 001A, CHEM 001B, CHEM 001C, each course completed with a grade of “C” or better
2. First-year calculus, equivalent to MATH 009A, MATH 009B, and MATH 009C, each course completed with a grade of "C" or better

At least one of the following one-year sequences:
1. General physics (calculus-based) equivalent to PHYS 040A, PHYS 040B, PHYS 040C, each course completed with a grade of "C" or better (strongly recommended)

2. Second-year calculus, equivalent to MATH 010A, MATH 010B, and MATH 046, each course completed with a grade of "C" or better

3. Organic chemistry (one-year lower-division), each course completed with a grade of "B" or better

Students must have a minimum grade point average of 2.70 in transferable college courses. UCR has articulation agreements with most of the California community colleges. These agreements list specific community college courses that have been designated as comparable to UCR courses (see the statewide articulation web site at assist.org). Transfer students will usually find it advantageous to complete most or all sequences before starting at UCR. All prospective transfers should try to complete the sequences they begin rather than divide a sequence between two campuses.

Change of Major Criteria

General requirement:
1. Students must be in good academic standing with 2.0 cumulative GPA and 2.0 upper-division chemistry major GPA.

2. Grades for all chemistry core and required lower-division math and physics courses must be "C-" or better.

3. A grade of "C-" or better in each of the courses used to satisfy the 20-unit CNAS Natural Science and Mathematics breadth requirement.

4. AP credit is not accepted for lower-division chemistry courses.

Specific requirement:
If student has completed less than 45 units (first year students), then
- Completion of CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C, CHEM 012A, CHEM 012B, CHEM 012C, and CHEM 012D (Chemistry core courses)
- Completion of MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046 for B.S. program

If student has completed between 45 and 90 units (second year students), then
- Completion of MATH 009A, MATH 009B, and MATH 009C.
- Completion of CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C, and PHYS 040A or PHYS 002A and PHYS 002A (Physics lower-division courses)

If student has completed between 90 and 135 units (third year students), then
- Completion of all lower-division math and physics courses (MATH 009A, MATH 009B, and MATH 009C, and PHYS 002A for B.S. program).

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the major may also fulfill some of the college's breadth requirements. Consult with a professional academic advisor at the CNAS Advising Center, 1223 Pierce Hall.

Major Requirements
The major requirements for the B.A. and the B.S. degree in Chemistry are as follows:

Bachelor of Arts
1. Lower-division requirements (63 units)
   a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C (or CHEM 011A and CHEM 1H1A, CHEM 011B and CHEM 1H1B, CHEM 011C and CHEM 1H1C), CHEM 005, CHEM 008A, CHEM 008B, CHEM 012A, CHEM 012B, CHEM 012C, and CHEM 012D (or CHEM 012A and CHEM 012B, CHEM 012C and CHEM 012D)
   b) MATH 009A, MATH 009B, MATH 009C, MATH 010A
   c) PHYS 040A, PHYS 040B, PHYS 040C (or PHYS 002A, PHYS 002B, PHYS 002C, PHYS 002D, PHYS 002E)

2. Upper-division requirements (36 units)
   A minimum grade of "C-" for any upper-division course used to fulfill the requirements for the B.A. degree.
   a) CHEM 110A, CHEM 110B, CHEM 113, CHEM 125, CHEM 150A, CHEM 191, and either CHEM 111 or CHEM 140 or CHEM 166
   b) Ten (10) additional upper-division units

Bachelor of Science
1. Lower-division requirements (71-72 units)
   a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C (or CHEM 011A and CHEM 1H1A, CHEM 011B and CHEM 1H1B, CHEM 011C and CHEM 1H1C), CHEM 005, CHEM 008A, CHEM 008B, CHEM 012A, CHEM 012B, CHEM 012C, and CHEM 012D (or CHEM 012A and CHEM 012B, CHEM 012C and CHEM 012D)
   b) MATH 009A, MATH 009B, MATH 009C, and MATH 010A, MATH 010B, MATH 031, MATH 046
   c) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (41-43 units)
   A minimum grade of "C-" for any upper-division course used to fulfill the requirements for the B.S. degree.
   a) CHEM 110A, CHEM 110B, CHEM 111, CHEM 125, CHEM 150A, CHEM 191
   b) Two laboratory courses from CHEM 114 or CHEM 140, CHEM 166, BCH 162
   c) One course from BCH 100, BCH 110A, CHEM 143
   d) One 4-unit course from CHEM 135/ENSC 135/ENTX 135, CHEM 136/ENSC 136/ENTX 136/SWSC 136, CHEM 150B, CHEM 197, CHEM 199. CHEM 197 and CHEM 199 must be taken for a grade and a written report submitted.

Chemical Physics Option
Students must consult with their Chemistry advisor before electing this option.

1. Lower-division requirements (79-80 units)
   a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 010A, CHEM 011B, CHEM 011C (or CHEM 01HA and CHEM 01HLA, CHEM 01HB and CHEM 01HLB, CHEM 01HC and CHEM 01HLC), CHEM 005, CHEM 008A and CHEM 008LA or CHEM 12A, CHEM 008B and CHEM 008LB or CHEM 12B, CHEM 008C and CHEM 008LC or CHEM 12C (or CHEM 08HA and CHEM 08HLA or CHEM 08HB and CHEM 08HLC or CHEM 08HC and CHEM 08HLC or CHEM 12HC)
   b) MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   c) PHYS 041A, PHYS 041B, PHYS 041C or PHYS 040A, PHYS 040B, PHYS 040C, and PHYS 041C

2. Upper-division requirements (59 units)
   A minimum grade of “C-” for any upper-division course used to fulfill the requirements for the Chemical Physics option.
   a) CHEM 110A, CHEM 110B, CHEM 111, CHEM 113, CHEM 114, CHEM 150A, CHEM 150B, CHEM 191
   b) Twenty-one (21) units of upper-division course work in Mathematics or Physics (110 or above excluding 190 series)
   c) Nine (9) additional units in physical chemistry

Environmental Chemistry Option

Students must consult with their Chemistry advisor before electing this option.

1. Lower-division requirements (84 units)
   a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 010A, CHEM 011B, CHEM 011C (or CHEM 01HA and CHEM 01HLA, CHEM 01HB and CHEM 01HLB, CHEM 01HC and CHEM 01HLC), CHEM 005, CHEM 008A and CHEM 008LA or CHEM 12A, CHEM 008B and CHEM 008LB or CHEM 12B, CHEM 008C and CHEM 008LC or CHEM 12C (or CHEM 08HA and CHEM 08HLA or CHEM 08HB and CHEM 08HLC or CHEM 08HC and CHEM 08HLC or CHEM 12HC)
   b) MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   c) PHYS 040A, PHYS 040B, PHYS 040C
   d) BIOL 005A, BIOL 005LA or BIOL 002A, BIOL 005B, BIOL 005C.

2. Upper-division requirements (57-58 units)
   A minimum grade of “C-” for any upper-division course used to fulfill the requirements for the Environmental Chemistry option.
   a) CHEM 110A, CHEM 110B, CHEM 111, CHEM 113, CHEM 125, CHEM 135/ENSC 135/ENTX 135, CHEM 136/ENSC 136/ENTX 136/091/092/190/190C, CHEM 114 or CHEM 140, CHEM 150A, CHEM 166, CHEM 191
   b) One course from ENSC 104/SWSC 104 or GEO 137
   c) One course from BCH 100, BCH 110A or CHEM 143
   d) Two additional courses from CHEM 150B, CHEM 197, CHEM 199, ENSC 100, ENSC 101, ENSC 102, ENSC 140/SWSC 140, ENSC 163, ENTX 101, GEO 132, GEO 157 (4 units total from CHEM 197 and/or CHEM 199)

Undergraduate Research is strongly encouraged for students with the requisite ability. Students wishing to participate in this activity should consult Chemistry faculty, their Chemistry advisor, or check: ugr.ucr.edu.

Sample Program

Student programs are planned on an individual basis with their advisors, and there is considerable flexibility in the sequence in which courses required for the major are taken. For example, PHYS 040A, PHYS 040B, PHYS 040C can be started equally well during either the freshman or sophomore year. The sample program is typical for a well-prepared entering freshman who seeks the B.S. degree.

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 001A, CHEM 001B, CHEM 001C, CHEM 010A, CHEM 011B, CHEM 011C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 040A, PHYS 040B</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>MATH 009A, MATH 009B</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 001A, ENGL 001B, ENGL 001C</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Elective (optional)</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>17</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 008A, CHEM 008B, CHEM 008C, CHEM 008LA, CHEM 008LB, CHEM 008LC</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 040C</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 010A, MATH 010B, MATH 046</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 005</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>13</td>
<td>17</td>
<td>16</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110A, CHEM 110B, CHEM 113</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Biological Science w/ Lab</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 150A, CHEM 150B</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Undergraduate Research

Students majoring in Chemistry should consult with their Chemistry advisor to construct a specific program consistent with their career goals.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Program

The Chemistry Department offers the M.S. and Ph.D. degrees in Chemistry.

Fields of specialization (subdisciplines) are analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry. Research is also carried out in bioanalytical, bioorganic, biogeochemical, and biophysical chemistry and in chemical physics, environmental/atmospheric, organometallic chemistry, and neuroscience. For additional information on the latter, please see Neuroscience Graduate Program in the Programs and Courses section of this catalog.

Admission

All applicants must submit scores from the GRE General Test. A score from the Advanced Chemistry GRE is not required for admission. It is strongly recommended, however, that applicants submit this score in order to receive maximum consideration for fellowships. The department normally considers applications for teaching and research assistantships at the same time as fellowships;
Program of Study
The departmental committee on graduate study determines a program of study on the basis of the students’ performance on the orientation examinations and a consideration of their subdisciplines. For students with a normal B.S. level preparation, the typical course pattern for each subdiscipline is as follows:

1. Analytical (a minimum of three courses selected from CHEM 221A, CHEM 221B, CHEM 221C, CHEM 221D, CHEM 221E plus two other courses)
2. Inorganic (CHEM 231A, CHEM 231B, CHEM 231C plus two other courses)
3. Organic (CHEM 211A, CHEM 211B, CHEM 211C plus two other courses)
4. Physical (a minimum of three courses selected from CHEM 201A, CHEM 201B, CHEM 201C, CHEM 201D, CHEM 201E plus two other courses)

Second Year Research Evaluation
Students seeking advancement to candidacy for the Ph.D. degree must undergo a Second-Year Research Evaluation (SYRE). The SYRE must take place by the end of the student’s fourth academic quarter of residency and is administered by a four-member committee of the Chemistry faculty, one of whom is the student’s dissertation advisor. The Chair of the SYRE Committee will be someone other than the dissertation advisor. Typically, these same four faculty members would also serve on the oral qualifying examination committee, with the Chair of the SYRE Committee continuing on as Chair of the oral qualifying examination committee.

The SYRE consists of both a written and oral component and the student is assessed on both components. The written SYRE document should provide an introduction to the dissertation research, an outline of the goals and objectives, a description of the progress to date, and a delineation of the path forward. The SYRE document is limited to five single-spaced pages (12-point type), including references. The oral component of the SYRE will be a presentation of the written document. After presentation of the SYRE document, the student will be queried by committee to assess the student’s general knowledge of the material. A student will receive a single grade of Pass, Qualified Pass, or Fail. A Pass signifies that the student has made satisfactory progress in research and is on track to pass the oral qualifying examination. A Qualified Pass signifies that a student’s progress in research is reasonable, but that improvement is needed, and should be demonstrated at the time of the oral qualifying examination. A Fail signifies that a student has to date, not made satisfactory progress in research. A student who fails the SYRE would not be required to undergo a second evaluation; however, such students would be placed on notice that they are not on track to pass the oral qualifying examination unless major steps are taken to correct serious deficiencies in research performance.

Foreign Language Requirement
A reading knowledge of German, French, or Russian is recommended but not required.

Oral Qualifying Examination
This examination consists in part of defending an original proposition and is designed to test the extent of the candidates’ development and their breadth of knowledge in chemistry and related fields.

Teaching Requirement
Normally requires three quarters of service as a teaching assistant, or equivalent.

Normative Time to Degree
15 quarters

Lower-Division Courses

CHEM 001 Preparation for General Chemistry (2)
Lecture, 2 hours. Prerequisite(s): none. Problem solving methods to succeed in general chemistry; this is an online virtual learning course. Students with credit for CHEM 001A or CHEM 01HA not eligible. Concurrent enrollment in CHEM 001A or CHEM 01HA is not allowed. Counts toward the 180-unit graduation requirement but not toward the University or college requirements. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of CHEM 001 or CHEM 001W.

CHEM 001A General Chemistry (4)
F, W, Summer Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): a score of 3, 4, or 5 on the College Board Advanced Placement Chemistry Examination or a passing score on the California Chemistry Diagnostic Test or a score on the Mathematics Advisory Exam sufficient for placement in MATH 007A or MATH 008B or MATH 009A or a grade of “C-” or better in MATH 005 or a grade of “C” or better in MATH 006A or a grade of “S” in CHEM 001W or a grade of “C-” or better in an equivalent college-level mathematics or chemistry course; concurrent enrollment in CHEM 01LA or a grade of “C-” or better in CHEM 01LA. An introduction to the basic principles of chemistry. Credit is awarded for only one of CHEM 001A or CHEM 01HA.

CHEM 001B General Chemistry (4)
W, S, Summer Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): grades of “C-” or better in CHEM 001A and CHEM 01LA or grades of “C-” or better in CHEM 01HA and CHEM 1HLA; concurrent enrollment in CHEM 01LB or a grade of “C-” or better in CHEM 01LB. An introduction to the basic principles of chemistry. Credit is awarded for only one of CHEM 001B or CHEM 01HB.

CHEM 001C General Chemistry (4)
F, S, Summer Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): grades of “C-” or better in CHEM 001B and CHEM 01LB or grades of “C-” or better in CHEM 01HB and CHEM 1LHB; concurrent enrollment in CHEM 01LC or a grade of “C-” or better in CHEM 01LC. An introduction to the basic principles of chemistry. Credit is awarded for only one of CHEM 001C or CHEM 01HC.

CHEM 001W Preparation for General Chemistry (3)
F Lecture, 2 hours; workshop, 3 hours. Prerequisite(s): completion of or concurrent enrollment in MATH 005 or MATH 006A. Problem solving methods to succeed in general chemistry. Students with credit for CHEM 001A or CHEM 01HA not eligible. Concurrent enrollment in CHEM 001A or CHEM 01HA is not allowed. Counts toward the 180-unit graduation requirement but not toward the University or college requirements. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of CHEM 001W or CHEM 001.

CHEM 003 Concepts of Chemistry (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of basic concepts of Chemistry. Designed for non-science majors and not as preparation for CHEM 001A or CHEM 01HA. Not open to students with credit for CHEM 001A or CHEM 01HA, but students who have completed CHEM 003 may take CHEM 001A or CHEM 01HA for full credit.

CHEM 005 Quantitative Analysis (5)
F Lecture, 3 hours; laboratory, 8 hours. Prerequisite(s): CHEM 001C and CHEM 01LC with grades of “C-” or better or CHEM 01HC and CHEM 1LHC with grades of “C-” or
CHEM 008A Organic Chemistry (3) F, W, Summer Lecture, 3 hours. Prerequisite(s): CHEM 001C and CHEM 01LC or CHEM 01HC and CHEM 1HL. Covers more depth than in CHEM 008A. A limited enrollment course in which the principles of chemistry are covered in more depth than in CHEM 001C. Credit is awarded for only one of CHEM 01LC or CHEM 01HC.

CHEM 008B Organic Chemistry (3) F, S, Summer Lecture, 3 hours. Prerequisite(s): CHEM 008A and CHEM 01LA or CHEM 01HB and CHEM 01HL with grades of "C-" or better; concurrent enrollment in CHEM 08LB or a grade of "C-" or better in CHEM 08LA. Covers more organic chemistry including structure, nomenclature, reactivity, synthesis, and reaction mechanisms and the chemistry of carbohydrates, lipids, nucleic acids, amino acids, and proteins. Credit is awarded for only one of CHEM 008A or CHEM 008B.

CHEM 008C Organic Chemistry (3) F, S, Summer Lecture, 3 hours. Prerequisite(s): CHEM 008A and CHEM 01LA or CHEM 01HB and CHEM 01HL with grades of "C-" or better; concurrent enrollment in CHEM 08LB or a grade of "C-" or better in CHEM 08LA. Covers more organic chemistry including structure, nomenclature, reactivity, synthesis, and reaction mechanisms and the chemistry of carbohydrates, lipids, nucleic acids, amino acids, and proteins. Credit is awarded for only one of CHEM 008A or CHEM 008C.
or better; concurrent enrollment in CHEM 08HA; admission to the University Honors Program or consent of instructor. Involves advanced, in-depth discussions of current literature relevant to the content of CHEM 08HA. Students work in small teams to solve advanced problem sets. Satisfactory (S) or No Credit (NC) grading is not available.

CHEM 13H8 Honors Discussion for Organic Chemistry (1) W Discussion, 1 hour. Prerequisite(s): CHEM 008A or CHEM 08H8A with a grade of "B" or better; concurrent enrollment in CHEM 08HB; admission to the University Honors Program or consent of instructor. Involves advanced, in-depth discussions of current literature relevant to the content of CHEM 08HB. Students work in small teams to solve advanced problem sets. Satisfactory (S) or No Credit (NC) grading is not available.

CHEM 13HC Honors Discussion for Organic Chemistry (1) S Discussion, 1 hour. Prerequisite(s): CHEM 008B or CHEM 08H8B with a grade of "B" or better; concurrent enrollment in CHEM 08HC; admission to the University Honors Program or consent of instructor. Involves advanced, in-depth discussions of current literature relevant to the content of CHEM 08HC. Students work in small teams to solve advanced problem sets. Satisfactory (S) or No Credit (NC) grading is not available.

CHEM 091 Freshman Seminar: What Chemists Do (1) Seminar, 1 hour. Explores the frontiers of chemistry (analytical, inorganic, organic, and physical) as well as the role of chemistry in allied areas such as agriculture, biology, environmental science, forensics, materials, medicine, and neuroscience. Graded Satisfactory (S) or No Credit (NC).

CHEM 092 Introduction to Undergraduate Research in Chemistry (1) S Seminar, 1 hour. Prerequisite(s): CHEM 001C or CHEM 01HC (may be taken concurrently); lower-division standing. Introduction to the elements of chemistry research (e.g., laboratory safety, literature searches, scientific writing, research ethics, oral or poster presentation preparation). Explores specific research opportunities within the Chemistry Department. Intended to assist Chemistry majors interested in pursuing undergraduate research opportunities in Chemistry. Graded Satisfactory (S) or No Credit (NC).

CHEM 095 Explorations in Molecular Science (1) Laboratory, 3 hours. Prerequisite(s): freshman standing; CHEM 001A or CHEM 01HA with a grade of "C-" or better; concurrent enrollment in or completion of CHEM 001B or CHEM 01HB, NASC 093; or consent of instructor. Laboratory experiments and computer modeling in a variety of chemistry-related areas such as agriculture, biology, environmental science, forensics, materials, medicine, and neuroscience. Graded Satisfactory (S) or No Credit (NC).

CHEM 097H Freshman Honors Project: Introduction to Research (1-4) Outside research, 3-12 hours. Prerequisite(s): admission to the University Honors Program. Prior arrangement with a chemistry faculty member is required. An introduction to the methods of research in chemical sciences. The student conducts an investigation under the supervision of a faculty member. A written report is required at the end of the quarter. To satisfy the requirement for the University Honors Program Freshman Project, the student must earn a minimum of 4 units during the first year. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable.

Upper-Division Courses

CHEM 105 Survey of Physical Chemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C and CHEM 01LC with grades of "C-" or better or CHEM 01HC and CHEM 1HLC with grades of "C-" or better; MATH 099B with a grade of "C-" or better or MATH 099H with a grade of "C-" or better. Introduces thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular structure, and spectroscopy. Primarily for students with major interests in life and agricultural sciences; not recommended for Chemistry majors. Credit is not awarded for CHEM 105 if it has already been awarded for CHEM 110A or CHEM 110B.

CHEM 110A Physical Chemistry: Chemical Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C with grades of "C-" or better or CHEM 01HC and CHEM 1HLC with grades of "C-" or better; MATH 010A with a grade of "C-" or better (or if MATH 010A is taken concurrently, MATH 009C with a grade of "C-" or better or MATH 010A with a grade of "C-" or better); PHYS 002C with a grade of "C-" or better or PHYS 040C with a grade of "C-" or better (PHYS 040C may be taken concurrently); or consent of instructor. An introduction to thermodynamics, with applications to chemical systems.

CHEM 110B Physical Chemistry: Introduction to Statistical Mechanics and Kinetics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 110A with a grade of "C-" or better or consent of instructor; prior or concurrent enrollment in MATH 010B is recommended. Statistical mechanics, kinetic molecular theory, and chemical kinetics with applications to chemical systems.

CHEM 111 Physical Chemistry Laboratory (4) W Lecture, 2 hours; laboratory, 8 hours. Prerequisite(s): CHEM 110A and CHEM 110B with grades of "C-" or better (or CHEM 110A concurrently), or consent of instructor. CHEM 113 recommended. Physical chemical measurements and laboratory experiments illustrating fundamental principles of physical chemistry. Modern electronic and optical measurement techniques.

CHEM 113 Physical Chemistry: Introduction to Quantum Chemistry (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001C and CHEM 011C with grades of "C-" or better or CHEM 01HC and CHEM 1HLC with grades of "C-" or better; MATH 009C with a grade of "C-" or better or MATH 099C with a grade of "C-" or better or MATH 099HC with a grade of "C-" or better. MATH 046 is recommended. Introduction to quantum mechanics with application to atomic and molecular structure and spectra.

CHEM 114 Advanced Physical Chemistry Laboratory (4) Lecture, 2 hours; laboratory, 8 hours. Prerequisite(s): CHEM 111 with a grade of "C-" or better or consent of instructor; completion of or concurrent enrollment in CHEM 113. Involves measurements and laboratory experiments illustrating applications of physical chemistry methods to problems in environmental, materials, and biological chemistry. Covers modern data acquisition, analysis, and computational techniques.

CHEM 125 Instrumental Methods (3 or 5) W Lecture, 3 hours; laboratory, 8 hours. Prerequisite(s): CHEM 005 with a grade of "C-" or better; PHYS 002C or PHYS 040C (PHYS 002C or PHYS 040C may be taken concurrently); or equivalents; or consent of instructor. Presents chromatographic separations, electrochemistry, and principles of spectroscopic techniques as an introduction to instrumental methods and their use in chemistry. Graduate students may register for either lecture only (3 units) or for lecture and laboratory (5 units).

CHEM 135 Chemistry of the Clean and Polluted Atmosphere (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HLB or consent of instructor; ENSC 102 recommended. Structure of the troposphere and stratosphere; formation of atmospheric ozone; tropospheric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemistry of volatile organic compounds; formation of photochemical air pollution; modeling of air pollution and control strategies; stratospheric ozone depletion and global warming. Cross-listed with ENSC 135 and ENTX 135.

CHEM 136 Chemistry of Natural Waters (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 005 with a grade of "C-" or better or ENSC 101 with a grade of "C-" or better or consent of instructor. Introduction to processes controlling the chemical composition of natural waters. Topics include chemical equilibria, acid-base chemistry, redox reactions, oxidation-reduction reactions, precipitation-dissolution, air-water exchange, and use of equilibrium and kinetic models for describing marine nutrient, trace metal, and sediment chemistry. Cross-listed with ENSC 136.

CHEM 140 Environmental Chemistry Laboratory (4) S Lecture, 2 hours; laboratory, 8 hours. Prerequisite(s): CHEM 125 with a grade of "C-" or better, CHEM 110A (or CHEM 109) with a grade of "C-" or better, or consent of instructor. Theory and application of chemical techniques for the analysis of environmentally relevant chemical processes. Discusses gas phase, condensed phase, surface, and particulate chemistry. Topics include "acid rain," photochemical smog, ozone depletion, and chemical analysis monitoring.

CHEM 143 Chemical Biology (3) Lecture, 3 hours. Prerequisite(s): CHEM 008A or CHEM 08LA or CHEM 08HC and CHEM 08HLC. Discusses biochemical reactions from a chemical standpoint and presents how the principles of chemistry have been applied to address fundamental questions in life sciences.

CHEM 150A Inorganic Chemistry (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HLB, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC with grades of "C-" or better; CHEM 110A (or CHEM 109) with a grade of "C-" or better. A systematic introduction to the synthesis, reactions, structure, and bonding of important classes of inorganic compounds. Emphasis on non-transition metal chemistry.

CHEM 150B Inorganic Chemistry (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 150A with a grade of "C-" or better. A systematic introduction to synthesis, reactions, structure, and bonding of important classes of inorganic compounds. Emphasis on transition metal chemistry.

CHEM 166 Advanced Structural and Synthetic Methods (2 or 4) S Lecture, 2 hours; laboratory, 8 hours. Prerequisite(s): CHEM 005 with a grade of "C-" or better or BCH 162 with a grade of "C-" or better, CHEM 008B and CHEM 08LB or CHEM 08HC and CHEM 08HLC with a grade of "C-" or better; consent of instructor is required for students enrolling only in the lecture (2 units); CHEM 125 and CHEM 150A are recommended. Covers methods for the characterization of organic and inorganic compounds and advanced methods of synthesis of organic and inorganic compounds such as vacuum, inert atmosphere, high-pressure, and photochemical techniques. Involves hands-on use of spectroscopic (nuclear magnetic resonance and optical spectroscopy and mass spectrometry) and computer-based methods for structural characterization. Non-Chemistry majors and graduate students may enroll for the lecture (2 units) or for the lecture and laboratory (4 units).

CHEM 190 Special Studies (1-5) To be taken with the consent of the chair of the department as a means of meeting special curricular problems.

CHEM 191 Seminar in Chemistry Careers (1) S Seminar, 1 hour. Prerequisite(s): upper-division standing. Oral reports and discussions by students, faculty, and visiting speakers. Required of chemistry majors, normally taken in the spring of the junior year. Graded Satisfactory (S) or No Credit (NC).
CHEM 197 Research for Undergraduates (1-4) Outside research, 3-12 hours. Prerequisite(s): sophomore or junior standing; consent of instructor. An introduction to the methods of research in chemistry. Includes a research project completed under the supervision of a Chemistry faculty member. Students who submit a written research report receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 6 units.

CHEM 198-I Individual Internship (1-12) Internship, 2-24 hours; term paper or preparation for presentation, 1-12 hours. Prerequisite(s): upper-division standing in chemistry, consent of instructor. Industrial work experience coordinated and supervised by a chemistry faculty member and an off-campus sponsor. Requires a term paper or presentation. Course is repeatable to a maximum of 12 units.

CHEM 199 Senior Research (1-4) Outside research, 3-12 hours. Prerequisite(s): senior standing; consent of instructor. Research project completed under the supervision of a Chemistry faculty member. Students who submit a written research report receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Total credit for CHEM 199 and/or CHEM 199H may not exceed 9 units.

CHEM 199H Senior Honors Research (1-5) Outside research, 3-15 hours. Prerequisite(s): senior standing; consent of instructor; a minimum GPA of 3.00 in chemistry courses and in all university course work. Research in chemistry conducted under the supervision of a Chemistry faculty member. Students who submit a written research report receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Total credit for CHEM 199 and/or CHEM 199H may not exceed 9 units.

Graduate Courses

CHEM 201A Advanced Physical Chemistry: Quantum Mechanics (3) Lecture, 3 hours. Prerequisite(s): CHEM 113 with a grade of "C" or better. Covers concepts in quantum mechanics including wavepackets, uncertainty, single particles in multiple dimensions, and approximate methods for solving the Schrödinger equation.

CHEM 201B Advanced Physical Chemistry: Quantum Mechanics and Spectroscopy (3) Lecture, 3 hours. Prerequisite(s): CHEM 113 with a grade of "C" or better. Covers concepts in quantum mechanics with particular applications to spectroscopy.

CHEM 201C Advanced Physical Chemistry: Elementary Statistical Mechanics (3) Lecture, 3 hours. Prerequisite(s): CHEM 110A and CHEM 110B with grades of "C" or better. Covers concepts in elementary statistical mechanics including ensembles, interpretations of thermodynamic functions, and quantum statistics.

CHEM 201D Advanced Physical Chemistry: Thermodynamics (3) Lecture, 3 hours. Prerequisite(s): CHEM 110A and CHEM 110B with grades of "C" or better. Covers concepts in thermodynamics including fundamental equations, potentials, Maxwell relations, and stability criteria. Cross-listed with MSE 205.

CHEM 201E Advanced Physical Chemistry: Kinetics (3) Lecture, 3 hours. Prerequisite(s): CHEM 110A and CHEM 110B with grades of "C" or better. Covers concepts in kinetics including reaction mechanisms and the molecular interpretation of reaction dynamics.

CHEM 202 Advanced Instrument Design (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor; consent of instructor of CHEM 202 or both concurrent enrollment in another course of CHEM 297 or both concurrent enrollment in and consent of instructor of CHEM 299. Focuses on the technical aspects of design and manufacture of instrumentation for physical chemistry and related fields. Introduces design and simulation software and provides hands-on experience in the realization of advanced instrument development projects. Students who complete a project and take the final examination receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade.

CHEM 203 Nanoscience and Nanotechnology (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry, Physics, or Engineering, or a related subject or consent of instructor. Provides a condensed, interdisciplinary overview of selected fields of nanoscience and emerging nanotechnological applications. Focuses on applications relevant for the campus research community that are not based on electronic applications of silicon. Cross-listed with MSE 225C.

CHEM 206A Introduction to Computational Quantum Chemistry (3) Lecture, 3 hours. Prerequisite(s): CHEM 113 with equivalent consent of instructor. Introduces computational techniques in quantum chemistry. Includes Hartree-Fock theory, Density Functional Theory, and electron correlation methods. Emphasizes practical applications in a research setting. Cross-listed with MSE 225C.

CHEM 206B Modeling Chemical and Biochemical Molecules (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry or a related field or consent of instructor. Introduces students to the principles, concepts, and techniques for modeling chemical and biological systems. Covers the various methods and techniques for molecular simulations, energy calculations, obtaining chemical potential data reliably, visualization and analysis of molecules, and screening and designing chemicals for proteins.

CHEM 207 Chemical Group Theory (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. The principles of group theory and molecular symmetry. Applications in several areas of chemistry.

CHEM 208 Interdisciplinary Overview of Current Issues in Semiconductor Processing (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry, Physics, Engineering, or a related subject or consent of instructor. An interdisciplinary overview of present-day semiconductor processing. Introduces topics such as properties of semiconductors, cleanroom environment, epitaxy, ion implantation, etching, lithography, device architecture, testing, and fault detection. May offer field trips. Cross-listed with MSE 245D and PHYS 202.

CHEM 209 (E-Z) Advanced Topics in Physical Chemistry (2-3) Lecture, 2 hours (2 units) or 3 hours (3 units). Prerequisite(s): consent of instructor. Additional prerequisite may be required for segments of this course; see department. Selected advanced topics from modern physical chemistry.

CHEM 211A Structure and Mechanism in Organic Chemistry (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers structure and bonding in organic compounds emphasizing more advanced aspects of the field.

CHEM 211B Advanced Organic Chemistry: Reactions and Mechanism (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores organic and organometallic reaction mechanisms and their application to modern synthesis.

CHEM 211C Advanced Synthetic Analysis (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers synthetic organic chemistry emphasizing strategy, reactions, and techniques.

CHEM 211D Spectrometry in Organic Structure Analysis (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Utilizes modern spectroscopic techniques such as IR, mass spectrometry, and 1H and 13C NMR to determine the structure of complex organic molecules. Topics include advanced NMR techniques such as 2D NMR, NMR pulse sequences, diffusion NMR, and MRI. Cross-listed with MSE 225A.

CHEM 211E Advanced Organic Reactions (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers modern organic reactions and reagents and their mechanistic pathways with emphasis on recent developments and practical organic chemistry. Cross-listed with MSE 245A.

CHEM 216 Physical Organic Chemistry (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An advanced treatment of physical organic chemistry.

CHEM 217 Polymers: Synthesis and Characterization (3) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores modern methods of synthesis, emphasizing catalytic methods. Describes industrial synthetic methods. Examines polymer physics and characterization, emphasizing physical methods.

CHEM 221A Advanced Analytical Chemistry: Separation Science (3) Lecture, 3 hours. Prerequisite(s): CHEM 125. Provides an overview of modern analytical separations including theory, instrumentation, and applications.

CHEM 221B Advanced Analytical Chemistry: Optical Spectroscopy (3) Lecture, 3 hours. Prerequisite(s): CHEM 125. Provides an overview of modern mass spectroscopy including basic theory, instrumentation, and applications. Cross-listed with MSE 225B.

CHEM 221C Advanced Analytical Chemistry: Electrochemistry (3) Lecture, 3 hours. Prerequisite(s): CHEM 125. Provides an overview of modern electrochemistry including basic theory, applications, and instrumentation of potentiometry and amperometry.

CHEM 221D Advanced Analytical Chemistry: Mass Spectroscopy (3) Lecture, 3 hours. Prerequisite(s): CHEM 125. Provides an overview of modern mass spectroscopy including basic theory, instrumentation, and applications. Focus is on biological applications.

CHEM 221E Advanced Analytical Chemistry: Introduction to Bioanalytical Chemistry (3) Lecture, 3 hours. Prerequisite(s): CHEM 125. Covers important aspects of modern chemical measurements, with particular emphasis on bioanalysis. Discusses analytical challenges associated with drug discovery and development, including analysis of combinatorial libraries, high-throughput screening, metabolomics, genomics, and proteomics, as well as new developments in analytical methods and instrumentation.

CHEM 221F Advanced Analytical Chemistry: Advanced Chemical Biology (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry or a related field or consent of the instructor. Introduces synthetic and analytical methods that enable molecular control over and interrogation of proteins, nucleic acids in vitro, in cellulo, and in vivo. Includes emerging technologies for biomolecular labeling and regulation.

CHEM 223 Nature of the Chemical Bond (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry or a related field or consent of instructor. Explores all aspects of chemical bonding including molecular orbital theory, valence bond theory, and noncovalent bonding, with coverage of key concepts from all subdivisions of chemistry.

CHEM 229 (E-Z) Advanced Topics in Analytical Chemistry (2 or 3) Lecture, 2-3 hours. Prerequisite(s): consent of instructor. Additional prerequisites may be required for segments of this course; see department. Selected advanced topics from modern analytical chemistry. Course content will vary.
CHEM 251 Graduate Seminar in Analytical Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Includes oral reports and discussion by students, faculty, and visiting scholars from academia and industry on current research topics in analytical chemistry. Offered each quarter. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 99 units.

CHEM 252 Graduate Seminar in Inorganic Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Includes oral reports and discussion by students, faculty, and visiting scholars from academia and industry on current research topics in inorganic chemistry. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 99 units.

CHEM 253 Graduate Seminar in Organic Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Includes oral reports and discussion by students, faculty, and visiting scholars from academia and industry on current research topics in organic chemistry. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 99 units.

CHEM 254 Graduate Seminar in Physical Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Includes oral reports and discussion by students, faculty, and visiting scholars from academia and industry on current research topics in physical chemistry. Offered each quarter. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 99 units.

CHEM 256 Chemistry of Nanostructured Materials (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Explores the chemistry of nanostructured materials. Introduces nanotechnology, solid state chemistry and physics of nanomaterials, nanoscale characterization tools, lithography, micro- and nanofabrication, physical and chemical methods to nanomaterials, surface modification, sol-gel chemistry, self assembly at various length scales, and bio-inspired materials. Emphasis is on development of novel functional nanostructured materials through chemical synthesis, surface modification, and self-assembly. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Yin

CHEM 258 Seminar in Surface Science (1) Seminar, 1 hour. Prerequisite(s): graduate standing in Physics or Chemistry or consent of instructor. Oral presentations by participating visiting scholars, postdoctoral researchers, students, and UCR faculty on current research topics in surface science. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CHEM 260 Organic and Organometallic Methodology and Synthesis (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Introduces key areas of synthetic organic and organometallic chemistry in a mechanism-based approach. Explores current literature with an emphasis on catalytic asymmetric reactions and their application to the synthesis of biologically active compounds. Surveys the background and history of discoveries leading to the development of new catalytic methodology. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 36 units.

CHEM 261 Scanning Probe Microscopy in Surface Science (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on theory and applications of scanning probe microscopy in surface science, including the use of scanning tunneling microscopy to image surfaces on the atomic and molecular length scale, and scanning probe techniques to investigate and control elementary steps of surface reactions. Reviews surface crystallography, electronic, and phononic band structure. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Bartels

CHEM 262 Ultrafast Dynamics in Condensed Matter (2) Seminar, 2 hours. Prerequisite(s): consent of instructor. The extremely fast relaxation and dephasing of nuclear (vibrational) excitations in condensed matter are probed by the use of coherent spectroscopy using (sub-picosecond) light pulses. Decay mechanisms are studied by making spectroscopic measurements at cryogenic temperatures (approximately 1K) and at various high pressures (greater than 100 Kbar). Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. May be repeated for credit. Chronister

CHEM 263 Analysis and Synthesis at the Chemistry-Biology Interface (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Introduces key areas of bioanalytical chemistry and chemical biology. Explores current literature with an emphasis on protein engineering, fluorescence imaging, and synthesis of light-active compounds and their applications to the modulation of biological pathways. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 36 units.

CHEM 264 Novel Synthesis in Inorganic Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Discusses strategies for the synthesis of novel structures in bioinorganic coordination, organometallic, and materials chemistry. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade based on seminar participation. Course is repeatable. Reed

CHEM 265 Raman Spectroscopy of Biological Systems (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Applications of Raman spectroscopy to the characterization of the structure and function of biological membranes and membrane proteins. Emphasis will be placed on the enhanced Raman scattering, including the theoretical origins of resonance enhancement. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Bocian

CHEM 266 Molecular Recognition and Catalysis (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Explores topics in biological and organic chemistry relevant to the study of molecular recognition. Emphasizes the study...
of non-covalent forces in self-association and the properties of macromolecular constructs. Also involves the study of the synthetic organic and inorganic chemistry used to create these constructs. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Hooley

CHEM 267 Organic Electronic Materials (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. A study of modern group chemistry, covering boron, silicon, phosphorus, and related elements. Organic and inorganic chemists benefit from this course. Introduces students to the peculiar properties of these elements, thus enabling them to use this knowledge in their own field of expertise. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Haddon

CHEM 269 New Trends in Main Group Chemistry (2) Seminar, 2 hours. Prerequisite(s): senior or graduate standing in Chemistry or consent of instructor. Training in modern group chemistry, covering boron, silicon, phosphorus, and related elements. Organic and inorganic chemists benefit from this course. Introduces students to the peculiar properties of these elements, thus enabling them to use this knowledge in their own field of expertise. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Zaera

CHEM 270 Theoretical Quantum Chemistry: Methods and Applications (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Explores topics in computational quantum chemistry relevant to both wave function and density functional theories. Emphasizes new computational algorithms and physical approximations that can be used to accelerate calculations and the applications of these methods to solve chemical problems. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Beran

CHEM 271 Design, Synthesis, and Applications of Highly Conjugated Organic Systems (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Surveys all aspects of ion chemistry in the gas phase. Topics include mass spectrometry, ion mobility, electrospray ionization, matrix-assisted laser desorption ionization, ion-molecule reactions, ionization reactions, quantum calculations, instrumentation, and photodissociation spectroscopy. Emphasis is on bioanalytical applications of the study of protein structure, folding, and assembly. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Julian

CHEM 272 Gaseous Ion Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Surveys all aspects of ion chemistry in the gas phase. Topics include mass spectrometry, ion mobility, electrospray ionization, matrix-assisted laser desorption ionization, ion-molecule reactions, ionization reactions, quantum calculations, instrumentation, and photodissociation spectroscopy. Emphasis is on bioanalytical applications of the study of protein structure, folding, and assembly. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Rabenstein

CHEM 274 Chemical Biology (2) Seminar, 2 hours. Prerequisite(s): senior or graduate standing in Chemistry or consent of instructor. Involves formal presentations by graduate students on topics in the current literature and their research. Presentation responsibilities rotate among enrolled students and postdoctoral fellows. Also enlists team work on problem sets and oral presentation of solutions. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Pirrung

CHEM 275 Bioorganic Chemistry of Nucleic Acids (2) Seminar, 2 hours. Prerequisite(s): consent of instructor. The design, synthesis, and evaluation of nucleotides with novel hydrogen-bonding capabilities as well as oligonucleotides capable of regulating gene expression. Discussion of ribonuclease catalysis, including possible catalytic functions that have not yet been determined. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Switzer

CHEM 276 The Nanocrystal-ligand Interface (2) Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): consent of instructor. Explores the nanocrystal-ligand interface. Topics include a quantitative understanding of the nanocrystal-ligand interface, single molecule spectroscopic methods; the self-assembly of nanoparticles; supramolecular chemistry; synthesis and characterization of organic-inorganic hybrid nanostructures, and novel catalytic and optoelectronic properties. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 36 units.

CHEM 277 Surface Chemistry (2) Seminar, 2 hours. Prerequisite(s): consent of instructor. Discussions for new advances in surface science, concentrating mainly on the use of molecular level. Letter grades will be assigned to who present a paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Zaera

CHEM 278 Nuclear Magnetic Resonance: Theory, Techniques, and Applications (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the development of solid-state and liquid-state nuclear magnetic resonance (NMR) as a probe of molecular structure, function, and dynamics with applications that range from chemistry to physics and biology. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade based on seminar participation. Course is repeatable. Mueller

CHEM 279 Molecular Spectroscopy (2) Seminar, 2 hours. Prerequisite(s): consent of instructor. Proper- ties of organic molecules and their reactivity; physical and photochemistry. Theory of radiationless transitions. Kinetics and mechanism of excited state decay. Laser spectroscopy. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. May be repeated for credit. Scott

CHEM 280 Chemistry and Biochemistry of Gaseous Molecules (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): consent of instructor. Describes the electronic and magnetic properties of organic compounds and ions in the absence of bulk media. Preparative mass spectrometry and ion-molecule reactions. Molecular mechanisms in the sense of smell. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. May be repeated for credit. Morton

CHEM 281 Interface between Heteroatom and Transition Metal Chemistry (2) Seminar, 2 hours. Prerequi- site(s): graduate standing in Chemistry or consent of instructor. Discusses heterocatalysis chemistry as a source of new ligands for transition metal chemistry and applications in catalysis and material science. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Matthey

CHEM 282 Elementary Processes in Atmospheric Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Applies state-of-the-art laser techniques to investigate elementary processes in atmospheric chemistry. Emphasis is on quantitative understandings of atmospheric free-radical intermediates, their photochemistry, and their reaction mechanisms. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Zhang

CHEM 283 Development of Inorganic Solid State Materials (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the development of advanced materials such as optical, electronic, and porous materials. Topics include synthetic methods, characterization techniques, property measurements, and device applications. Special emphasis is placed on the design of synthetic strategies for the discovery of new functional materials with novel properties. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade based on seminar participation. Course is repeatable. Feng

CHEM 284 Bio-inspired Materials and Chemical Sen- sors (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the development of advanced materials and their application in analytical chemistry. Focus is on the design and synthesis of new materials, electrochemical detection, and the Surface Plasma Resonance (SPR) technique. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CHEM 286 Time-Resolved Spectroscopy and Microscopy and Dynamics in Complex Systems (2) F. W. S Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the design and synthesis of new materials and their application in analytical chemistry. Specifically includes techniques for the discovery of new functional materials with novel properties. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Bardeen

CHEM 287 Modeling Molecular Recognition (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. A comprehensive survey of modern time-resolved spectroscopy and microscopy techniques. Emphasizes applications to outstanding problems in materials science and biology. Specific problems include the measurement of energy transport in organic semiconductors and DNA dynamics in biological media. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Bardeen

CHEM 288 Bioanalytical Applications of Nuclear Magnetic Resonance (NMR) and Mass Spectrometry (MS) (2) Seminar, 2 hours. Prerequisite(s): consent of instructor. Focuses on the study of ligand-protein interactions, metabolomics, and applications to outstanding problems in materials science and biology. Specific problems include the measurement of energy transport in organic semiconductors and DNA dynamics in biological media. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Bardeen
other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CHEM 289 Special Topics in Neuroscience (2) Seminar, 2 hours. Prerequisite(s); graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BCH 289, BIOL 289, ENTM 289, NRSC 289, and PSYC 289.

CHEM 296 Special Topics Seminar (2) Seminar, 2 hours. Prerequisite(s); graduate standing in Chemistry; or consent of instructor. Includes oral presentations and intensive small-group discussion of selected topics in the area of specialization of each faculty member. Emphasizes recent advances in the special topic area; course content varies accordingly. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

CHEM 297 Directed Research (1-6) Prerequisite(s); consent of a staff member. Research in analytical, inorganic, organic, or physical chemistry under the direction of a member of the staff. A written report is required of the research study. Graded Satisfactory (S) or No Credit (NC).

CHEM 299 Research for Thesis or Dissertation (1-12) Prerequisite(s); consent of a staff member. Research in analytical, inorganic, organic, or physical chemistry under the direction of a member of the staff. This research is to be included as part of the dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

CHEM 301 Oral Presentations in Chemistry (1) Lecture, 1 hour. The technique of oral presentation, emphasizing the problems that arise in chemistry laboratory and classroom situations. Designed primarily for new graduate students in the Chemistry Department. Graded Satisfactory (S) or No Credit (NC).

CHEM 302 Teaching Practicum (1-2) Lecture/laboratory, 4-8 hours. Prerequisite(s); Limited to Chemistry Department teaching assistants and Associates-In-Chemistry. Supervised teaching in undergraduate courses in Chemistry. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Units are not applicable to degree unit requirements.

CHEM 401 Professional Development in Chemistry (1) Lecture, 1 hour. Prerequisite(s); graduate standing in Chemistry. Provides skill development and theory in writing, public speaking, and pedagogy related to chemical science. Designed primarily for new graduate students in the Chemistry Department. Graded Satisfactory (S) or No Credit (NC).

CHEM 402 Chemical Laboratory Safety (1) W Seminar, 1 hour. Prerequisite(s); graduate standing. Covers safety issues surrounding research and teaching in chemical laboratories. Topics include safe handling of chemicals, radioactive materials, and biological samples; laboratory equipment hazards; proper use of personal protective equipment; and emergency response procedures. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

The Chicano Bilingual-Bicultural Studies Minor

College of Humanities, Arts, and Social Sciences

Adalberto Aguirre, Jr., Ph.D., Chair Office. 1140 Watkins Hall (951) 827-5507; chicanobstudies.ucr.edu

Committee in Charge
Philip Gericke (Spanish & Portuguese) Alfredo Miranda (Ethnic Studies) Yolanda Venegas, non voting

The Chicano Bilingual-Bicultural Studies minor provides the student with a basic understanding of the Spanish language and of the Mexican American bicultural contexts in which that language is used in the southwestern United States.

1. Lower-division requirements (8 units)
   a) Four (4) units from ETST 002, ETST 004/HIST 004
   b) Four (4) units from one of the following:
      (1) SPN 006
      (2) Any upper-division course taught in Spanish language

2. Upper-division requirements (16 units)
   a) One course in the general area of Education and Bilingualism from ETST 146/EDUC 146, ETST 163/SOC 163, ETST 165/SOC 165, ETST 166
   b) One course from the general area of Societal Perspectives on the Chicano Experience ETST 142
   c) One course from ETST 123, ETST 124, ETST 126, ETST 128/SOC 128
   d) One course in Chicano Art or Literature from ETST 108P, ETST 114, ETST 153/LNST 153, ETST 191N

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Comparative Literature and Languages

College of Humanities, Arts, and Social Sciences

Jeffrey Sacks, Ph.D., Chair Department Office, 2402 Humanities and Social Sciences (951) 827-1462; complitforlang.ucr.edu

Professors
Michelle E. Bloom, Ph.D. Comparative Literature/ French Anthonia Kalu, Ph.D. African Literature and Culture/Comparative Literature Eugene Perry Link, Ph.D., Chancellorial Chair for Innovative Teaching, Chinese Literature, Language and Culture Hendrik M.J. Maier, Ph.D. Literature of Southeast Asia and Indonesia/Comparative Literature Lisa A. Raphals, Ph.D. Chinese/Comparative Literature Marguerite Waller, Ph.D. Italian/Comparative Literature (Gender and Sexuality Studies/Comparative Literature and Foreign Languages) Yenna Wu, Ph.D. Chinese/Civilizations/Comparative Literature

David K. Danow, Ph.D. Russian/Comparative Literature
Donald G. Davau, Ph.D. Germanic Studies
Robert B. Griffin, Ph.D. Comparative Literature/French
Georg M. Gugelberger, Ph.D. Comparative Literature
Stephanie B. Hammer, Ph.D. Germanic Studies/Comparative Literature
Jules F. Levin, Ph.D. Linguistics/Russian
Elid Martinez, Ph.D. Comparative Literature (Comparative Literature and Foreign Languages/ Creative Writing)
Thomas F. Scanlon, Ph.D. Classics/Comparative Ancient Civilizations/Comparative Literature
George E. Slusser, Ph.D. Comparative Literature
Ben F. Stoltzfus, Ph.D., Litt.D. Comparative Literature/French (Comparative Literature and Foreign Languages/Creative Writing)

Associate Professors
Heidi Brevik-Zender, Ph.D. French/Comparative Literature
Johannes Endres, Ph.D. Germanic Studies/Comparative Literature
Kelly Jeong, Ph.D. Korean Literature and Culture/Comparative Literature
John N. Kim, Ph.D. German/Japanese/Comparative Literature
Mariam Beevi Lam, Ph.D. Comparative Literature/Vietnamese
Jeffrey Sacks, Ph.D. Arabic Literature/Comparative Literature
Yang Ye, Ph.D. Chinese/Comparative Literature

Assistant Professors
Vrinda Chidambaram, Ph.D. Linguistics

** Lecturers
Han-hua Chao, Ph.D. Chinese
Jingsong Chen, Ph.D. Chinese
Christine Duvergé, Ph.D. French
Young Hong, Ph.D. Korean
Shuliang Hsi, M.A. Chinese
Benjamin King, Ph.D. Classics
Nicoleta Tinooz Mehrmand, Ph.D. Italian
Kim Dzung Pham, M.A. Vietnamese
Ayman Ramadan, M.A., Arabic
Jennifer Ramos, M.A., French
Priscilla Ruedas, M.A., Filipino
Kyoko Sagawa, M.A. Japanese
Reiko Sato, M.A. Japanese
Sabine Thauerwechter, Ph.D. German/Comparative Literature
Kelle Truby, Ph.D. French
Heidi Waltz, Ph.D. Linguistics/Comparative Studies
Ekaterina Yadina, Ph.D. Russian

Lecturers Emeriti
Wendy J. Raschke, Ph.D. Classics/Comparative Literature/Comparative Ancient Civilizations

Majors

The Department of Comparative Literature and Languages offers courses and degree programs in Western and non-Western national literatures, languages, and civilizations. It also has programs in Comparative Literature, Comparative Ancient Civilizations, and Linguistics. The department believes in the importance of offering fundamental training in the humanities in their own literary and linguistic contexts as well as in their cultural and interdisciplinary dimensions. Accordingly, students may obtain degrees or take courses in a specialized field, while at the same time enhancing the breadth of their education within and outside of the department.

The department offers the following majors leading to the B.A. degree.
Chinese and Japanese
The B.A. degrees in Languages and Literatures/Chinese and Languages and Literatures/Japanese offer a diverse, flexible program for students interested in the study of Asian languages, cultures, and literatures.

Classical Studies
The B.A. in Languages and Literatures/Classical Studies combines the study of Greek and/or Latin language and literature with courses which explore the historical, philosophical, political, and cultural developments of Greece and Rome and their impact on Western civilization. The department is a joint member of the UC Tri-Campus Graduate Program in Classics (UCI, UCR, UCSD), which offers M.A. and Ph.D. degrees in Classics.

Comparative Ancient Civilizations
For the B.A. in Languages and Literatures/Comparative Ancient Civilizations, students employ the methods of humanities and social sciences in the comparison study of several major cultures of the past. They acquire skills of historical and social analysis, multicultural awareness, and insight into constructions of civilizations in general.

Comparative Literature
The department offers the B.A. degree in Languages and Literatures/Comparative Literature and the M.A. and Ph.D. graduate degrees in Comparative Literature.

While students majoring in Languages and Literatures/Comparative Literature must have a knowledge of the languages involved in the literatures of their choice, Comparative Literature courses themselves are open to all students. All work is done in translation and the courses are given in English.

French, Germanic Studies, and Russian Studies
The B.A. degree is offered in Languages and Literatures/French, Languages and Literatures/Germanic Studies, and Languages and Literatures/Russian Studies. Requirements for degrees include proficiency in the language of the literature.

Languages
The Languages and Literatures/Languages major allows a student to specialize in two foreign languages through a knowledge not only of the languages themselves but also of the bases of language (linguistics), examples of their creative use (literature), and the cultures which they reflect (civilization).

Linguistics
A B.A. in Linguistics is available through a program administered by an interdepartmental committee. Some foreign language study is essential for specialization in this discipline, as well as the pursuit of research projects and other kinds of practical work in linguistic-related areas.

Graduate Degrees
Comparative Literature (interliterary) M.A.
Comparative Literature (interliterary or interdisciplinary) Ph.D.
UC Tri-Campus Graduate Program in Classics M.A. and Ph.D.

Teaching Assistantships and Fellowships
Teaching assistantships and fellowships are available. Teaching assistants are normally held for CPLT 301 (Teaching of Foreign Language at the College Level). Course work and/or teaching experience at another college-level institution may be accepted in fulfillment of this requirement.

Education Abroad Program
The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
Requirements for the majors and courses offered are described in the following sections.

Arabic Language
Arabic Literatures and Cultures
Civilization
Comparative and World Literature
Languages and Literatures/Comparative Literature

Italian Studies
Languages and Literatures/Chinese
Languages and Literatures/Classical Studies

Classics
Greek
Latin
Languages and Literatures/Comparative Ancient Civilizations
Languages and Literatures/French
Languages and Literatures/Germanic Studies

Languages and Literatures/Russian Studies

Comparative Literature
Subject abbreviations: CPLT
Committee in Charge
Jeffrey Sacks, Ph.D., Chair Arabic Literature/Comparative Literature
Michelle E. Bloom, Ph.D. Comparative Literature/French
Hediy Breit-Zender, Ph.D. Comparative Literature/French
Vrinda Chidambaram, Ph.D. Linguistics
Johannes Endres, Ph.D. Germanic Studies/Comparative Literature
Kelly Jeong, Ph.D. Korean Literature and Culture/Comparative Literature
Anthonia Kali, Ph.D. African Language and Culture/Comparative Literature
John N. Kim, Ph.D. Germanic Studies/Japanese/Comparative Literature
Mariam Beevi Lam, Ph.D. Vietnamese/Comparative Literature
Eugene Perry Link, Ph.D. Chinese Literature/Language and Culture
Hendrik M.J. Maier, Ph.D. Southeast Asian Literature/Comparative Literature
Lisa A. Raphals, Ph.D. Chinese/Comparative Literature
Marguerite Waller, Ph.D. Italian/Gender and Sexuality Studies
Yenna Wu, Ph.D. Chinese/Civilizations/Comparative Literature
Yang Ye, Ph.D. Chinese/Comparative Literature
Milagros Peña, Ph.D. Dean, College of Humanities, Arts, and Social Sciences, ex officio

The department offers the B.A. in Comparative Literature. Comparative Literature is an interdisciplinary field which is studied internationally. At UCR, the Comparative Literature curriculum is organized around a core staff of comparatists assisted by qualified faculty from other departments and programs. The discipline of Comparative Literature encourages study of interliterary relationships among various cultural traditions; on the
graduate level, it seeks to promote the study of interdisciplinary relationships. Comparative Literature courses, undergraduate or graduate, require that the majors read whenever possible in the languages (two for undergraduates, one of which may be English, and three for graduates) they present. Nonmajors may do all the readings in English translations. Comparative Literature majors may also work with translations.

Comparative Literature and World Literature courses are open to all students.

Languages and Literatures/Comparative Literature

1. Lower-division requirements (20 units plus proficiency)
   a) Proficiency in at least one language (besides English), ancient or modern, through the intermediate level (second year)
   b) CPLT 001 or CPLT 001W, CPLT 002
   c) CPLT 017A, CPLT 017B, CPLT 017C

2. Upper-division requirements (48 units)
   a) Sixteen (16) units in one literature, distributed as much as possible among courses representing the various literary periods
   b) Twelve (12) units in a second literature
   c) CPLT 110, CPLT 193, (CPLT 196 strongly recommended but not required)
   d) Twelve (12) elective units in Comparative Literature

Students contemplating graduate study in Comparative Literature are urged to complete two years in a second (non-English) language before graduation.

Graduate Programs

The Department of Comparative Literature and Languages grants graduate degrees based on the comparative studies of world literatures and cultures. The Ph.D. degree has three tracks: Interliterary Studies, Interdisciplinary Studies, and Science Fiction, Science, and Literature described below. The department faculty, well balanced among Asianists and Europeanists, share a strong commitment to the study of literature through comparative and interdisciplinary approaches. We have particular strengths in comparative Asian and European studies; comparative ancient studies; gender and feminist studies; global cultures and post-colonialism; film and visual culture studies; narrative and cultural translation; and science and science fiction.

Students are admitted into the Ph.D. program only. Entering students who do not already hold a master’s degree in Comparative Literature, in literature, or in comparable fields from another institution must complete M.A. requirements while pursuing the Ph.D.

Admission All applicants must supply GRE General Test (verbal, quantitative, analytical) scores.

S/N Courses No S/N-graded courses may be applied toward the minimum unit requirement for the graduate degree(s).

Note Courses in the student's special literature areas used to fulfill either the M.A. or Ph.D. literature requirements may be either graduate courses, or undergraduate courses together with a concurrent 292 course.

Language Requirement Students must have attained at least advanced language competency in their non-English areas of literary specialization. Competency is demonstrated by one of the following for each language required for a student's particular literary specializations:

1. Course Work A translation seminar with additional work in a specific national language/literature as required by the instructor.
2. Translation Examination A translation exercise from the foreign language into English with use of only a dictionary administered on campus and about two hours long. Period and genre should be discussed in advance with the examiner. The choice of examiner is approved by the graduate advisor.

Master's Degree

The Department of Comparative Literature and Languages requires the following for the M.A. degree in Comparative Literature.

All students must complete a minimum of 36 units of course work. Candidates must work in three of the following literatures, or two literatures for students in the interdisciplinary track: Chinese, English (either British or American), French, German, Classical Greek, Italian, Indonesian, Japanese, Latin, Portuguese, Russian, Spanish, and Vietnamese.

Requirements are as follows:
1. Two courses in canonical literature (CPLT 210)
2. Two courses in methods and theory (CPLT 214 and CPLT 215A)
3. One course from CPLT 212, CPLT 222, or CPLT 301
4. Two graduate courses in each of three literatures, or in each of two literatures and one interdisciplinary area
5. Three elective courses in Comparative Literature

Note Students must take at least one graduate course in each of the following four areas: European, Asian, Ancient, and Modern Literature.

After completing the course requirements, the student has two options:

a) Submit a portfolio of three essays, each one representing one of their three literary or interdisciplinary areas, and write a 750-1000 word commentary explaining the aims and achievements of the essays in relation to one another.

b) Write a comprehensive research paper (40-50 pages) that incorporates their three interliterary or interdisciplinary areas; this paper may develop topics of previous papers, or explore a new topic area.

The student then undergoes oral examination on the portfolio or the research paper. Following the examination, the graduate committee, after evaluation of the student's entire graduate record, determines the candidate's suitability for continuing in the Ph.D. program.

Doctoral Degree

The Department of Comparative Literature and Languages offers the Ph.D. degree in Comparative Literature with three tracks: Interliterary Studies, Interdisciplinary Studies, and Science Fiction, Science, and Literature. Areas of particular strength in the Interliterary Studies are comparative Asian and European studies; comparative ancient civilizations; gender and feminist studies; global cultures and post-colonialism; film and visual culture studies; narrative and cultural translation; and science and science fiction.

Interliterary Studies This program is designed for students wishing to concentrate in Comparative Literature as an interliterary discipline. Students examine the relation among various national literatures. They are expected to work in three of the following literatures: Chinese, English (either British or American), French, German, Classical Greek, Italian, Indonesian, Japanese, Latin, Portuguese, Russian, Spanish, and Vietnamese. Permission is granted in exceptional cases to work in other literatures related to the Germanic, Romance, or Slavic families, in Hebrew or Arabic literature, in other Asian Literatures, and the literatures of Africa.

Students must obtain comprehensive knowledge of their first literature (the major specialty), in its language, literary history, and critical scholarship. In their two other literatures, they specialize in a genre, a period, critical school or theoretical approach, always in combination with their main literature. Work in the three literatures must be done in the languages of these literatures.

Students entering the interliterary Ph.D. program with an M.A. in literature must take two courses from the canons (CPLT 210), CPLT 214, and CPLT 215A (or demonstrate having taken similar courses). Course requirements are two graduate courses in a first literature, two graduate courses in a second literature, two graduate courses in a third literature, and three additional elective graduate courses in Comparative Literature.

Note Students must take at least one graduate course in each of the following four areas: European, Asian, Ancient, and Modern Literature.

Students entering the interliterary Ph.D. program with an M.A. in another discipline must do course work equivalent to the M.A. degree in Comparative Literature while proceeding with course work for the Ph.D. program.
Interdisciplinary Studies This program is designed for students with interests in interdisciplinary studies. Students examine relationships between literary studies and other disciplines (such as art, ethnic studies, film, history, law, music, philosophy, political science, psychology, religious studies, science, sociology, theater). Students complete the literary requirements of the program but substitute an appropriate discipline for one of the second or third literatures. This option is recommended to students who enter Comparative Literature with an M.A. in a non-literary discipline.

Students entering the interdisciplinary studies Ph.D. program with an M.A. in any discipline must take two courses from the canons (CPLT 210), as well as CPLT 214 and CPLT 215A (or demonstrate having taken similar courses). In addition, course requirements are two graduate courses in each of two literatures; two courses in another discipline; and three elective graduate courses in Comparative Literature. The graduate advisor may require appropriate courses on an individual basis.

Note Students must take at least one graduate course in each of the following four areas: European, Asian, Ancient, and Modern Literature.

Science Fiction, Science, and Literature This option is designed for students with interests in science fiction studies and the relations of science to world literature. It builds upon the current widespread interest in Science Fiction and draws on the Eaton Collection. The program is intended for students who have already completed an undergraduate degree in Comparative Literature, English or kindred studies. It draws on the speculative richness of science fiction literature in a wide variety of social contexts, including the role of science in society (genetic engineering, artificial environments, nanotechnology, etc.), race and ethnicity, and social ethics. This track interacts with existing programs in the humanities, arts, social sciences and sciences. It is inherently cross-disciplinary both within the humanities, and between the humanities and sciences.

Students entering the Science Fiction, Science, and Literature Ph.D. program with an M.A. in any discipline must take courses from the following areas:

1. Three theory courses from among CPLT 214, CPLT 215A, and CPLT 210 (repeatable).
2. Three science, science fiction theory, literature and methods courses, including CPLT 272, CPLT 273, CPLT 274, CPLT 275.
3. One history of science course, (PHIL 237, PHIL 239, CHN/CLA 231, CHN/CLA 232, CPAC 134)
4. One course in Film and Media Studies (SOC 211, CPLT 174, CPLT 173, MCS 175, MCS 139, MCS 146)
5. One course in Philosophy or Religion from among either PHIL 234, PHIL 237, PHIL 238 and PHIL 239 -- or RLST 200A, RLST 200C, and RLST 224)
6. One course in Social Sciences (ANTH 261, ANTH 277, ANTH 279, CHN/CLA 141, SOC 247, SOC 261, SOC 281)
7. Three elective courses from any of the groups listed above.

Among all the various courses selected there must be at least one course on non-Western materials and two graduate literature courses with readings in the original language in each of the student’s two language areas. Language areas include: Arabic, Chinese, English, French, German, Classical Greek, Italian, Indonesian, Japanese, Latin, Filipino, Portuguese, Russian, Spanish, and Vietnamese. The graduate advisor may require appropriate courses on an individual basis.

When taking any upper-division undergraduate course listed here, the student must enroll in a 292 course.

Teaching Requirement Normally some teaching experience is required; such experience is obtained through a teaching assistantship whereby a student is assigned either to Comparative Literature or to another program. Students are strongly recommended to take one of the pedagogy courses in the department (CPLT 222 or CPLT 301) which may be used as one of their required elective courses.

Written and Oral Qualifying Examinations The written qualifying examination consists of the following:

1. For a student in the track of Interliterary Studies, the examination consists of four parts, which include the three national literatures that the student specializes in, with a comparative perspective, and on critical theory.
2. For a student in the track of Interdisciplinary Studies, the examination consists of four parts, which include two national literatures and one non-literary discipline that the student specializes in, with a comparative perspective, and on critical theory.

Prior to the examination for either track, students in consultation with the designated members of their committee, formulate a Special Reading List based on available departmental reading lists for each of the four parts that reflects the student’s chosen fields of study and research and provides a basis for the examination.

Each of the four parts of the written examination for either the Interliterary or the Interdisciplinary Track is a three-hour exam.

The written examinations are followed by an oral qualifying examination.

Dissertation and Final Oral Examination Candidates must write a dissertation on a topic approved by the dissertation committee and may be required to successfully undergo an oral examination on the dissertation.

Normative Time to Degree 18 quarters

Lower-Division Courses

CPLT 001 Introduction to Close Reading (4) Lecture, 3 hours; discussion, 1 hour. Teaches focused reading of works of literature and construction of compelling written arguments about texts. Explores methods of analyzing literature, framing relevant questions, and writing clear essays. Compares fiction and non-fiction, poetry and prose, narrator and author, and ancient and modern. Also covers basic critical concepts. Emphasizes non-English language traditions. Credit is awarded for only one of CPLT 001 or CPLT 001W.

CPLT 001W Introduction to Close Reading (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. Teaches focused reading of literature and construction of compelling written arguments. Compares fiction and non-fiction, poetry and prose, and narrator and author. Also covers basic critical concepts. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Credit is awarded for only one of CPLT 001 or CPLT 001W.

CPLT 002 Reading World Literature (4) Lecture, 3 hours; discussion, 1 hour. Teaches concepts of cross-cultural literacy. Explores how writers in different cultural, literary, and national traditions use literature to define the foreign, and perceive the world. Discusses what world literature has been and what it could be. Considers reading as a tool for approaching cultural difference. Emphasizes non-English language traditions.

CPLT 012 The Writer in Writing (4) Lecture, 3 hours; written work, 2 hours; outside research, 1 hour. Prerequisite(s): none. Targeted at the fledgling creative writer and apprentice literary critic, surveys the complex legacy surrounding the figure of the writer in world literature. Discussion and weekly writing exercises demonstrate the use of brainstorming in creating and critiquing literature. Cross-listed with CRWT 012.

CPLT 015 Language, Literature, and Culture (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): none. Introduces students to the connections between language, literature, and culture over the centuries and across national traditions through study of an array of literary forms and genres. Close reading of masterworks, selected to provide an overview of the fields of literary, linguistic, and cultural analysis.

CPLT 017A Masterworks of World Literature (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Explores selected great works of literature from around the world in historical and cultural contexts. Covers antiquity to the early Renaissance, emphasizing textual analysis.

CPLT 017B Masterworks of World Literature (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Explores selected great works of literature from around the world in historical and cultural contexts. Covers the early Renaissance to the Enlightenment, emphasizing textual analysis.

CPLT 017C Masterworks of World Literature (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Explores selected great works of literature from around the world in historical and cultural contexts. Covers the modern period, emphasizing critical methods and approaches to comparative literature.

CPLT 018 The Nature of Narrative (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): none. Examines the basic features of narrative (including plot, character, point of view, space relations) within various literary forms, such as the anecdote, story, tale, novella, and novel.

CPLT 021 Introduction to Film, Literature, and Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Surveys critical approaches to the cinematic as such and genre theory. Studies literature and film, national cinemas, and film movements. Cross-listed with MCS 021.

CPLT 022A Introduction to World Literature by Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduction to world literature by women across many centuries. Covers the creative work of women from ancient to early modern periods, examining both texts and the historical circumstances of the earliest women writers. Emphasizes texts
originally written in languages other than English from around the globe. Cross-listed with GSST 022A.

CPLT 022 Introduction to World Literature by Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces the increasingly powerful voices of women writers in modernity and postmodernity. Emphasizes texts originally written in languages other than English from around the globe. Topics include the question of feminine writing and feminist theories about literature by women. Cross-listed with GSST 022B.

CPLT 023 Modern Japan and Personal Narrative (4) Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Introduces major debates in history, politics, and culture through the genres of biography, autobiography, diary, and confession. Explores the parallel construction of the modern nation, the modern language, and the modern self. Traces the development of Japan’s “novel.” Builds skills in close reading by studying the rhetoric of self-narrative. Cross-listed with AST 023 and JPN 023.

CPLT 024 World Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Introduction to world cinema as a fusion of national and international, culturally specific, and globally universal characteristics. Topics include the role of Empire wars, Hollywood's global reach, alternative aesthetics of third-world cinemas, cross-fertilization between Europe and Asia, and the function of international film festivals and the international film market. Cross-listed with MCS 024.

CPLT 025 Introduction to Science Fiction (4) Lecture, 3 hours; outside research, 3 hours. Considers science fiction as an interface between today's scientific and humanistic disciplines. Utilizes books, films, and works of art to examine the interplay of these disciplines. Explores the perspective of science fiction on such themes as time, space, God, nature, mind, and the future.

CPLT 027 Food in Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Explores the representation of food, cooking, and restaurants in films from different national traditions. Includes gender roles; sensuality and sexuality; social class and the economics of food; excess and lack. Cross-listed with MCS 036.

CPLT 028 Justice, Law, Violence (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the concepts of justice, law, and violence through literary and philosophical texts. Raises fundamental questions of individual human existence within the social collective. Topics include natural right, freedom of will, sacrifice, revolution, gender, and power.

CPLT 029 The Arts: Approach, Comparison, and Culture (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introductory course on the arts, their meaning and interrelationship as well as their cultural contexts East and West. Stresses such approaches as: How do you understand a poem? What do you look for in a painting? What do you listen for in music? How do different cultural backgrounds help in appreciating a work of art?

CPLT 040 Literary Response to Disaster and Repression (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An examination of how literature (e.g., memoir, fiction, and poetry) can be utilized in the recovery from major disaster or repression. Examines examples from Asia, Africa, and Europe to address the issues of looking squarely, coming to terms, commemoration, and apology. Utilizes the third-quarter writing requirement for students who earn a grade of "C" or better for courses that the Academic Senate designates, and the student's college permits as alternatives to English 001C. Cross-listed with HIST 040W. Credit is awarded for only one of CPLT 040W/HIST 040 or CPLT 040W/HIST 040W.

CPLT 046 Representing the Holocaust in Words and Images (4) Lecture, 3 hours; screening, 3 hours. Introduces representations of the Holocaust in documentary and narrative film, literature, and painting. Explores notions such as memory, mourning, trauma, spectatorship, and atrocity to come to terms with different responses to the Holocaust. Topics include memorialization, stigmatization, the ethics of historical representation, and black humor. Cross-listed with GER 046.

CPLT 056 Cultures of the Japanese Empire (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Covers the social histories and literatures of the Japanese empire from the foundation of the Meiji state to the present. Includes the Ainu, Okinawan, Taiwanese, and Korean cultures. Explores the concepts of assimilation, citizenship, national language, nation-state, sovereignty, total war, and translation. Utilizes readings in English. Cross-listed with AST 056 and JPN 056.

CPLT 062 Introduction to Southeast Asian Literature (4) F, W, S Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to modern and contemporary Southeast Asian literature and culture, with a focus on individual national histories. Explores the relationship between aesthetics, politics, and academic scholarship. Readings are in translation; classes conducted in English. Course is repeatable as content changes to a maximum of 8 units. Cross-listed with AST 062 and SEAS 062.

CPLT 063 Reading Southeast Asian Stories (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to the modern short story in Southeast Asia with a focus on literariness and the act of reading. Readings are in translation; classes conducted in English. Course is repeatable as content changes to a maximum of 8 units. Cross-listed with AST 063 and SEAS 063. Maier.

CPLT 070 Introduction to African Literature (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): none. An introduction to African literature in English. Traces the history of African literary traditions from its oral beginnings to the early 2000s. Themes include colonialism across the continent, apartheid in South Africa, politics of post-independence, gender, African aesthetics, and diverse cultures on the continent.

Upper-Division Courses

CPLT 110 Literary Analysis and Criticism (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of different critical approaches to literature, through reading and discussion of literary texts and critical essays on those texts. Reading and discussions cover different genres and traditions as well as different critical approaches.

CPLT 111 Berlin Metropolis in Literature, Film, Music, and Art (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the metropolis Berlin as a gateway between the East and West. Explores topography of the city through film, art, music, and literary texts. Considers Berlin's dramatic transformation as a microcosm of Germany and Europe's troubled history in the twentieth century. Course conducted in English. Cross-listed with AHS 120, EUR 120, GER 111, and MCS 178.

CPLT 112 Mythology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of mythic traditions from several world cultures and religions viewed from a variety of theoretical perspectives. Includes material drawn from epics, religious texts, divine hymns, creation myths, heroic legends, and concepts of the afterlife as reflected in literary and nonliterary sources. Cross-listed with CLA 112 and RLST 117.

CPLT 114 The Classical Tradition (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the legacy of Greece and Rome in Western culture, from the Renaissance to the present. Topics include literature, art, architecture, and politics. Cross-listed with CLA 114.

CPLT 115 Modern German History through Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores twentieth-century German history through film. Includes World Wars I and II, inflation and polarization of classes, Nazi Germany, representations of the Holocaust, and a divided and reunited Germany. Cross-listed with GER 163, HSE 163, and MCS 115.

CPLT 118 The Alien as Other (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers the alien in science fiction studies as an image of both alterity ("Otherness") and a representation of what it means to be human. Topics include alien contact, societies and languages, and the deliberate modifications of both humans and aliens. Utilizes short stories, novels, and film.

CPLT 120 Autobiography (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the genre of literary autobiography and its visual equivalents (self-portraits and autobiographical film). An examination of narrative structure and point of view; the boundaries between fiction and nonfiction; and concepts such as masks, sexuality, memory, and biculturalism. Focus may change from year to year. Course is repeatable as topics change.

CPLT 121 Crossing Borders: Immigration, Migration, and Exile in Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Proposes an international look at the phenomenon of migration through film. Can be considered the foremost medium to do justice to this issue.

CPLT 123 Transnational Feminist Film and Media (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers contemporary women's and feminist film and media productions. Connects the forces of globalization and militarization with gender-related experiences of displacement, migration, immigration, diaspora, trafficking, and refugee status. Focuses on innovative uses of visual language signaling changes in notions of nation, identity, class, race, ethnicity, gender, and sexuality. Cross-listed with GSST 123.

CPLT 126 From Novel to Screen: Film Adaptations of German Literature (4) Lecture, 3 hours; screening, 2 hours; individual study, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to classic works of German literature and their film adaptations. Explores adaptations by film directors such as Welles, Kubrick, Visconti, and Fassbinder. Studies the nexus between literature, film, and theatre. Course conducted in English. Cross-listed with GER 126 and MCS 126.

CPLT 131 Marx, Nietzsche, Freud (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Critical introduction to three central thinkers of modernity. Topics include
alienation, free will, revolution, the unconscious, sexual difference, political power, and the modern conception of truth. Readings and discussions are in English. Selected readings are in German for German majors and minors. Cross-listed with GER 131.

CPLT 132 Rousseau and Revolution (4) Lecture, 4 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introductory study of the French philosopher and novelist Jean-Jacques Rousseau and the age of revolution in France, Germany, and England. Topics include social inequality, slavery, gender, subjectivity, violence, and political rights. All readings are in English. Cross-listed with FREN 132 and GER 132.

CPLT 134 Cinematic War Memory (4) Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines movies involving World War II in Germany and Japan. Topics include desire between victims and perpetrators, representation of trauma, and ethical responsibility. All screenings have English subtitles. Cross-listed with GER 134, JPN 134, and MCS 114.

CPLT 136 The Enlightenment and Its Consequences: Modern Europe in the Arts (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the basic ideas of modernity in Europe that are central to the history of western cultures and civilization. Focuses on the function of the arts and sciences in relation to the philosophy and condition of the Enlightenment. Addresses humankind's changing relationship to religion, state, society, and history, as well as new strategies of self-reflection. Cross-listed with GER 136.

CPLT 137 Passions, Apparitions, and Automata (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introductory study of German Romanticism from its origins in Goethe to its development in Hoffmann. Topics include madness, sexual desire, dualism, and <i>automatons</i>. All readings are in English; selected readings are in German for German majors and minors. Cross-listed with EUR 137 and GER 137.

CPLT 142 (E-Z) Women's Writing in Modern Asia and Asian America (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include colonialism, modernity, and gender (idiom, autobiography, translation, and subjectivity). Asian literature will be circulated in the original language to students with reading ability (not required). E. Chinese and Chinese American Writing; F. Japanese and Japanese American Writing; K. Korean and Korean American Writing; U. Vietnamese and Vietnamese American Writing. Cross-listed with GSST 142 (E-Z).

CPLT 143 France and Asia in Literature and the Arts (4) Lecture, 3 hours; screening, 20 hours per quarter; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores French portrayals of Asia in literature, cinema, the other arts, and popular culture. Topics include colonialism, orientalism, gender, race, and language. Cross-listed with FREN 143.

CPLT 144 Buddhist Literature (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Readings in canonical and non-canonical Buddhist texts. Includes Buddhist-influenced literature written by Asian, European, and American authors. Examines themes of emptiness, impermanence, and no-self. Cross-listed with AST 133 and RLST 144.

CPLT 145 Modern Japanese Thought (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of modern Japanese thought from a theoretical and intellectual historical perspective. Topics include philosophical discussions of modernization, “Westernization,” nationalism, colonialism and imperialism, “comfort women,” Japanese war crimes in continental Asia, the American bombing of Hiroshima and Nagasaki, post-World War II remembrance and denial. All readings are in English. Cross-listed with JPN 145.

CPLT 146 Comedy and Satire (4) Lecture, 4 hours; outside reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates the origins and historical development of contemporary Western culture’s two most popular genres. Although the focus is on literary texts ranging from Aristophanes to the present, the course also considers the many other cultural media through which the comic and the satiric find expression—among them, caricature drawing, photography, comic books, film, and television. Attention is given to debates about the related functions of irony, laughter, violence, and sexuality.

CPLT 147 (E-Z) The Novel (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Investigation of the novel as a preeminent register of cultural values and common literary themes derived from the various national literatures and literary epochs. Examines the novel form in terms of selected, related works by some of its greatest practitioners. E. The Existential Novel; F. The Carnivalesque.

CPLT 148 Short Narrative (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis and interpretation of short literary and historical moments from the linked perspectives of universal themes and shared literary concerns. The finest short prose, including the anecdote, short story, tale, and novella, by some of the world’s greatest writers is explored in depth.

CPLT 149 The Development of Classical Modern Drama (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Consists of readings, discussions, and lectures, treats plays and theories from the German, Scandinavian, Russian, and French repertoire among others. Covers Naturalism to Expressionism (1880-1918).

CPLT 151 Palestine/Algeria (4) Lecture, 3 hours; screening, 6 hours per quarter, extra reading, 24 hours per quarter. Prerequisite(s): upper-division standing or consent of instructor. Considers two diverse and related literary and historical moments: Palestine and Algeria. Topics include the relations between language and context; literature and literary historiography; genre and idiom; violence and the body, and the state and institutional practices of reading. Cross-listed with ARCL 151 and MEIS 151.

CPLT 152 Modern Arabic Poetry in a Multilingual Frame (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers selected writings of Adunis (‘Ali Ahmed Sa’ id), Mahmoud Darwish, Abdelatif La’abi, and Etel Adnan, published originally in Arabic, French, and English. Topics include language (idiom, statement, utterance, translation, rebellion, rhythm) and related issues of violence, mourning, inheritance, future, legacy. Course is taught in English. Cross-listed with ARCL 152.

CPLT 153 Literature, Language, Relation (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers the rapport among language, relation, and literature. Focuses on the relations among context and modes of address (the<cb> Qur’an</cb>, <i>Levina</i>, <i>Autor</i>, <i>Deronda</i>), the name and the posing force of language (Darwish, Plato, Nietzsche); and language, violence, and poetic statement (Ibn Arabi, Heidegger, Benjamin).

CPLT 154 Introduction to Arabic Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Arabic philosophical texts. Provides close and literary reading of texts in philosophy, as well as considers the impact these texts have had or can have on Western cultural formation. Cross-listed with ARLC 154 and PHIL 128.

CPLT 155 Introduction to Arabic Literature (4) Lecture, 4 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces to Arabic literature that focuses on language and rhetoric. Considers major issues such as colonialism, secularism, modernity, language, and the state. Utilizes texts from literature, the law, and philosophy. Cross-listed with ARCL 155, MEIS 155, and RLST 157.

CPLT 156 Jews and Arabs (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Traces the formation of the shared and divided history of the Jewish and Arab peoples. Focuses on the literary and institutional dimensions of this history, as well as the formation of related areas of study, such as religion, philosophy, literature, and psychoanalysis. Cross-listed with ARCL 156, MEIS 156, and RLST 156.

CPLT 158 Islam and Psychoanalysis (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores contemporary psychoanalytic readings of Islam to consider the relationship between Islam and Orientalism, Orientalism and psychoanalysis, and psychoanalysis and Islam. Cross-listed with ARCL 158, MEIS 158, and RLST 158.

CPLT 160 (E-Z) Comparative Cultural Studies: From the Middle Ages to Postmodernism (4) Lecture, 3 hours; extra reading, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores a significant cultural “event” whose implications (historical, political, literary) cross national and cultural boundaries. In order to present a diversity of national and linguistic views, segments are where feasible team taught. F. The French Revolution and Napoleon; G. The Holocaust; M. Millennium and Apocalypse.

CPLT 163 Nationalism and the Novel (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the novel and its role within nationalism as a representative summary or mirror of the nation. Cross-listed with AST 163 and SEAS 163.

CPLT 166 Vietnam and the Philippines (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the comparative national histories of Vietnam and the Philippines by way of great literary works in various genres including poetry, short fiction, and novels. All materials are read in English. Cross-listed with AST 166, SEAS 166, and VNM 166.

CPLT 167 Postcolonial Literature and Criticism in Southeast Asia and South Asia (4) Lecture, 4 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores how the theoretical concepts of postcolonial criticism inform and challenge the literatures of Southeast Asia and South Asia, as the literature itself pushes the limits of the criticism. Addresses themes of nation, identity, space, gender, home, diaspora, alterity, history, sexuality, transnationalism, neocolonialism, tourism, and education. Cross-listed with AST 167 and SEAS 167.

WRRLT 170 Third World Literature (4) Lecture, 4 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of some major works associated with Third World literature and film. Emphasis on African, Latin American, Caribbean, African-American, and Chicano literature. Cross-listed with ETST 170.

CPLT 173 (E-Z) International Cinemas (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor.
CPLT 174 (E-Z) Comparative Studies in Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers film in the context of the other arts. Compares the treatment of various themes or problems in film and other media. E. Film and Literature in the Avant-Garde. Cross-listed with MCS 173 (E-Z). 

CPLT 175 Women in African Literature (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines portrayals and discussions of women in African literature from pre-colonial to contemporary times. Focus on selected African writers’ presentations of women from pre-colonial to post-independence periods. Considers various perceptions of women in African life and experience. 

CPLT 178 Religious Biography (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical survey of the theories and methodologies involved in the comparative study of literature and nonliterary fields. E. Literature and History; I. Literature and Institutions; L. Pre-Romanesque in Literature; M. Literature and Music; N. Literature and Psychology; S. Literature and Science; U. Literature and the Visual Arts; X. Literature and Marxism; Z. Literature and Fiction/Fantasy. 

CPLT 180 (E-Z) Literature and Related Fields (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the construction and continuing appropriation of biographical images (textual and visual narratives) in selected religious traditions. Special attention is given to problems of intertextuality and the medium of presentation in the communication of “religious” meaning. Cross-listed with RLST 178. 

CPLT 184 (E-Z) Legalities of Literature (4) Lecture, 3 hours; screening, 2 hours; research, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the study of legalities (e.g., law, crime, punishment, rights, justice, etc.) in literature, film, and other art forms. Topics include crime, punishment, law, and violence in literature, film, and television. Cross-listed with FREN 146 and MCM 181. 

CPLT 187 Metaphor (4) Lecture, 3 hours; creative writing, take-home midterm, or term paper, 30 hours per quarter. Prerequisite(s): upper-division standing or consent of instructor. Covers postmodernism, metaphor, and the representation of ideas in writing. Creative writers submit fiction in lieu of a term paper or midterm. Cross-listed with CRWT 187.

CPLT 195H Senior Thesis (1-2) Open by invitation to students in the Honors Program in Comparative Literature. Grade is deferred until the end of the second or third quarter. To be taken for two or three consecutive quarters; total credit may not exceed 6 units.

CPLT 196 Senior Research Paper (2) Consultation, 1 hour; term paper, 3 hours. Prerequisite(s): CPLT 193. A combination of the research project begun in CPLT 193. Conducted under supervision of a faculty advisor in the applicable field of study. Satisfactory (S) or No Credit (NC) grading is not available. 

Graduate Courses 

CPLT 200 Topics in Southeast Asian Studies (4) Seminar, 3 hours; written work, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. An introduction to the world of Southeast Asia and the scholarly discussions about it, with an emphasis on cultural aspects, embedded in their historical context. Materials are in English. Course is repeatable as content changes to a maximum of 12 units. Cross-listed with ANTH 202 and SEAS 200. 

CPLT 205 Literature of Southeast Asia (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores themes and theories related to understanding literature and literary culture in Southeast Asia, insisting that the spirit of literature reaches beyond the text to include all disciplines. Students read, engage in, and question discourses of nationhood, identity, loss, mourning, history, and memory. Course is repeatable as content changes to a maximum of 12 units. Cross-listed with SEAS 205. 

CPLT 210 Canons in Comparative Literature (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Studies the concept of the canon and literary texts included in and excluded from it. Considers the distinction between “mainstream” and “marginal” works. Examines how the canon of texts changes over time. Course is repeatable as topics change. 

CPLT 212 Introduction to Graduate Studies in Comparative Literature (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing. Surveys the history of comparative literature and introduces the beginning graduate student to the various methodologies, aesthetic theories, and critical approaches which have come to dominate its field of inquiry. In addition to class discussion, examinations, and a term paper, students are also involved in a number of practical activities designed to sharpen their critical acumen, enlarge academic vocabulary, and encourage mastery of scholarship procedures. 

CPLT 213 Rhetoric and Argument in Ancient China and Greece (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A study of theories and practices of rhetoric, argument, persuasion, and, in some cases, poetic form and literary theory (texts dating from the fifth to the third centuries B.C.), as well as some of their implications for contemporary theory and practice. Students who submit a seminar paper receive a letter grade; other students receive a Satisfactory (S) or Credit (C) grade. This course may also be taken on a Satisfactory (S) or No Credit (NC) basis by students advanced to candidacy for the Ph.D. Cross-listed with POSC 213. 

CPLT 215A Critical Theory (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing. Considers critical theories and movements in contemporary theory. Includes the study of formalism, structuralism, semiotics, psychoanalytic and feminist theory, and deconstruction. 

CPLT 215B Issues in Contemporary Theory (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing. Focuses on a specific problem or movement in contemporary theory. Course is repeatable as content changes. 

CPLT 219 Dante and Italian Cinema (4) Seminar, 3 hours; screening, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the poetic goals and strategies of each of the three sections of Dante’s <I>cantiche</I> in contemporary theory. Course is repeatable as topics change. 

CPLT 220 Eastern European Literature (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the development of narrative from the pre-Holocaust period to the present. Topics include individual figures in the history of German aesthetic theory and their legacy in critical discourse. Topics include philhellenism, the beautiful, the sublime, the ugly, fascist chic, mimesis, ornament, the “thing,” mechanical reproduction, synesthesia, and technomedia. All readings are in English. E. Kant; F. Benjamin. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Each segment is repeatable as its topics change. 

CPLT 221 Film and Literature (4) Seminar, 3 hours; extra reading, 4 hours; outside research, 2 hours; screening, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores relationships between film and literature, including adaptation, remakes, translation, novelizations; and literary films as well as cinematic literature. Studies world film and the concepts of national and transnational cinema. Readings include fiction, emphasizing concepts such as narrative framing, intertextuality and genre, and complementary critical and theoretical works. 

CPLT 222 Problems in the Pedagogy of Comparative Literature (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing. Addresses the theories of literary pedagogy and emerging discussions about the teaching of comparative literature. 

CPLT 223 Topics in East Asian Literature and Film (4) Seminar, 3 hours; extra reading, 2 hours; outside research, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores East Asian literatures and cinema through critical theory and film studies. Major concepts include colonialism, postcoloniality, Cold War, gender ideology, cultural imperialism, interiority and surface. Focuses on texts that specifically discuss East Asian context and material. Film viewing is required. Taught in English. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as topics change to a maximum of 12 units. 

CPLT 224 Film Theory (4) Seminar, 3 hours; screening, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced introduction to classic texts of early and contemporary film theory. Discusses theoretical claims of relevant films. Major concepts include realist film theory, cinema of attractions, apparatus theory, theory of film practice, feminist film theory, and notions of gender, race, and class. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.
CPLT 243 France and Asia: Orientalism and Beyond (4)
Seminar, 3 hours; screening, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the phenomenon and concept of Orientalism as well as alternative paradigms for East-West aesthetic and cultural relations through theory, literature, and film. Geographical areas and periods of focus may vary. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CPLT 252 Topics in Tourism, Cultural Authenticity, and the Question of Nostalgia (4)
Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces theoretical literature concerning the intertwined notions of tourism, cultural authenticity, and nostalgia. Encourages students to approach written texts and other media from a critical perspective, considering the context of both cultural production and audience. Also valuable to those working on issues such as orientalism, modernity, study, diasporic literature, and postcolonial literature. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes.

CPLT 261 European Modernities (4)
Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. Examines theoretical issues of late nineteenth- and twentieth-century modernities. Utilizes literature, art, and popular images from France, England, Austria, and Russia. Addresses aesthetic, consumption, mass culture, fashion, melodrama, technology, psychology, and nihilism. Works by Baudelaire, Zola, Braddon, Boucicaut, Turgenev, Manet, Degas, Daumier, and Klimt. Course is repeatable as content changes to a maximum of 12 units.

CPLT 267 Colonialisms and Postcolonial Criticism (4)
Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers the historical development of postcolonial criticism and how its theoretical concepts inform and challenge the study of literature and culture. Addresses themes of nation, identity, space, gender, home, diaspora, alterity, history, sexuality, transnationalism, neocolonialism, domestic colonialism, tourism, and education. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes.

CPLT 270 Modern African Literature (4)
Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines literary portrayals of colonialism, post-colonialism and independence and their impact on understandings about space, women, gender, individual and communal consciousness, development and national identities in African experience. Includes post-colonial and African feminist thought.

CPLT 272 The Origins and Promise of Science Fiction (4)
Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Studies the literary, scientific, and social origins of the science fiction genre and how it generates new themes, narrative structures, and perspectives on the human condition.

CPLT 273 Genre and Method in Science Fiction Studies (4)
Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the critical debate within the field of science fiction and to some of the early and fundamental concepts of what science fiction is and what it does. Examines the development of science fiction from its origins through its influence on critical theory in twentieth- and twenty-first century texts.

CPLT 275 Science Fiction Authors (4)
Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the work of one of the prominent authors of science fiction and the reception of that work in either the initial formation or later development of the genre. Course is repeatable as content changes to a maximum of 12 units.

CPLT 276 Science Meets the Fiction (4)
Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines how changing scientific views of the world impact the science fiction genre. Studies the evolution of travel narratives and the historical novel into new adaptations of scientific visions of space and time. More broadly, examines how the genre reflects changing social and scientific contexts.

CPLT 277 Seminar in Comparative Literature (4)
Seminar, 3 hours; consultation, 1 hour. Special topics in comparative literature. Subject may vary from quarter to quarter depending on instructor. Course may be given by visiting faculty. May be repeated.

CPLT 284 Literature, Colonialism, and Religion (4)
Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to debates on secularism and religion in Europe. Examines how these debates may illuminate perspectives on literary studies and colonialism.

CPLT 290 Directed Studies (1-6)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CPLT 291 Individual Studies in Coordinated Areas (1-6)
Research, 6 hours. Prerequisite(s): consent of instructor; concurrent enrollment in CPLT 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the CPLT 100-series course. May be repeated with different topic.

CPLT 292 Concurrent Analytical Studies (2)
Research, 6 hours. Prerequisite(s): consent of instructor; concurrent enrollment in a 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the CPLT 100-series course. May be repeated with different topic.

CPLT 293 (E-Z) Research Topics in Comparative Literature & Foreign Languages (1-6)
Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Provides a means of meeting special curricular needs in literature. Topics include E. English, F. French, G. German, H. Greek, I. Italian, J. Japanese, K. Korean, L. Latin, M. Malay, N. Chinese, O. Vietnamese, P. Filipino, Q. Indonesian, R. Russian, S. Spanish, T. Arabic, U. Comparative Literature. Segments are repeatable.

CPLT 299 Research for Thesis or Dissertation (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

CPLT 301 Teaching of Foreign Language at the College Level (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Provides a means of meeting special curricular needs in literature. Topics include E. English, F. French, G. German, H. Greek, I. Italian, J. Japanese, K. Korean, L. Latin, M. Malay, N. Chinese, O. Vietnamese, P. Filipino, Q. Indonesian, R. Russian, S. Spanish, T. Arabic, U. Comparative Literature. Segments are repeatable.

CPLT 302 Teaching Practicum (1-4)
Practicum, 3-12 hours. Prerequisite(s): CPLT 301 or equivalent; graduate standing; employment as a teaching assistant or associate in. Supervised teaching in lower-division courses. Required of all teaching assistants in Comparative Literature. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Comparative Literature and Languages / 178

Literatures/Arabic Minor

This minor introduces the field of Arabic studies, and offers training in the Arabic language and in the close reading of texts—including poetry, literature, philosophy, theoretical writings, essays, and film—with attention to problems of translation, the history of disciplines, and the formation of institutions. It teaches students to read cultural objects, practices, texts, and institutions as active sites of translation, negotiation, contestation, and invention.

Minor Requirements

1. Lower Division Requirements (language proficiency)
   a) ARBC 001, 002, 003, and 004

2. Upper Division Requirements (16 units)
   a) Twelve upper-division units in Arabic Literature and Culture from ARLC 120, ARLC 151/CPLT 151/MEIS 151, ARLC 152/CPLT 152, ARLC 154/CPLT 154/PHIL 128, ARLC 155/CPLT 155/MEIS 155/RLST 157, ARLC 156/CPLT 156/MEIS 156/RLST 156, ARLC 158/CPLT 158/MEIS 158/RLST 158, and any other related courses chosen in consultation with the student's faculty advisor.
   b) Four upper-division units from CPLT 110 or a related upper-division course

Arabic Language

Foreign Language Placement Examination A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course cannot take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

ARBC 001 Elementary Arabic (4)
Lecture, 4 hours. Prerequisite(s): Student must take the Arabic placement examination. An introduction to modern standard Arabic. Focuses on the development of the four language skills: listening, speaking, reading, and writing. Also explores aspects of Arabic cultures. Classes conducted primarily in Arabic.

ARBC 002 Elementary Arabic (4)
Lecture, 4 hours. Prerequisite(s): ARBC 001 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Arabic placement examination as determined by the department faculty. An introduction to modern standard Arabic. Focuses on the development of the four language skills: listening, speaking, reading, and writing. Also explores aspects of Arabic cultures. Classes conducted primarily in Arabic.

ARBC 003 Elementary Arabic (4)
Lecture, 4 hours. Prerequisite(s): ARBC 002 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Arabic placement examination as determined by the department faculty. An introduction to modern standard Arabic. Focuses on the development of the four language skills: listening, speaking, reading,
and writing. Also explores aspects of Arabic cultures. Classes conducted primarily in Arabic.

ARBC 004 Intermediate Arabic (4) Lecture, 4 hours. Prerequisite(s): ARBC 003 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Arabic placement examination as determined by the department faculty. An introduction to intermediate modern standard Arabic. Builds upon current knowledge levels of grammar and vocabulary to gain greater fluency and accuracy in listening, speaking, reading, and writing. Classes conducted in Arabic.

ARBC 005 Intermediate Arabic (4) Lecture, 4 hours. Prerequisite(s): ARBC 004 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Arabic placement examination as determined by the department faculty. An introduction to intermediate modern standard Arabic. Builds upon current knowledge levels of grammar and vocabulary to gain greater fluency and accuracy in listening, speaking, reading, and writing. Classes conducted in Arabic.

ARBC 006 Intermediate Arabic (4) Lecture, 4 hours. Prerequisite(s): ARBC 005 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Arabic placement examination as determined by the department faculty. An introduction to intermediate modern standard Arabic. Builds upon current knowledge levels of grammar and vocabulary to gain greater fluency and accuracy in listening, speaking, reading, and writing. Classes conducted in Arabic.

Upper-Division Courses

ARBC 101A Advanced Arabic (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ARBC 006 or equivalent. An introduction to advanced modern standard Arabic. Builds upon knowledge of grammar and vocabulary to gain greater fluency and accuracy in listening, speaking, reading, and writing. Class conducted in Arabic.

ARBC 101B Advanced Arabic (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ARBC 101A or equivalent. An introduction to advanced modern standard Arabic. Builds upon knowledge of grammar and vocabulary to gain greater fluency and accuracy in listening, speaking, reading, and writing. Class conducted in Arabic.

ARBC 101C Advanced Arabic (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ARBC 101B or equivalent. An introduction to advanced modern standard Arabic. Builds upon knowledge of grammar and vocabulary to gain greater fluency and accuracy in listening, speaking, reading, and writing. Class conducted in Arabic.

ARBC 105 Media Arabic (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ARBC 006 or consent of instructor. Develops listening, speaking, reading, and writing skills through a focus on the language in newspapers, the news, and other forms of media in the Arabic language.

ARBC 110 Advanced Readings in Arabic (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ARBC 006 or consent of instructor. Advanced seminar in the reading of Arabic texts. Focuses on improving students’ reading skills while reviewing and deepening knowledge of Arabic grammar and vocabulary. Course is repeatable as content changes up to a maximum of 12 units.

Arabic Literatures and Cultures

Upper-Division Courses

ARLC 120 Classical Arabic Literary Prose (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores aspects of classical Arabic literary prose. Includes the modes of quotation, citation, falsification, fabrication, and forgery. Focuses upon selected writings of al-Haradhali, al-Jahiz, al-Ma‘arri, Ibn Tufayl, and Ibn Hazm.

ARLC 151 Palestine/Algeria (4) Lecture, 3 hours; screening, 6 hours per quarter; extra reading, 24 hours per quarter. Prerequisite(s): upper-division standing or consent of instructor. Considers selected writings of Adunis (‘Ali Ahmed Sa‘id), Mahmoud Darwish, Abdelatif La‘abi, and Etel Adnan, published originally in Arabic, French, and English. Topics include language (idiom, statement, utterance, translation, repetition, rhythm) and history (loss, violence, mourning, inheritance, future, legacy). Course is taught in English. Cross-listed with CPLT 151 and MEIS 151.

ARLC 152 Modern Arabic Poetry in a Multilingual Frame (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Arabic philosophical texts. Provides close and literary reading of texts in philosophy, as well as considers the impact these texts have had or can have on Western cultural formation. Cross-listed with CPLT 152.

ARLC 154 Introduction to Arabic Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Arabic philosophical texts. Provides close and literary reading of texts in philosophy, as well as considers the impact these texts have had or can have on Western cultural formation. Cross-listed with CPLT 154 and PHIL 128.

ARLC 155 Introduction to Arabic Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Arabic literature that focuses on language and rhetoric. Considers major issues such as colonialism, secularism, modernity, language, and the state. Utilizes texts from literature, the law, and philosophy. Cross-listed with CPLT 155, MEIS 155, and RSST 157.

ARLC 156 Jews and Arabs (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Traces the formation of the shared and divided history of the Jewish and Arab peoples. Focuses on the literary and historical dimensions of this history, as well as the formation of related areas of study, such as religion, philosophy, literature, and psychoanalysis. Cross-listed with CPLT 156, MEIS 156, and RSST 156.

ARLC 158 Islam and Psychoanalysis (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores contemporary psychoanalytic readings of Islam to consider the relationship between Islam and Orientalism, Orientalism and psychoanalysis, and psychoanalysis and Islam. Cross-listed with CPLT 158, MEIS 158, and RSST 158.

Languages and Literatures / Southeast Asian Minor

The Southeast Asian minor provides students with the opportunity to enhance their knowledge of Southeast Asian languages, cultures, and literatures.

1. Lower-division requirements (8 units plus language proficiency)
   a) Proficiency in one of the Southeast Asian languages (Vietnamese/Indonesian/

Tagalog) through the first-year level
   b) Eight (8) units from lower-division lecture courses on Southeast Asian literature and culture: AST 062/CPLT 062/SEAS 062,
   AST 063/CPLT 063/SEAS 063, AST 064/
   MCS 049/SEAS 064/VNM 064, AST 065/
   SEAS 065

2. Upper-division requirements (16 units)
   Sixteen (16) units in Southeast Asian literature and culture from CPLT 142/
   WMST 142, AST 161/SEAS 161, AST 162/
   HIST 187/VNM 162, AST 163/CPLT 163/
   SEAS 163, AST 165 (E-Z)/SEAS 165 (E-Z)/
   VNM 165 (E-Z)/WMST 165(E-2), AST 166/
   CPLT 166/SEAS 166/VNM 166, AST 167/
   CPLT 167/SEAS 167, AST 168/MUS 168/
   SEAS 168, or graduate courses in Southeast Asian literature and culture (with consent of instructor) such as CPLT 200/SEAS 200 and
   CPLT 205/SEAS 205

Chinese Courses

For the list of courses offered in Chinese, please see the Languages and Literatures/Chinese major section.

Filipino Courses

Foreign Language Placement Examination

A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors.

No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

FIL 1 First-Year Filipino (4) Lecture, 4 hours. Prerequisite(s): Student must take the Filipino placement examination. An introduction to the sound system and grammar of Filipino. Emphasizes reading, writing, understanding, and speaking. Conducted in Filipino whenever possible.

FIL 2 First-Year Filipino (4) Lecture, 4 hours. Prerequisite(s): FIL 001 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Filipino placement examination as determined by the department faculty. An introduction to the sound system and grammar of Filipino. Emphasizes reading, writing, understanding, and speaking. Conducted in Filipino whenever possible.

FIL 3 First-Year Filipino (4) Lecture, 4 hours. Prerequisite(s): FIL 002 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Filipino placement examination as determined by the department faculty. An introduction to the sound system and grammar of Filipino. Emphasizes reading, writing, understanding, and speaking. Conducted in Filipino whenever possible.

FIL 4 Second-Year Filipino (4) Lecture, 4 hours. Prerequisite(s): FIL 003 with a grade of “C-” or better or equivalent or a sufficiently high test score on the Filipino placement examination as determined by the department faculty. Emphasizes further development of the four language skills: reading, writing, understanding, and speaking. Conducted primarily in Filipino.
Japanese Courses
For the list of courses offered in Japanese, please see the Languages and Literatures/ Japanese major section.

Southeast Asian Studies Courses
For the list of courses offered in Southeast Asian Studies please see the Southeast Asian Studies Graduate Program section.

Vietnamese Courses

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time.
Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses
VNM 001 Elementary Vietnamese (4) Lecture, 4 hours. Prerequisite(s): Student must take the Vietnamese placement examination. An introduction to the sound system and grammar of Vietnamese. Focuses on the development of the four skills: comprehension, speaking, reading, and writing. Classes are conducted in Vietnamese as often as possible. Credit is awarded for only one of the following sequences: VNM 001, VNM 002, and VNM 003; VNM 020A and VNM 020B.

VNM 002 Elementary Vietnamese (4) Lecture, 4 hours. Prerequisite(s): VNM 001 with a grade of "C-" or better or equivalent or a sufficiently high test score on the Vietnamese placement examination as determined by the department faculty. An introduction to the sound system and grammar of Vietnamese. Focuses on the development of the four skills: comprehension, speaking, reading, and writing. Classes are conducted in Vietnamese as often as possible. Credit is awarded for only one of the following sequences: VNM 001, VNM 002, and VNM 003; VNM 020A and VNM 020B.

VNM 003 Elementary Vietnamese (4) Lecture, 4 hours. Prerequisite(s): VNM 002 with a grade of "C-" or better or equivalent or a sufficiently high test score on the Vietnamese placement examination as determined by the department faculty. An introduction to the sound system and grammar of Vietnamese. Focuses on the development of the four skills: comprehension, speaking, reading, and writing. Classes are conducted in Vietnamese as often as possible. Credit is awarded for only one of the following sequences: VNM 001, VNM 002, and VNM 003; VNM 020A and VNM 020B.

VNM 004 Intermediate Vietnamese (4) Lecture, 4 hours. Prerequisite(s): VNM 003 with a grade of "C-" or better or equivalent or a sufficiently high test score on the Vietnamese placement examination as determined by the department faculty. Focuses on the development of the four skills: comprehension, speaking, reading, and writing. Classes are conducted in Vietnamese as often as possible. Credit is awarded for only one of the following sequences: VNM 001, VNM 002, and VNM 003; VNM 020A and VNM 020B.

VNM 020A Beginning Vietnamese for Advanced Heritage Learners (4) Lecture, 4 hours. Prerequisite(s): Applicant must take the Vietnamese placement examination. Structured for the heritage student at the beginning level who has advanced comprehension and some speaking skills. Focuses on developing language skills and improving existing reading and writing skills. Credit is awarded for only one of the following sequences: VNM 001, VNM 002, and VNM 003; VNM 020A and VNM 020B.

VNM 020B Beginning Vietnamese for Advanced Heritage Learners (4) Lecture, 4 hours. Prerequisite(s): VNM 020A with a grade of "C-" or better or equivalent or a sufficiently high test score on the Vietnamese placement examination as determined by the department faculty. An introduction to Vietnamese required. Readings are in translation or bilingual editions. Classes are conducted in English. Credit is awarded for only one of the following: VNM 001, VNM 002, and VNM 003; VNM 020A and VNM 020B.

VNM 064 Introduction to Vietnamese and Diasporic Film Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Engages in critical viewing strategies and analytical visual critique. Explores the revival of film production in Vietnam following the Vietnam War, with a focus on the means of production, state control, and international distribution. Readings are in translation; classes conducted in English. Cross-listed with AST 064, MICS 049, and SEAS 064.

Upper-Division Courses
VNM 101 Advanced Vietnamese (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): VNM 005 or equivalent or a sufficiently high test score on the Vietnamese placement examination as determined by the department faculty or consent of instructor. Designed to develop written work to the level of intellectual conversation. Emphasis is on reading and writing of Vietnamese literature and criticism, visual culture, and discussion of current issues of Vietnamese society.

VNM 162 Vietnamese Literary History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing. A historical analysis of Vietnamese literature from its oral tradition to contemporary fiction. Focuses on the implications of the nation-state and the subsequent struggles with the Chinese, French, Japanese, and Americans. No knowledge of Vietnamese required. Readings are in translation or bilingual editions. Classes are conducted in English. Cross-listed with VNM 162, HIST 187, and SEAS 162.

VNM 164 Vietnamese American Culture (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of Vietnamese American culture. Includes shared histories, acculturation patterns, class diversity, identity struggles, community-building literary and cultural production, youth issues, and cultural survival. Also introduces foundational literature, visual culture, and scholarship in the field. Cross-listed with AST 164 and SEAS 164.

VNM 165 (E-Z) Themes in Vietnamese Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of Vietnamese literature in translation as seen through the lens of a particular theme or issue. Focuses on the implications of gender and sexuality on nation formation. All materials are read or viewed in English. Women and War. Cross-listed with AST 165 (E-Z), GSST 165 (E-Z), and SEAS 165 (E-Z).

Comparative Literature and Languages / 180
VNM 166 Vietnam and the Philippines (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1989) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticolonial movements; periods of French and American military involvement up to 1975; the post-bao moi period; and the post-<I>doi moi period. Cross-listed with AST 166, CLPT 166, and SEAS 166.

VNM 184 The Vietnam Wars (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1989) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticolonial movements; periods of French and American military involvement up to 1975; the post-bao moi period; and the post-<I>doi moi period. Cross-listed with AST 184S, HIST 184S, and SEAS 184S. Credit is awarded for only one of the following: AST 180/HIST 184/SEAS 184/ VNM 184 or AST 180S/HIST 184S/SEAS 184S/VNM 184S.

VNM 184S The Vietnam Wars (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1989) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticolonial movements; periods of French and American military involvement up to 1975; the post-bao moi period; and the post-<I>doi moi period. Cross-listed with AST 180S, HIST 184S, and SEAS 184S. Credit is awarded for only one of the following: AST 180/HIST 184/SEAS 184/VNM 184 or AST 180S/HIST 184S/SEAS 184S/VNM 184S.

VNM 189 Encountering Vietnam (5) Lecture, 6 hours; tutorial, 6 hours; project, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on literary and historical accounts of Vietnam. Utilizes translated travel writings from different genres and eras. Proficiency in Vietnamese not required. Taught in Vietnamese and offered only in summer. Cross-listed with AST 189, HIST 189, and SEAS 189.

Civilization
Committee in Charge
Jeffrey Sacks, Ph.D. Arabic Literature/Comparative Literature
Niccolletta Tinazzi Mehrmand, Ph.D. Italian
Yang Ye, Ph.D. Chinese/Civilizations/Comparative Literature
Milagros Peña Ph.D. Dean, College of Humanities, Arts, and Social Sciences, ex officio

Lower-Division Courses
EUR 042 Italian Americans; Voices and Visions (4) Lecture, 1.5 hours; discussion, 1.5 hours; screening, 2 hours; written work, 1 hour. Prerequisite(s): none. A study of the Italian American experience as seen through major works of Italian and Italian American writers and filmmakers. Covers the 1950s to the present. No knowledge of Italian required. Cross-listed with ITAL 042.

EUR 044 Mafia and Malavita in Italian Literature and Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. A study of the history of malavita in the Italian peninsula. Explores topics from mischievous transgression to organized crime and Mafia, as presented through the works of renowned Italian writers and directors. No knowledge of Italian required. Cross-listed with ITAL 044.

EUR 047 Introduction to Russian Culture (4) Lecture, 3 hours; consultation, 1 hour. A multimedia introduction to Russian culture. Emphasis on Russian masterpiec-
Upper-Division Courses

EUR 111A Survey of Russian Civilization (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers pre-twentieth century Russian music, architecture, and art. Any course within the EUR 111A, EUR 111B, and EUR 111C sequence may be taken independently. No knowledge of Russian is necessary.

EUR 111B Survey of Russian Civilization (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers Russian symbolism and the Great Emigration. Any course within the EUR 111A, EUR 111B, and EUR 111C sequence may be taken independently. No knowledge of Russian is necessary.

EUR 111C Survey of Russian Civilization (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers Soviet culture. Any course within the EUR 111A, EUR 111B, and EUR 111C sequence may be taken independently. No knowledge of Russian is necessary.

EUR 115 (E-Z) French Studies (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Varying topics relating to the literature, thought, and culture of France. Possible topics might include: the Paris mystique, French literary existentialism, individualism in the Renaissance. F: Paris; M: Medieval Women in France. No knowledge of French is necessary.

EUR 119 (E-Z) Topics in Italian Culture (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. In-depth study of major topics in Italian institutions, society, and culture. E: Contemporary Italy; M: Making of Italian Arts; R: Risorgimento: Birth of the Italian Nation; U: Italian Urban Culture. No knowledge of Italian is required.

EUR 120 Berlin Metropolis in Literature, Film, Music, and Art (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the metropolis Berlin as a gateway between the East and West. Explores topography of the city through film, art, music, and literary texts. Considers Berlin's dramatic transformations as a microcosm of Germany and Europe's troubled history in the twentieth century. Course conducted in English. Cross-listed with AHS 120; CPLT 111, GER 111, and MCS 178.

EUR 124 Nordic Mythology, Folklore, and Fairtales (4) Seminar, 3 hours; extra reading, 1 hour; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the representation of animals, plants, and other appearances of the natural world such as sunrise and sunset in European creation and destruction mythology, fairtales, and folklore. Cross-listed with GER 124.

EUR 137 Passions, Apparitions, and Automata (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introductory study of German Romanticism from its origins in Goethe to its development in Hoffmann. Topics include madness, sexual desire, doppelganger, homicide, and <a-automata>. All readings are in English; selected readings are in German for German majors and minors. Cross-listed with CPLT 137 and GER 137.

EUR 192 Workshop in European Languages (1) Workshop, 1 hour. Prerequisite(s): concurrent enrollment in an upper-division course in European literature or culture that is taught in English. Taken in conjunction with an upper-division course in European literature or culture, provides discussion and alternative assignments in the language of the student's emphasis. Course is repeatable to a maximum of 6 units.

Languages and Literatures/Italian Studies

Subject abbreviation: ITAL

College of Humanities, Arts, and Social Sciences

Jeffrey Sacks, Ph.D., Chair
Committee in Charge: Marguerite Waller, Acting Chair (Gender and Sexuality Studies); Erith Jaffe-Berg (Theater); Jeanette Koh (Art History); Sherri Johnson (Religious Studies); Melissa Conway (Rivera Library, non-voting); Nicoletta Tinozzi-Mehrmand, non-voting; Milagros Peña Ph.D.

Dean, College of Humanities, Arts, and Social Sciences, ex officio

Students are encouraged to consider opportunities for study through the Education Abroad Program (EAP). This is an excellent opportunity to become deeply familiar with another country and its culture while earning academic units towards graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Minor

The Italian Studies minor offers students the opportunity to attain an advanced level of proficiency in Italian language while taking a number of discipline-based courses that concentrate on Italian themes. The minor complements liberal arts degrees in many aspects of Western or European studies, including art history, history, philosophy, political science, and religious studies.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog.

Requirements for the minor consist of 24 units, distributed as follows:

1. Twelve (12) units of ITAL 101A and ITAL 101B and ITAL 101C
2. Eight (8) units of upper-division courses in Italian literature, film and/or culture offered by the Department of Comparative Literature and Languages.
3. Four (4) units of upper-division courses in Italian art history, history, film, theatre, or another related discipline offered by other departments and approved by the student's advisor.

Lower-Division Courses

ITAL 001 Elementary Italian (4) Lecture, 4 hours. Prerequisite(s): none. An introduction to the sound system and grammar of Italian focusing on the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Italian insofar as possible. Audio-lingual and media-based learning materials available in the Media Library. Credit is awarded for only one of the following sequences: ITAL 001, ITAL 002, and ITAL 003; ITAL 020A and ITAL 020B.

ITAL 002 Elementary Italian (4) Lecture, 4 hours. Prerequisite(s): ITAL 001 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Italian focusing on the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Italian insofar as possible. Audio-lingual and media-based learning materials available in the Media Library. Credit is awarded for only one of the following sequences: ITAL 001, ITAL 002, ITAL 003, ITAL 020A and ITAL 020B.

ITAL 003 Elementary Italian (4) Lecture, 4 hours. Prerequisite(s): ITAL 002 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Italian focusing on the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Italian insofar as possible. Audio-lingual and media-based learning materials available in the Media Library. Credit is awarded for only one of the following sequences: ITAL 001, ITAL 002, ITAL 003, ITAL 020A and ITAL 020B.

ITAL 004 Intermediate Italian (4) Lecture, 4 hours. Prerequisite(s): ITAL 003 or ITAL 020B with a grade of “C-” or better or equivalent. Continued study of the basic grammatical structures of Italian emphasizing competency in reading, writing, and speaking. Involves reading varied materials (literary and journalistic) dealing with contemporary Italy.

ITAL 020A Italian for Spanish Speakers (4) Lecture, 4 hours. Prerequisite(s): appropriate native or heritage proficiency in Spanish as determined by the department faculty. Students must take the Spanish placement examination only. Credit is awarded for only one of the following sequences: ITAL 001, ITAL 002, and ITAL 003; ITAL 020A and ITAL 020B.

ITAL 020B Italian for Spanish Speakers (4) Lecture, 4 hours. Prerequisite(s): ITAL 020A with a grade of “C-” or better or a sufficiently high test score on both the Italian and Spanish language placement examinations as determined by the department faculty. Introduction to the fundamental skills of listening, speaking, reading, and writing Italian for students with proficiency in Spanish. Emphasizes comparison of Italian and Spanish grammatical constructions. Admission by placement examination only. Credit is awarded for only one of the following sequences: ITAL 001, ITAL 002, and ITAL 003; ITAL 020A and ITAL 020B.
183 / Programs and Courses

046W, CHN 048/AST 048

2. Upper-division requirements (20 units)

a) 8 upper-division units in Chinese language from CHN 101A, CHN 101B, CHN 101C, CHN 102, CHN 105, CHN 108, CHN 110 (E-Z), CHN 115 (E-Z)

b) Eight (8) units in Chinese literature and culture from CHN 104, CHN 105, CHN 106/PHIL 123, CHN 107/AST 107/RLST 107, CHN 108, CHN 110 (E-Z), CHN 115 (E-Z), CHN 118 (E-Z)-AST 118 (E-Z), CHN 132/AST 132/CLA 132/CPAC 132, CHN 134, CHN 135/AST 135, CHN 136/AST 136, CHN 137, CHN 141/AST 145/CLA 141/CPAC 141/POSC 140, CHN 142/AST 142, CHN 148/AST 148, CHN 185/AST 185/MCS 169, CHN 190 CPLT 142/WMST 142.

c) Four (4) units in Asian literatures and cultures: can be chosen from all the upper-division lecture courses on Asian literature and culture from the department as well as Chinese-related upper-division courses from other departments (with adviser’s consent), including the courses listed under (b).

Chinese Courses

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

CHN 001 First-Year Chinese (4) Lecture, 4 hours. Prerequisite(s): Student must take the Chinese placement examination. An introduction to the sound system and grammar of Chinese. Focuses on the development of the four skills: understanding, speaking, reading, and writing. Classes are conducted in Chinese as much as possible. Audio-lingual learning materials are available in the language laboratory. Credit is awarded for only one of the following sequences: CHN 001, CHN 002, CHN 003, and CHN 004; CHN 001, CHN 002, and CHN 006; CHN 002, CHN 006; CHN 020B, CHN 020A and CHN 020B.

CHN 002 First-Year Chinese (4) Lecture, 4 hours. Prerequisite(s): CHN 001 with a grade of "C" or better or equivalent or a sufficiently high test score on the Chinese placement examination as determined by the department faculty. An introduction to the sound system and grammar of Chinese. Focuses on the development of the four skills: understanding, speaking, reading, and writing. Classes are conducted in Chinese as much as possible. Audio-lingual learning materials are available in the language laboratory. Credit is awarded for only one of the following sequences: CHN 001, CHN 002, CHN 003, and CHN 004; CHN 001, CHN 002, and CHN 006; CHN 002, CHN 006; CHN 020B, CHN 020A and CHN 020B.

CHN 003 First-Year Chinese (4) Lecture, 4 hours. Prerequisite(s): CHN 002 with a grade of "C" or better or equivalent or a sufficiently high test score on the Chinese placement examination as determined by the department faculty. An introduction to the sound system and grammar of Chinese. Focuses on the development of the four skills: understanding, speaking, reading, and writing. Classes are conducted in Chinese as much as possible. Audio-lingual learning materials are available in the language laboratory. Credit is awarded for only one of the following sequences: CHN 001, CHN 002, CHN 003, and CHN 004; CHN 001, CHN 002, and CHN 006; CHN 002, CHN 006; CHN 020B, CHN 020A and CHN 020B.

CHN 004 Accelerated Second-Year Chinese (4) Lecture, 4 hours. Prerequisite(s): CHN 003 with a grade of "C" or better or equivalent or a sufficiently high test score on the Chinese placement examination as determined by the department faculty. Provides continuing development of the four skills: understanding, speaking, reading, and writing. Lectures are conducted primarily in Mandarin. Credit is awarded for only one of CHN 025 or the CHN 005 and CHN 006 sequence.

CHN 005 Second-Year Chinese (4) Lecture, 4 hours. Prerequisite(s): CHN 004 or CHN 020B or equivalent or a sufficiently high test score on the Chinese placement examination as determined by the department faculty. Continued development of the four skills: understanding, speaking, reading, and writing. Lectures are conducted primarily in Mandarin. Credit is awarded for only one of CHN 025 or the CHN 005 and CHN 006 sequence.

CHN 020A First-Year Chinese for Heritage Learners (4) Lecture, 4 hours. Prerequisite(s): Student must take the Chinese placement examination. A first-year Mandarin Chinese course designed for heritage learners who have some proficiency in listening comprehension and speaking but are unable to read and write in Mandarin. Credit is awarded for only one of the following sequences: CHN 001, CHN 005, CHN 003, and CHN 004; CHN 001, CHN 002, and CHN 006; CHN 020A and CHN 006.

CHN 020B First-Year Chinese for Heritage Learners (4) Lecture, 4 hours. Prerequisite(s): CHN 002 with a grade of "C" or better or equivalent or a sufficiently high test score on the Chinese placement examination as determined by the department faculty. A first-year Mandarin Chinese course designed for heritage learners who have some proficiency in listening comprehension and speaking but are unable to read and write in Mandarin. Credit is awarded for only one of the following sequences: CHN 001, CHN 002, CHN 003, and CHN 004; CHN 001, CHN 002, and CHN 006; CHN 020A and CHN 006.

CHN 025 Accelerated Second-Year Chinese (4) Lecture, 4 hours. Prerequisite(s): CHN 004 or CHN 020B or equivalent or a sufficiently high test score on the Chinese placement examination as determined by the department faculty. Designed for students with advanced comprehension and speaking skills. Focuses on improving reading and writing skills. Credit is awarded for only one of CHN 025 or the CHN 005 and CHN 006 sequence.

CHN 030 Introduction to Chinese Civilization (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An introduction to Chinese civilization through an interplay of philosophical, historical, religious, and literary readings from the ancient times through the modern age. Uses audiovisual media. All work is in English. Cross-listed with AST 030. Ye

CHN 040 Masterworks of Chinese Literature (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. Reading and discussion of selected great works of Chinese literature (in English translation) with attention to cultural contexts. Various critical methods and approaches are used. Cross-listed with AST 040. Wu, Ye

CHN 046 Responses to Political Repression in Modern Chinese Literature and Film (4) Lecture, 2 hours; extra reading, 3 hours. Prerequisite(s): none. An examination of the various responses to political repression in China during the second half of the twentieth century through selected literary and artistic representations. Cross-listed with AST 046. Credit is awarded for only one of CHN 046AST 046 or CHN 046WAST 046W.

CHN 046W Responses to Political Repression in Modern Chinese Literature and Film (4) Lecture, 2 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): CHN 004 with a grade of "C" or better or consent of instructor. An examination of the various responses to political repression in China during the second half of the twentieth century through selected literary and artistic representations. Cross-listed with AST 046. Credit is awarded for only one of CHN 046AST 046 or CHN 046WAST 046W.

CHN 048 Chinese Cinema (4) Lecture, 2 hours; discussion, 1 hour; screening, 2 hours; outside research, 1 hour. Prerequisite(s): none. Study of the third-quarter writing requirement for students who earn a grade of "C" or better for courses that the Academic Senate designates, and that the student's college permits as alternatives to English 001C. Cross-listed with AST 048. Ye

CHN 090 Special Studies (1-5) Individual study, 3-15 hours. To be taken with the consent of the Chair of the Department as means of meeting special curricular problems in either language or literature. Course is repeatable.

Upper-Division Courses

CHN 101A Third-Year Chinese (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): CHN 006 or CHN 025 or equivalent. Further development of the four skills: understanding, speaking, reading, and writing; with an emphasis on reading and writing. Classes conducted in Mandarin.

CHN 101B Third-Year Chinese (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): CHN 101A or equivalent or consent of instructor. Further development of the four skills: understanding, speaking, reading, and writing; with an emphasis on reading and writing. Classes conducted in Mandarin.

CHN 101C Third-Year Chinese (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): CHN 101B or equivalent or consent of instructor. Further development of the four skills: understanding, speaking, reading, and writing; with an emphasis on reading and writing. Classes conducted in Mandarin.

CHN 102 Fourth-Year Chinese (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): CHN 101C or equivalent. Reinforcement of reading, speaking, and writing skills through study of a broad range of texts and various styles of writing. Course is repeatable as content changes to a maximum of 8 units.

CHN 104 Introduction to Classical Chinese Texts (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): CHN 003 or equivalent or consent of instructor. Introduction to classical Chinese philosophical and
historical texts. Readings of primary source materials and analysis of grammar and usage. Class is conducted in English.

CHN 105 Classical Chinese Prose (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): CHN 101C. Close reading of selected texts from the Han and pre-Han period, chosen to illustrate the main features of the Chinese <b>cu</b>-<b>ku-wen</b> <b>chu</b> (classical prose). Ye

CHN 106 Readings in Classical Chinese Philosophy (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): CHN 104 or consent of instructor. Introduces selections from key philosophical texts in classical Chinese. Focuses on a combination of Chinese reading and philosophical understanding. Cross-listed with PHIL 123.

CHN 107 Taoist Traditions (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): AST 030/CHN 030 or upper-division standing or consent of instructor. A survey of the ancient mystical and philosophical aspects of Taoism as well as the living religious tradition, their relationships to each other, and their expression in Chinese culture and civilization. Topics include the Tao Te Ching, the <b>chu</b> Chuang-tzu <b>chu</b>, the Taoist canon, meditation, immortality, alchemy, and ritual. Cross-listed with AST 107 and RLST 107. Raphals

CHN 108 Introduction to Classical Chinese Poetry (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): CHN 102 or equivalent. Explores the representative works in various genres and forms that illustrate the development of classical Chinese poetry from its origin through the premodern age. Course conducted primarily in Chinese. Ye

CHN 110 (E-Z) Readings in Twentieth-Century Chinese Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): CHN 102 or equivalent. Presents the works of major authors of twentieth-century Chinese literature. Course conducted in Chinese. E. Contemporary Chinese Fiction; M. Modern Chinese Fiction; S. Modern Chinese Poetry; T. Love in Taiwanese and Chinese Stories; W. Modern Chinese Prose. Credit is awarded for only one of CHN 110E or CHN 137 and for only one of CHN 110M or CHN 134. Wu, Ye

CHN 112 Asian Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of Asian contributions to philosophy focusing on the Indian and Chinese traditions. Examines questions concerning how best to live one’s life, what can be known, the relation between mind and body, whether there are minds and bodies, and the nature of the universe. Cross-listed with PHIL 110. Ye

CHN 115 (E-Z) Readings in Thirteenth- to Nineteenth-Century Chinese Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): CHN 102 or equivalent. Covers vernacular literature from the Yuan to the Qing dynasties. Course conducted in Chinese. G. Hongliou meng; M. Ming Novel; Q. Qing Novel; S. The Short Story; Y. Yuan Drama. Wu

CHN 118 (E-Z) Masterworks of Chinese Literature in Translation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines canonical Chinese works of literature in translation. Conducted in English. E. The Ancient Times Through the Early Imperial Dynasties. Cross-listed with AST 118 (E-Z).

CHN 132 Medical Traditions in China and Greece (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): one of the following courses: AST 030/CHN 030, CHN 104, CHN 105, AST 107/CHN 107/RLST 107, CHN 108, AST 142/CHN 142/RLST 142, AST 148/CHN 148, CHA 010A, CHA 010B, CHA 010C, CHA 040, CHA 050, CHA 100/HISE 110, LST 102/CPAC 102/CLA 110/CPLT 112/RLST 117, CHA 114/CPLT 114, CPAC 112/CLA 113/HISE 113, CHA 120 (E-Z), CHA 121/CPAC 121/POSC 121, CHA 165, CPAC 133/HISE 114, CPAC 134/CHN 141/CPAC 143/CHN 143/RLST 143, CHN 145/CHN 141/CLA 141/POSC 140; or consent of instructor. Comparative examination of the early development of Western medical traditions and Chinese medicine. Focus on their cultural and social contexts. Cross-listed with AST 132, CLA 132, and CPAC 132.

CHN 134 Modern Chinese Literature in Translation (4) Seminar, 2 hours; lecture, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to major works of Chinese fiction, drama, and poetry from the first half of the twentieth century. Considers literary quality and technique, as well as the social and political ideas of Chinese writers during a turbulent time in China’s history. Credit is awarded for only one of CHN 110M or CHN 134.

CHN 135 Great Novels of China (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to major works of Chinese fiction, drama, and poetry from the mid-twentieth century to the present. Includes readings from mainland China, as well as writings from Taiwan and other overseas communities. Credit is awarded for only one of CHN 110E or CHN 137.

CHN 136 Family and Gender in the Chinese Short Story (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines a broad array of short stories from the Tang to modern times (approximately ninth to eighteenth century). Investigates love, marriage, family, gender dynamics, and the representation of women in Chinese literature. No knowledge of Chinese required. Cross-listed with AST 136. Wu

CHN 137 Contemporary Chinese Literature in Translation (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to important works of fiction, drama, poetry, and reportage from the mid-twentieth century to the present. Includes readings from mainland China, as well as writings from Taiwan and other overseas communities. Credit is awarded for only one of CHN 110E or CHN 137.

CHN 141 Militarism and Hegemony in the Ancient World (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): One of the following courses: CHN 030/AST 030, CHN 104, AST 107/CHN 107/RLST 107, CHN 108, AST 142/CHN 142/RLST 142, AST 148/CHN 148, CHA 010A, CHA 010B, CHA 010C, CHA 040, CHA 050, CHA 100/HISE 110, CHA 112/CPLT 112/RLST 117, CHA 114/CPLT 114, CHA 120 (E-Z), CHA 121, CPAC 102/CLA 102, CLA 113/HISE 113, CPAC 121/CLA 121/POSC 121, CPAC 132/AST 132/CLA 132, CPAC 133/CHN 134, CPAC 143/HIST 110, CLA 143/CPAC 143/CHN 143/RLST 143; or consent of instructor. Comparative study of early divination and prediction in early China, ancient Greece, or two other areas of the ancient world. Perspectives include social and intellectual contexts and institutions, as well as gender and boundaries between science, philosophy, and religion. Utilizes primary source materials in texts and visual arts. Cross-listed with CLA 143, CPAC 143, and RLST 143.

CHN 148 Chinese Poetry and Poetics in Translation (4) Lecture, 2 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of traditional Chinese poetry through the study of selected major texts, emphasizing forms, themes, and Chinese poetics in its close relation to the development of Chinese literature. Classes are conducted in English. Cross-listed with AST 148. Ye

CHN 185 New Chinese Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020, upper-division standing or consent of instructor. A study of representative films from the People’s Republic of China, with a focus on those made during the last decade. Conducted in English; most films have English subtitles. Cross-listed with AST 185 and MCS 169. Ye

CHN 190 Special Studies (1-3) Individual study, 3-15 hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems in either language or literature. Course is repeatable.

CHN 195 Senior Thesis (2-4) Thesis, 6-12 hours. Prerequisite(s): senior standing; consent of instructor. Individual research and preparation of a thesis completed under the supervision of a faculty member. Course is repeatable to a maximum of 12 units.

Languages and Literatures/Classical Studies

College of Humanities, Arts, and Social Sciences

Lisa Raphals, Ph.D., Chair

Committee in Charge

Jozef Muller (Philosophy)
Benjamin King, non-voting
Milagros Pitia Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The objective of the B.A. in Classical Studies is the furthering of knowledge of classical civilization through two emphases: the study of Greek and/or Latin language(s) and literature(s) and the study of courses in English translation on topics including classical literature, history, politics, religion, mythology, and art in order to aid students’ appreciation of the Greek and Roman contributions to later Western civilization.
The student who majors in Classical Studies acquires a balanced yet focused view of the language, literature, thought, and civilization of Greece and Rome. The student also obtains the valuable skills of a better vocabulary, a sharper critical sense, logical analysis of texts, coherent argumentation, and a valuable perspective on our own society. Classical Studies majors receive a liberal arts education of traditional excellence and one widely esteemed by business and professional schools. A student may also pursue graduate training in Classics, Art History, History, Philosophy, or other related disciplines.

**Minor**

The Classical Studies minor offers students a fundamental understanding of classical language and culture which form the basis of much of western civilization. The minor naturally complements liberal arts degrees in many areas, including History, Art History, Philosophy, English, and Religious Studies. Students profit from the skills associated with a degree in the classics, such as enhancement of analytical and critical abilities, communication skills, and verbal proficiency.

1. One course from CLA 010A, CLA 010B, or CLA 010C
2. Either LATN 001, LATN 002, LATN 003, and LATN 004 (or equivalents) or GRK 001, GRK 002, and GRK 003 (or equivalents)
3. One upper-division course (4 units) in either Latin or Greek

**Upper-Division Courses**

CLA 100 Ancient Historians (4) Lecture, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. The historical development of historiography as evidenced in ancient historical writings from Near Eastern king lists and biblical histories to the narrative histories of Greece and Rome. Focuses on the ideas of history in the various cultures of the ancient Near East and Mediterranean and their relation to modern historical thought. Cross-listed with HISE 110.

CLA 102 Ancient Civilizations and Later Identities (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topical survey of aspects of ancient civilizations appropriated and re-applied to modern cultures. Course is repeatable as content changes to a maximum of 12 units. Cross-listed with CPAC 102.

CLA 112 Mythology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of mythic traditions from several world cultures and religions viewed from a variety of theoretical perspectives. Includes material drawn from epics, religious texts, divine hymns, creation myths, heroic legends, and concepts of the afterlife as reflected in literary and nonliterary sources. Cross-listed with CPIT 112 and RLST 117.

CLA 113 Comparative Ancient Historical Writing (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the literary aspects of historical writing in ancient cultures, with some comparison of the ancient contribution to later authors of the genre. Cross-listed with CPAC 112 and HISE 113.
CLA 114 The Classical Tradition (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the legacy of Greece and Rome in Western culture, from the Renaissance to the present. Topics include literature, art, architecture, and politics. Cross-listed with CPLT 114. King, Scanlon

CLA 120 (E-Z) Themes and Issues of the Classical World (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on an aspect of antiquity of critical importance to modern culture, and examines the relevant literary monuments and cultural data. Students explore and interpret ancient sources to gain an appreciation of the differences and similarities between the classical world and the world today. All readings are in English; no knowledge of foreign language is required. E: Ancient Societies and Gender: Myths and Realities; F: Greco-Roman Popular Culture; G: Reading Greek and Roman Sports; J: Guide to Living in the Ancient World.

CLA 121A Royal Monarchy (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A cross-cultural survey of the institution of monarchy in the ancient world and its role in political, social, economic, and religious life. Cross-listed with CPAC 121S and POSC 121S. Credit is awarded for only one of CLA 121A/CPAC 121/POSC 121 or CLA 121S/CPAC 121S/POSC 121S.

CLA 121A Royal Monarchy (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the cross-cultural survey of the institution of monarchy in the ancient world and its role in political, social, economic, and religious life. Cross-listed with CPAC 121S and POSC 121S. Credit is awarded for only one of CLA 121A/CPAC 121/POSC 121 or CLA 121S/CPAC 121S/POSC 121S.

CLA 122 Medical Traditions in China and Greece (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): one of the following courses: AST 030/CHN 030, CHN 104, CHN 105, AST 107/CHN 107/RLST 107, CHN 108, AST 142/CHN 142/RLST 142, AST 148/CHN 148, CLA 010A, CLA 010B, CLA 010C, CLA 040, CLA 050, CHN 100/HISE 110, CLA 112/CPLT 112/RLST 117, CLA 114/CPLT 114, CLA 116/CPAC 116/HISE 116, CLA 120 (E-Z), CLA 121/CPAC 121/POSC 121, CLA 165, CPAC 133/HISE 113, CPAC 143/HISE 113, CPAC 134/HISE 114, CPAC 134/HIST 110, CPAC 141/AST 145/CHN 145/CLA 141/POSC 140, CPAC 143/CHN 143/RLST 143, or consent of instructor. Comparative study of early divination and prediction in early China, ancient Greece, or two other areas of the ancient world. Perspectives include social and intellectual contexts and institutions, as well as gender and boundaries between science, philosophy, and religion. Examines primary source material in texts and visual arts. Cross-listed with CHN 143, CPAC 143, and RLST 143.

CLA 165 Greco-Roman Cults and Credence (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the rich diversity of religious belief and systems of worship in the Greco-Roman world, from Bronze Age and Classical Greeks, to the Romans of the late Empire. Texts, documents, and archaeological evidence are examined to explore these unique constructions of ritual and creed. Scanlon

CLA 190A Special Studies (1-5) To be taken with the consent of the chairman of the department as a means of meeting special curricular problems or deficiencies. Course is repeatable.

Graduate Courses
See also UC Tri-Campus Graduate Program in Classics.

CLA 200A Contemporary Literary Theory and the Classics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to contemporary literary theory focusing on important critical approaches. Topics vary from year to year. Requires written work that explores theoretical issues and involves engagement with a Greek or Latin text. This work may, for example, illuminate some aspect of a theorist’s work, put two theorists into dialogue, or explore the usefulness of a particular approach to texts, authors, or genres. Taught at UC Irvine. Same as UC Irvine CLASSIC 200A. Course is repeatable.

CLA 200B Diachronic Perspectives on Classical Antiquity (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Examines ways in which classical texts and ideas have been received and appropriated for the diverse purposes of ancient and subsequent cultures. Taught at UC Irvine. Same as UC Irvine CLASSIC 200B. Course is repeatable.

CLA 200C Greece and Rome in Their Contemporary Cultural Contexts (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to the methods and perspectives of social scientific theory used to study the material and social dimensions of the ancient cultures of Greece and Rome. Taught at UC Irvine. Same as UC Irvine CLASSIC 200C. Course is repeatable.

CLA 201A Research Methods in Classical Studies (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Covers various technical skills essential for successful research and pedagogy in Classics. Includes use of digital resources (e.g., bibliographical databases). Introduces important disciplinary subfields, such as textual criticism and epigraphy. Selection of topics is at the instructor’s discretion. Taught at UC Irvine. Same as UC Irvine CLASSICS 201. Course is repeatable as topics change.

CLA 250 Seminar in Classics (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Focuses mainly, but not exclusively, on major literary topics. Subject matter varies. Taught at UC Irvine. Same as UC Irvine CLASSIC 220. Course is repeatable.

CLA 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): consent of instructor and graduate advisor; normally open only to students in the UC Tri-Campus Graduate Program in Classics. Supervised independent research. Same as UC Irvine CLASSIC 280. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CLA 292 Concurrent Studies in Classics (2) Individual study, 6 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Concurrent enrollment in an advanced undergraduate Greek or Latin course, with credit awarded for additional reading and separate examinations. Same as UC Irvine CLASSIC 250. Course is repeatable.

CLA 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Research in preparation for the Candidacy Examination. Same as UC Irvine CLASSIC 290. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CLA 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-12 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Directed research for the M.A. thesis or Ph.D. dissertation. Same as UC Irvine CLASSIC 299. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

CLA 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): CPLT 301 or equivalent; graduate standing; employment as a teaching assistant or associate in. Supervised teaching in lower-division courses. Required of all teaching assistants in Classics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Greek Courses

Subject abbreviation: GRK

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

GRK 001 Introduction to Classical Greek (4) Lecture, 4 hours. Prerequisite(s): none. Intensive study of the fundamentals of Attic Greek with practice in reading and writing. King
Upper-Division Courses

**GRK 101 (E-Z) Advanced Greek Reading and Grammar (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): GRK 003 with a grade of "C-" or better or equivalent. One or two of the following will be offered every year, according to need, E. Homer <i>Iliad</i>; F. Homer <i>Odyssey</i>; G. Lyric Poets; H. Aeschylus; I. Sophocles; J. Euripides; K. Aristophanes; L. Herodotus; M. Thucydides; N. Xenophon; O. The Attic Orators; P. Plato; Q. Aristotle; R. New Testament; T. Hellenistic and Later Greek.

**GRK 190 Special Studies (1-5)** To be taken with the consent of the instructor as a means of meeting special curricular problems. Course is repeatable.

Graduate Courses
See also UC Tri-Campus Graduate Program in Classics.

**CPLT 290 Directed Studies (1-6)** Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**GRK 292 Concurrent Analytical Studies (2)** Outside research, 6 hours. Prerequisite(s): consent of instructor; concurrent enrollment in GRK 100-series course. To be taken on an individual basis. Each student completes a graduate paper based on research related to the GRK 100-series course. Course is repeatable.

Professional Course

**CPLT 301 Teaching of Foreign Language at the College Level (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing, or senior standing with consent of instructor. Covers first and second language acquisition; general models of L2 learning; learning different types of grammar; learning other components of language: acquisition of pronunciation, vocabulary, and discourse; multilingual societies and the goals of language teaching; and implications of second language acquisition research for the foreign language classroom. Graded Satisfactory (S) or No Credit (NC).

Latin Courses

Subject abbreviation: LATN

**Foreign Language Placement Examination** A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

**LATN 001 Introduction to Latin (4)** Lecture, 4 hours. Prerequisite(s): none. Intensive study of the funda-
Doctoral Degree

The requirements for the Ph.D. degree in Classics are three years (nine quarters) of course work. Minimum course requirements are four quarters of CLA 200A, CLA 200B, CLA 200C, and CLA 201; five quarters of UC Riverside CLA 292/UC Irvine CLASSICS 205; and six quarters of UC Riverside CLA 250/UC Irvine CLASSICS 220 or an equivalent course. (UC Riverside CLA 290/UC Irvine CLASSICS 280 may be substituted for these courses at the discretion of the Program faculty.) Students are encouraged to take courses and seminars in relevant areas outside the program at any of the three campuses.

Students must demonstrate reading proficiency in a second modern language by the end of the third year. By the end of the third year and during the fourth year of study, students must have read extensively in the primary texts in and literary history and theory and in ancient history. To qualify as a candidate and enter the dissertation stage, a student must pass an individually designed set of qualifying examinations, including translation examinations in Greek and Latin, written examinations or lengthy papers in special authors and field, and an oral examination.

The facilities, course offerings, programs, and individual faculty mentorship of all three campuses are available to students in the Tri-Campus degree program. The resources of the program are enhanced through a cooperative teaching arrangement among the Tri-Campus program and the Classics graduate programs of UC Los Angeles and the University of Southern California.

Foreign Language Requirement

Students must demonstrate reading proficiency in a second modern language by the end of the third year.

Teaching Requirement

Experience in supervised teaching and/or research activity is normally required.

Normative Time to Degree

Six years

Faculty

Michele Salzman, Ph.D., Director
Professor of History, UCR; Late Antiquity; Roman History and Literature, Religion, Gender and Sexuality Studies

Georgios Anagnostopoulos, Ph.D.
Professor of Philosophy, UCSD; Ancient Greek Philosophy, Ethics, Metaphysics

Cynthia L. Claxton, Ph.D.
Lecturer in Classics, and graduate teaching supervisor, UCI; Greek prose, Historiography

Page duBois, Ph.D.
Professor of Classics and Comparative Literature, UCSD; Greek Literature, Rhetoric, Critical Theory, Cultural Studies

Zina Gannopoulou, Ph.D.
Associate Professor of Classics, UCI; literary theory and Platonic hermeneutics, classical and Hellenistic philosophy, Greek tragedy and epic.

David Giddens, Ph.D.
Professor Emeritus of Philosophy, UCR; Greek and Roman Philosophy

Anna Gonosova, Ph.D.
Associate Professor of Art History, UCI; Byzantine and Medieval Art

Denver Graninger, Ph.D.
Associate Professor of History, UCR; Greek and Roman History, Greek Epigraphy and Archaeology

Monte Johnson, Ph.D.
Associate Professor of Philosophy, UCSD; Classical and Hellenistic Philosophy; Aristotle, Democritus and their later reception in philosophy and science

Dayna Keller, Ph.D.
Associate Professor of History and Religious Studies, UCSD; Late Antiquity, Religious Studies, and Critical Theories of Religion

Andromache Karanika, Ph.D.
Associate Professor of Classics, UCI; Greek Epic Poetry, Greek Lyric, Folklore

Benjamin King, Ph.D.
Lecturer in Classics, UCR; Greek Literature and Philosophy

Margaret M. Miles, Ph.D.
Associate Professor of Art History, UCI; Greek and Roman Art and Archaeology, Ancient Sicily, Greek Religion

Jozef Muller, Ph.D.
Assistant Professor of Philosophy, UCR; Ancient Philosophy, especially Aristotle, Plato, and the Stoics

Maria C. Pantelia, Ph.D.
Associate Professor of Classics, and Director, Thesaurus Linguae Graecae, UCI; Greek Epic Poetry, Hellenistic Poetry, Computer Applications to Classics

Lisa Raphals, Ph.D.
Professor of Chinese/Comparative Literature, UCR

Edward Watts, Ph.D.
Professor of History, UCI (Vassiliadis Endowed Chair in Byzantine Studies), Intellectual and Religious History of the Early Byzantine Empire; Late Antiquity

Andrew Zissos, Ph.D.
Associate Professor of Classics; graduate advisor, UCI; Latin Epic; Medieval Latin; Roman Culture

Graduate Courses

Most of the following courses are taught at the UC Irvine campus.

See also CLA 302 under the Classics section.

CLA 200A Contemporary Literary Theory and the Classics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to contemporary literary theory focusing on important critical approaches. Topics vary from year to year. Requires written work that explores theoretical issues and involves engagement with a Greek or Latin text. This work may, for example, illuminate some aspect of a theorist's work, put two theorists into dialogue, or explore the usefulness of a particular approach to texts, authors, or genres. Taught at UC Irvine. Same as UC Irvine CLASSIC 200A. Course is repeatable.

CLA 200B Diachronos Perspectives on Classical Antiquity (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Examines ways in which classical texts and ideas have been received and appropriated for the diverse purposes of ancient and subsequent cultures. Taught at UC Irvine. Same as UC Irvine CLASSIC 200B. Course is repeatable.

CLA 200C Greece and Rome in Their Contemporary Cultural Contexts (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to the methods and perspectives of social scientific theory used to study the material and social dimensions of the ancient cultures of Greece and Rome. Taught at UC Irvine. Same as UC Irvine CLASSIC 200C. Course is repeatable.

CLA 201 Research Methods in Classical Studies (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Covers various technical skills essential for successful research and pedagogy in Classics. Includes use of digital resources (e.g., bibliographical databases). Introduces important disciplinary subfields, such as textual criticism and epigraphy. Selection of topics is at the instructor's discretion. Taught at UC Irvine. Same as UC Irvine CLASSICS 201. Course is repeatable as topics change.

CLA 250 Seminar in Classics (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Focuses mainly, but not exclusively, on major literary topics. Subject matter varies. Taught at UC Irvine. Same as UC Irvine CLASSIC 220. Course is repeatable.

CLA 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): consent of instructor and graduate advisor; normally open only to students in the UC Tri-Campus Graduate Program in Classics. Supervised independent research. Same as UC Irvine CLASSIC 280. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CLA 292 Concurrent Studies in Classics (2) Individual study, 6 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Concurrent enrollment in an advanced undergraduate Greek or Latin course, with credit awarded for additional reading and separate examinations. Same as UC Irvine CLASSIC 205. Course is repeatable.

CLA 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Research in preparation for the Candidacy Examination. Same as UC Irvine CLASSIC 290. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CLA 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Directed research for the M.A. thesis or Ph.D. dissertation. Same as UC Irvine CLASSIC 299. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Languages and Literatures/Comparative Ancient Civilizations

Subject abbreviation: CPAC

College of Humanities, Arts, and Social Sciences

Lisa Raphals, Ph.D., Chair

Committee in Charge

Christopher Chase-Dunn (Sociology)
Lucile Chia (History)
Denver Graninger (History)
John Laursen (Political Science)
Hendrick Maijer (Comparative Literature & Foreign Languages)
Jozef Muller (Philosophy)
The Comparative Ancient Civilizations B.A. combines the breadth of an interdisciplinary major with the focus of more traditional majors like History or Classical Civilization. By undertaking a comparison of several major cultures of the past that have continued importance in the construction of our present world, the program affords a truly liberal education. Students have a unique opportunity to employ the methods of humanities and social sciences in their major study. They acquire skills of historical and social analysis, multicultural awareness, insight into constructions of gender and sexuality, and mental flexibility.

The major is an excellent choice as a double major taken along with any of the traditional disciplines to add distinction and intellectual breadth to one’s background.

**Major**

1. Lower-division requirements (20 units): CPLT 001 or CPLT 001W, CPLT 002 and any three from ANTH 003, ANTH 004, AST 030/CHN 030, CLA 010A, CLA 010B, CLA 010C, CPLT 017A

2. Upper-division requirements (44 units)
   a. At least 16 units from CPAC 102/CLA 102, CPAC 112/CLA 113/HISE 113, CPAC 121/CLA 121/POSC 121, CPAC 132/AST 132/CHN 132/CLA 132, CPAC 133/HISE 114, CPAC 134/HIST 110, CPAC 141/AST 141/CHN 141/CLA 141/AST 145/POSC 140
   
   b. CPLT 193 (4 units). (CPLT 196 strongly recommended but not required)
   
   c. The balance (24 units) from any of the following upper-division courses in related disciplines; students are recommended, in consultation with their advisor, to focus on one or two ancient civilizations in related courses to obtain special depth in those areas. Since related course offerings in these areas are often added, some of the most recent courses acceptable to fulfill this requirement may not be listed and students are advised to consult with the major advisor.

**Anthropology**

ANTH 110

ANTH 117

ANTH 162

**Art History**

AHS 144/AST 144

AHS 146/AST 147

AHS 147

AHS 148

AHS 155

**Asian Studies**

AST 107/CHN 107/RLST 107

AST 136/CHN 136

AST 142/CHN 142/RLST 142

AST 144/AHS 144

AST 147/AHS 147

AST 148/CHN 148

**Chinese**

CHN 107/AST 107/RLST 107

CHN 142/AST 142/RLST 142

CHN 148/AST 148

**Classes**

CLA 100/HISE 110

CLA 112/CPLT 112/RLST 117

CLA 113/CPAC 112/HISE 113

CLA 114/CPLT 114

CLA 120 (E-Z)

CLA 121/CPAC 121/POSC 121

CLA 132/CPAC 132/AST 132/CHN 132

CLA 141/CPAC 141/AST 145/CHN 141/POSC 140

CLA 165

**Comparative Literature**

CLA 112/CPLT 112/RLST 117

CLA 114/CPLT 114

**English**

ENGL 100 (E-Z)

ENGL 149

ENGL 151A

ENGL 151B

**Ethnic Studies**

ETST 115 (E-Z)/HISA 144 (E-Z)

**Greek**

GRK 101 (E-Z)

**History**

HISA 144 (E-Z)/ETST 115 (E-Z)

HISE 110/CLA 100

HISE 115

HISE 116

HISE 117

HISE 150

HISE 171

HIST 110/CPAC 134

HIST 180

HIST 181

**Latin**

LATN 101 (E-Z)

LATN 135

**Philosophy**

PHIL 120 (E-Z)

PHIL 122E

**Political Science**

POSC 110

**Religious Studies**

RLST 101

RLST 106

RLST 107/AST 107/CHN 107

RLST 111

RLST 117/CLA 112/CPLT 112

RLST 121

RLST 124 (E-Z)

RLST 128E

RLST 130

RLST 131

RLST 136

RLST 142/AST 142/CHN 142

**Upper-Division Courses**

CPAC 102 Ancient Civilizations and Later Identities

(4) Lecture, 3 hours; outside research, 3 hours.

Prerequisite(s): upper-division standing or consent of instructor. Topical survey of aspects of ancient civilizations appropriated and re-applied to modern cultures. Course is repeatable as content changes to a maximum of 12 units. Cross-listed with CLA 102. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

CPAC 112 Comparative Ancient Historical Writing

(4) Lecture, 3 hours; outside research, 3 hours.

Prerequisite(s): upper-division standing or consent of instructor. A survey of the literary aspects of historical writing in ancient cultures, with some comparison of the ancient contribution to later authors of the genre. Cross-listed with CLA 113 and HISE 113. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

CPAC 121 Monarchy

(4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour.

Prerequisite(s): upper-division standing or consent of instructor. A cross-cultural survey of the institution of monarchy in the ancient world and its role in political, social, economic, and religious life. Cross-listed with CLA 121 and POSC 121. Credit is awarded for only one of CLA 121/CPAC 121/POSC 121 or CLA 121S/CPAC 121S/POSC 121S. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

CPAC 121S Monarchy

(5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour.

Prerequisite(s): upper-division standing or consent of instructor. Examines the cross-cultural survey of the institution of monarchy in the ancient world and its role in political, social, economic, and religious life. Cross-listed with CLA 121S and POSC 121S. Credit is awarded for only one of CLA 121/CPAC 121/POSC 121 or CLA 121S/CPAC 121S/POSC 121S. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

CPAC 132 Medical Traditions in China and Greece

(4) Lecture, 3 hours; outside research, 3 hours.

Prerequisite(s): one of the following courses: AST 030/CHN 030, CHN 104, CHN 105, AST 107/CHN 107/RLST 107, CHN 108, AST 142/CHN 142/RLST 142, AST 148/CHN 148, CLA 010A, CLA 010B, CLA 010C, CHN 040, CLA 050, CLA 100/HISE 110, CLA 102/CPAC 102, CLA 112/CPLT 112/RLST 117, CLA 114/CPLT 114, CPAC 112/CLA 113/HISE 113, CLA 120 (E-Z), CLA 121/CPAC 121/POSC 121, CLA 165, CPAC 133/HISE 114, CPAC 134/HIST 110, CPAC 141/AST 145/CHN 141/POSC 140, CPAC 143/CHN 143/RLST 143; or consent of instructor. Comparative examination of the early development of Western medical traditions in classical Greece and the origins and development of the Chinese medical systems now referred to as traditional Chinese medicine. Focuses on their cultural and social contexts. Cross-listed with AST 132, CHN 132, and CLA 132. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

CPAC 133 Ancient Writing and Literacy

(4) Lecture, 3 hours; extra reading, 3 hours.

Prerequisite(s): upper-division standing or consent of instructor. Uses cross-cultural comparison to survey writing and literacy in ancient civilizations and how they are related in the origin and development of selected ancient cultures. Cross-listed with HISE 114. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

CPAC 134 History of Ancient Astronomy

(4) Lecture, 3 hours; individual study, 3 hours.

Prerequisite(s): upper-division standing or consent of instructor. Explores the origins and history of ancient astronomy from Mesopotamia to the Greco-Roman world. Topics include the problems of the calendar and planetary motion, and the relation between astronomy and
opportunities for study through the Education French. The core of the major is the study of ancient warfare and hegemony in two or more civilizations of the ancient world. Perspectives may include social and political contexts, gender and war, acquisition of empire, religious wars, and weapons, strategies and tactics in theory and practice. Study of primary source material in texts and visual arts. Cross-listed with AST 145, CHN 141, and POSC 140. Fulfils either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

CPAC 143 Divination and Prediction in China and Greece (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): One of the following courses: CHN 030/AST 030, CHN 104, CHN 105, AST 107/CHN 107/RLST 107, CHN 108, AST 142/CHN 142/RLST 142, AST 148/CHN 148, CLA 010A, CLA 010B, CLA 010C, CLA 040, CLA 050, CLA 100/HISE 110, CLA 112/RLST 112/RLST 117, CLA 114/CPAC 114, CLA 120 (E-Z), CLA 165, CPAC 102/CLA 102, CPAC 112/CLA 113/HISE 113, CPAC 121/CLA 121/POSC 121, CPAC 132/AST 132/CLA 132, CPAC 133/HISE 114, CPAC 134/HIST 110, CLA 143/CPAC 143/CHN 143/RLST 143, or consent of instructor. Comparative study of ancient warfare and hegemony in two or more civilizations of the ancient world. Perspectives may include social and political contexts, gender and war, acquisition of empire, religious wars, and weapons, strategies and tactics in theory and practice. Study of primary source material in texts and visual arts. Cross-listed with AST 145, CHN 141, and POSC 140. Fulfils either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

Languages and Literatures/French

Subject abbreviation: FREN

Committee in Charge
Heidi Brevik-Zender, Ph.D., Chair, French/Comparative Literature
Michelle E. Bloom, Ph.D., Comparative Literature/French
Christine Duvergé, Ph.D., Chair, French
Jennifer Ramos, M.A., French
Kelle Truby, Ph.D., French
Millagros Peña Ph.D., French
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The department offers the B.A. program in French. The core of the major is the study of French and Francophone literatures and cultures through innovative textural, visual, and interdisciplinary approaches.

Students are encouraged to consider opportunities for study through the Education Abroad Program (EAP). This is an excellent opportunity to become deeply familiar with another country and its culture while earning academic units towards graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences. Students who wish to major in French should consult their advisors. No college-level credit may be duplicated. See college placement examination policy.

Major
1. CPLT 001 or CPLT 001W, CPLT 002, FREN 045/MCS 045
2. Language proficiency (12 units) FREN 101A, FREN 101B, FREN 101C
3. Eight courses (32 units) of upper-division electives in the French Program. Of these, the student must choose a minimum of five courses (20 units) offered entirely in French. Students may petition to take one course (4 units) outside of the French Program on a related topic. It is strongly recommended that students take at least one class focusing on a time period earlier than 1800. It is highly recommended that students complete FREN 101B and FREN 101C before enrolling in upper-division electives.
4. CPLT 193 (4 units). (CPLT 196 strongly recommended but not required)

Minor
1. Language proficiency (16 units) - FREN 100, FREN 101A, FREN 101B, FREN 101C
2. Two courses (8 units) chosen from among upper-division courses offered entirely in French.

See Minors under the College of Humanities, Arts, and Social Sciences for information on minors.

Honors Program
Students who wish to undertake a special program of honors study in upper-division courses should apply to the department.

Graduate Programs
Master's Degree
The master's program in French is not currently accepting new students.

Doctoral Degree
Ph.D. studies in French are available through the Ph.D. program in Comparative Literature.

Lower-Division Courses

FREN 001 Introduction to French (4) W, S Lecture, 4 hours. Prerequisite(s): Student must take the French placement examination. An introduction to the sound system and grammar of French. Focuses on the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in French.

FREN 002 Introduction to French (4) W, S Lecture, 4 hours. Prerequisite(s): FREN 001 with a grade of "C-" or better or equivalent. An introduction to the sound system and grammar of French. Focuses on the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in French.

FREN 003 Introduction to French (4) W, S Lecture, 4 hours. Prerequisite(s): FREN 002 with a grade of "C-" or better or equivalent. An introduction to the sound system and grammar of French. Focuses on the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in French.

FREN 004 Intermediate French (4) Lecture, 4 hours. Prerequisite(s): FREN 003 with a grade of "C-" or better or equivalent. Continued study of the grammatical structures of French; vocabulary building; and development of reading and compositional skills. Classes conducted in French.

FREN 009A French for Reading Knowledge (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): consent of instructor. A specialized course developing the skill to translate from French into English. No previous knowledge of French is required.

FREN 009B French for Reading Knowledge (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): FREN 009A or consent of instructor. A specialized course developing the skill to translate from French into English. No previous knowledge of French is required.

FREN 015A Introduction to Literature and Culture (4) F, W, S Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): FREN 004 with a grade of "C-" or better or equivalent. Continued progress towards mastery of the French language. Classes conducted entirely in French.

FREN 015B Introduction to Literature and Culture (4) F, W, S Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): FREN 015A with a grade of "C-" or better or consent of Instructor. Continued progress towards mastery of the French language. Classes conducted entirely in French.

FREN 045 French Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Covers masterpieces of French cinema. Examines the historical evolution of French cinema as an art form, with emphasis on major themes and directors. Cross-listed with MCS 045.

FREN 090 Special Studies (1-3) To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems. Course is repeatable.

Upper-Division Courses

FREN 100 Advanced Conversation (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): FREN 015B
191 / Programs and Courses

with a grade of “C” or better or equivalent. Provides practice in the development of oral proficiency, fluency of expression, and listening comprehension. Only 4 units may be applied toward the major. Course is repeatable to a maximum of 8 units.

FREN 101A Advanced French Studies (4) F, W, S Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): FREN 101B with a grade of “C” or better or equivalent. Advanced analysis of topics in literature, film, visual arts, or culture. Focuses on the development of written expression in French.

FREN 101B Advanced French Studies (4) F, W, S Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Advanced analysis of topics in literature, film, visual arts, or culture. Focuses on the development of written expression in French.

FREN 101C Advanced French Studies (4) F, W, S Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): FREN 101A or FREN 101B with a grade of “C” or better or consent of instructor. Advanced analysis of topics in literature, film, visual arts, or culture. Focuses on the development of written expression in French.

FREN 109A Main Currents in French Literature: Middle Ages and Renaissance (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. A study of the principal movements in French literature based on the reading of representative works in their entirety.

FREN 109B Main Currents in French Literature: Seventeenth and Eighteenth Centuries (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. A study of the principal movements in French literature based on the reading of representative works in their entirety.

FREN 109C Main Currents in French Literature: Nineteenth Century (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. A study of the principal movements in French literature based on the reading of representative works in their entirety.

FREN 109D Main Currents in French Literature: Twentieth Century (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. A study of the principal movements in French literature based on the reading of representative works in their entirety.

FREN 112 Mythology in French Literature, Film, and the Visual Arts (4) Lecture, 3 hours; field, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Studies myths and mythological figures in seventeenth- to twentieth-century French texts. Focuses on literature (theatre, short stories, and novels), film, painting, and popular culture. Myths include Pygmalion, Venus, Orpheus, Narcissus and Echo, and Icarus. Course conducted in French.

FREN 124 (E-Z) Gender in French Studies (4) Lecture, 3 hours; extra reading, 2 hours; screening, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Examines gender issues in French studies including literature, culture, and visual arts. Topics include depictions of women, writing by male and/or female authors, and women in relation to power. Instruction is in French. G. Gender, Race, and Identity Politics; P. Portrayals of Women in Literature and Film.

FREN 130 Sports in French Literature and Cinema (4) Lecture, 3 hours; screening, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): FREN 101A or FREN 101B or FREN 101C or consent of instructor. Explores the role of sports in works of fiction from the French speaking world. Utilizes a variety of genres. Topics include the origin of Western sports, fraternity, hygiene, hubris, competition, the making and the fall of heroes, patriotism, doping, capitalism, and propaganda. Taught entirely in French.

FREN 132 Rousseau and Revolution (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the French philosopher and novelist Jean-Jacques Rousseau and the age of revolution in France, Germany, and England. Topics include social inequality, slavery, gender, subjectivity, violence, and political rights. All readings are in English. Cross-listed with CPLT 132 and GER 132.

FREN 143 France and Asia in Literature and the Arts (4) Lecture, 3 hours; screening, 20 hours per quarter; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the portrayal of Asia and the cinema, the other arts, and popular culture. Topics include colonialism, orientalism, gender, race, and language. Cross-listed with CPLT 145.

FREN 148 (E-Z) French Literature of the City (4) Lecture, 3 hours; screening, 1 hour; extra reading, 2 hours. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Explores aspects of French literature dealing with city life. Examines visual and cultural material in conjunction with literary works read and discussed. Instruction and reading is in French. S. The Culture of the Paris Suburbs.

FREN 150 (E-Z) Francophone Studies (4) Lecture, 3 hours; screening, 1 hour; term paper, 1 hour; outside research, 1 hour. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Explores the role of food in French literature. Discusses descriptions of food and concepts such as eating as consuming, food, desire, and sex; gendering of food; cooking, food preparation, recipes, and menus; and food and social class (poverty and wealth). Taught in French.

FREN 153 Children in French Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Explores the representation of children in French cinema from its inception to the present. Topics include children in the classroom (teachers’ pets and troublemakers); outside of school (juvenile delinquents); social class (the underprivileged and well-off); gender; coming of age; and parental roles (child neglect, the maternal/paternal). Conducted in French.

FREN 155 The Bande Dessinée: From Comics to Graphic Novels in French (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): FREN 101A with a grade of “C” or better or consent of instructor. Explores the formal literature of the medium of the bande dessinée in its various forms (precursors, comic strips, graphic novels, films). Novels to documentary and fiction film. Topics include choice, subjectivity, and alienation. Cross-listed with CPLT 181 and MCS 181.

FREN 190 Special Studies (1-5) To be taken with the consent of the department chair as a means of meeting special curricular problems. Course is repeatable.

FREN 195H Senior Honors Thesis (1-4) Consultation, 1 hour; individual study, 3-9 hours. Prerequisite(s): invitation by faculty to pursue honors work in French. Senior standing. Intensive study and research in consultation with a faculty member, leading to a senior thesis. Grades will be deferred until presentation of the thesis and the final examination, S or NC. Only 4 units may be applied toward the major. Course is repeatable.

FREN 290 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

FREN 291 Individual Studies in Coordinated Areas (1-6) A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.A. candidates. Does not count toward the unit requirement for the M.A. May be repeated quarterly until the qualifying examinations are completed. Graded Satisfactory (S) or No Credit (NC).

FREN 292 Concurrent Analytical Studies in French (2) Outside research, 6 hours. Prerequisite(s): consent of instructor; concurrent enrollment in a French 100-series course. To be taken on an individual basis. Student completes a graduate paper based on research related to the French 100-series course. Course is repeatable as topics change. FREN 100 and the FREN 101A, FREN 101B, and FREN 101C sequence may not be used for FREN 292.

FREN 299 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

FREN 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): CPLT 301 or equivalent; graduate standing; employment as a teaching assistant or associate in. Supervised teaching in lower-division courses. Required of all teaching assistants in French. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Languages and Literatures/Germanic Studies

Subject abbreviation: GER

Committee in Charge

Jeffrey Sacks, Ph.D. Chair, Arabic Literature/Comparative Literature
Johnnes Endres, Ph.D. Germanic Studies/Comparative Literature
Saline Thauerwaechter, Ph.D. German/Comparative Literature
Heidi Waltz, Ph.D. Linguistics/Germanic Studies
Milagros Peña Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio
The B.A. in Germanic Studies enables a student to specialize in the German language through the acquisition of language competence, as well as exposure to the study of cultural, literary and filmic practices. Students are encouraged to consider opportunities for study through the Education Abroad Program (EAP). This is an excellent opportunity to become deeply familiar with another country and its culture while earning academic units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Major
1. Lower-division requirements (24 units)
   a) Sixteen (16) units: GER 001, GER 002, GER 003, GER 004, or equivalents
   b) Eight (8) units: CPLT 001 or CPLT 001W, CPLT 002
2. Upper-division requirements (36 units)
   a) Sixteen (16) units from the following: GER 100, GER 101, GER 102, GER 103A, GER 103B, GER 104, GER 108, GER 172/PHIL 172
   b) Twenty (20) units as follows:
      (1) Sixteen (16) upper-division units in German literature and film beyond the language proficiency requirement, chosen in consultation with student's advisor.
      (2) CPLT 193 (CPLT 196 strongly recommended but not required)

Minor
1. Lower-division requirements (16 units)
   GER 001, GER 002, GER 003, GER 004, or equivalents
2. Upper-division requirements (28 units)
   a) Sixteen (16) units from the following: GER 100, GER 101, GER 102, GER 103A, GER 103B, GER 104, GER 172/PHIL 172
   b) Twelve (12) upper-division elective units in German literature, film, or courses related to Germanic Studies, with approval of the student's advisor.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Honors Program
Students who wish to undertake a special program of honors study in the upper division should apply at the beginning of the junior year. Acceptance for honors study is based on students' previous grade records and the recommendations of their instructors. Candidates for honors must demonstrate superior capacity for independent study and during the senior year are required write an individually directed senior thesis.

Graduate Programs

Master's Degree
The master's program in Germanic Studies is not currently accepting new students.

Doctoral Degree
Ph.D. studies in Germanic Studies are available through the Ph.D. program in Comparative Literature.

Lower-Division Courses

GER 001 Elementary German (4) Lecture, 4 hours. Prerequisite(s): none. An introduction to the sound system and grammar of German. Emphasizes development of active control of the language with the four basic skills of listening, speaking, reading, and writing. Credit is awarded for only one of the following sequences: GER 001, GER 002, and GER 003; GER 010A and GER 010B.

GER 001R German for Reading Knowledge (4) Lecture, 4 hours. Prerequisite(s): none. First of an intensive two-quarter sequence providing a comprehensive coverage of basic German grammar. Differ from GER 001 by placing exclusive emphasis on developing the skills of reading and translating German. No previous knowledge of German is required.

GER 002 Elementary German (4) Lecture, 4 hours. Prerequisite(s): GER 001 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of German. Focused on the development of the four skills: listening, speaking, reading, and writing. Classes conducted in German as much as possible. Credit is awarded for only one of the following sequences: GER 001, GER 002, and GER 003 sequence including the four basic skills of listening, speaking, reading, and writing. GER 001 is equivalent to the GER 001, GER 002, and GER 003 sequence including the four basic skills of listening, speaking, reading, and writing. Credit is awarded for only one of the following sequences: GER 001, GER 002, and GER 003; GER 010A and GER 010B.

GER 002R German for Reading Knowledge (4) Lecture, 4 hours. Prerequisite(s): none. An introduction to ten key authors in German literature. Credit is awarded for only one of the following sequences: GER 001, GER 002, and GER 003; GER 010A and GER 010B.

GER 014 The German Big Ten: German-Speaking Authors That Writers Should Know (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): none. Introduction to ten key authors in German literature. Covers works by the Brothers Grimm to contemporary writers such as Elfriede Jelinek and Patrick Suskind. Course conducted in English. Cross-listed with CRWT 014.

GER 045 Introduction to German Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Introduction to the history of German cinema from the advent of the studio system to the present. Covers film in Germany, Switzerland, and Austria. Attendance is paid to the work of German-speaking filmmakers living in other parts of the world. Instruction is in English; all films have subtitles. Cross-listed with MCS 042.

GER 046 Representing the Holocaust in Words and Images (4) Lecture, 3 hours; screening, 3 hours. Introduces representations of the Holocaust in documentary and narrative film, literature, and painting. Explores notions such as memory, mourning, trauma, spectatorship, and atrocity to come to terms with different responses to the Holocaust. Topics include memorialization, stigmatization, the ethics of historical representation, and black humor. Cross-listed with CPLT 046.

GER 090 Special Studies (1-3) To be taken with the consent of the department chair as a means of meeting special curricular problems. Course is repeatable.

Upper-Division Courses

GER 100 Introduction to German Literature (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): GER 004; consent of instructor. Involves reading and analysis of literary texts within a literary-historical framework. Seeks to familiarize the beginning student of literature with the main currents, representatives, and genres of modern German literature. Language of instruction is German. Ochs

GER 101 German Conversation (4) Lecture, 4 hours. Prerequisite(s): GER 004 or equivalent. Involves development of active control of the language with discussion and oral presentation of assigned topics. Supervised work in German phonetics.

GER 102 Contemporary German Cinema for Conversation (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): GER 004 or consent of instructor. Utilizes a series of German language films to connect cultural background and historical contexts with linguistic aspects. Topics include The Wall, reunification, Turk-
GER 103A Advanced Composition and Conversation (4) Lecture, 4 hours; Prerequisite(s): GER 004 or consent of instructor. Emphasis on the mastery of the subtleties of the German language, including conversation, reading, listening, and writing. Reinforces oral and written skills through exposure to and analysis of a broad range of texts, essay writing, and oral presentations.

GER 103B Advanced Composition and Conversation (4) Lecture, 4 hours; Prerequisite(s): GER 004 or consent of instructor. Improves oral and written proficiency of the German language. Emphasis is on reading increasingly difficult material, conversational use of German, vocabulary building, and study of idioms. Materials include newspaper articles and television programs that explain the German educational system, the arts, history, and politics.

GER 104 Intro to German Cultural History for Conversation (4) Lecture, 3 hours; individual study, 3 hours.

GER 107 German Drama in Translation: Theater of Revolution/Theater as Revolution (4) Lecture, 3 hours; individual study, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. Explores the influence of drama and stage on society and their role in disseminating philosophical ideas and aiding social change. Topics include the medieval Carnival play, theater of the Enlightenment and the Sturm und Drang, 19th century Realism and social drama, and Epic Theater.

GER 108 The Art of Translation (4) Lecture, 1 hour; discussion, 3 hours; Prerequisite(s): GER 101 or GER 103A or GER 103B or consent of instructor. Introduces German cultural history through conversation and composition in German. Organized thematically around politics, philosophy, music, art, and architecture. Class conducted in German.

GER 109 Masterworks of German Literature in Translation: Plays, Nineteenth-Century Realism to the 1960s (4) Lecture, 3 hours; individual study, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. Provides an introduction to the great contribution of German letters of good and bad translations. Provides an opportunity to put theory into practice.

GER 111 Berlin Metropolis in Literature, Film, Music, and Art (4) Lecture, 3 hours; screening, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. An introduction to the metropolis Berlin as a gateway between the East and West. Explores topography of the city through film, art, music, and literary texts. Considers Berlin's dramatic transformations as a microcosm of Germany and Europe's troubled history in the twentieth century. Course conducted in English. Cross-listed with AHS 120, CPLT 111, EUR 120, and MCS 178.

GER 118 (E-Z) Topics in German Cinema (4) Lecture, 3 hours; screening, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. Study of selected films, directors, and movements in German film. Films are in German with English subtitles. No knowledge of German is required. Cross-listed with MCS 118 (E-Z).

GER 124 Nordic Mythology, Folklore, and Fairytales (4) Seminar, 3 hours; extra reading, 1 hour; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the representation of animals, plants, and other appearances of the natural world such as sunrise and sunset in European creation and destruction mythology, fairytales, and folklore. Cross-listed with EUR 124.

GER 126 From Novel to Screen: Film Adaptations of German Literature (4) Lecture, 3 hours; screening, 2 hours; individual study, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to classic works of German literature and their film adaptations. Explores adaptations by film directors such as Welles, Kubrick, Visconti, and Fassbinder. Studies the nexus between literature, film, and theatre. Course conducted in English. Cross-listed with CPLT 126 and MCS 125.

GER 131 Marx, Nietzsche, Freud (4) Lecture, 3 hours; extra reading; 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Critical introduction to three central thinkers of modernity. Topics include alienation, free will, revolution, the unconscious, sexual difference, political power, and the modern conception of truth. Readings and discussions are in English. Selected readings are in German for German majors and minors. Cross-listed with CPLT 131.

GER 132 Rousseau and Revolution (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introductory study of the French philosopher and novelist Jean-Jacques Rousseau and the age of revolution in France, Germany, and England. Topics include social inequality, slavery, gender, subjectivity, violence, and political rights. All readings are in English. Cross-listed with CPLT 132 and FREN 132.

GER 134 Cinematic War Memory (4) Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines cinematic confrontations involving World War II in Germany and Japan. Topics include desire between victims and perpetrators, representation of trauma, and ethical responsibility. All screenings have English subtitles. Cross-listed with CPLT 134, JPN 134, and MCS 114.

GER 136 The Enlightenment and Its Consequences: Modern Europe in the Arts (4) Lecture, 3 hours; extra reading, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. Explores the basic ideas of modernity in Europe that are central to the history of western cultures and civilization. Focuses on the function of the arts and sciences in relation to the philosophy and concepts of the Enlightenment. Addresses humankind's changing relationship to religion, state, society, and history, as well as new strategies of self-reflection. Cross-listed with CPLT 136.

GER 137 Passions, Apparitions, and Automata (4) Lecture, 3 hours; extra reading, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. Introductory study of German Romanticism from its origins in Goethe to its development in Hoffmann. Topics include madness, sexual desire, double-decker, homicide, and <b>automata</b>. All readings are in English; selected readings are in German for German majors and minors. Cross-listed with CPLT 137 and EUR 137.

GER 163 Modern German History through Film (4) Lecture, 3 hours; screening, 3 hours; Prerequisite(s): upper-division standing or consent of instructor. Explores twentieth-century German history through film. Includes World Wars I and II, inflation and polarization of classes, Nazi Germany, representations of the Holocaust, and a divided and reunited Germany. Cross-listed with CPLT 115, HISE 163, and MCS 115.

GER 172 Reading Philosophical German (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): GER 002R or GER 004 or consent of instructor. Develops reading strategies and translation skills for German philosophical texts through a review of grammar and readings in the original language. Prepares for a graduate-level translation exam and independent research in German. Intermediate to advanced German reading proficiency required. Familiarity with German philosophical works is recommended but not required. Cross-listed with PHIL 172.
Major

The Japanese Major enables students to acquire advanced proficiency in the Japanese language and to develop critical thinking skills in their analysis of Japanese literary, filmic, and social texts. Students are encouraged to study in Japan through the University of California’s numerous Education Abroad Programs.

1. Lower-division requirements (16 units plus language proficiency)

a) Proficiency in Japanese through the intermediate level (JPN 006 or its equivalent)

b) Eight (8) units from lower-division lecture courses on Japanese literature and culture: AST 022/JPN 022/MCS 022, AST 023/CPLT 023/JPN 023, AST 032/JPN 032, AST 034/JPN 034, AST 056/CPLT 056/JPN 056, JPN 035. and any other lower-division lecture courses on Japanese literature, culture, and film chosen in consultation with the student’s advisor.

c) Eight (8) units from CPLT 001 or CPLT 001W, CPLT 002.

2. Upper-division requirements (36 units)

a) Twelve (12) upper-division units in Japanese language from JPN 101A, JPN 101B, JPN 101C, JPN 110. Students whose proficiency exceeds the 101 series should take the 8 required units by taking JPN 110 more than once, by using EAP language courses, or, under the JPN 190 rubric, by converting an existing “content” course into a language course with the instructor’s help.

b) Twenty (20) units in upper-division Japanese literature and culture from AST 150/JPN 150, AST 151/JPN 151, AST 152 (E-Z)/JPN 152 (E-Z), AST 153 (E-Z)/JPN 153 (E-Z), AST 184/JPN 184, AST 190, CPLT 134/GER 134/JPN 134/MCS 134, CPLT 142/JWMST 142, CPLT 145/JPN 145, JPN 110, JPN 190, KOR 112, and any other upper-division lecture courses on Japanese literature, culture, and film chosen in consultation with the student’s advisor.

c) Four (4) units in CPLT 193. (CPLT 196 strongly recommended but not required)

Languages and Literatures/Japanese Minor

The Japanese Minor enables students to acquire intermediate proficiency in the Japanese language and to develop critical thinking skills in their analysis of these literary, filmic, and social texts. Students are encouraged to study in Japan through the University of California’s numerous Education Abroad Programs.

1. Lower-division requirements (4 units plus language proficiency)

a) Proficiency in Japanese through the intermediate level (JPN 006 or its equivalent)

b) Four (4) units from lower-division lecture courses on Japanese literature and culture: JPN 022/AST 022/MCS 022, JPN 023/AST 023/CPLT 023, JPN 034/JPN 034, JPN 035, JPN 056/AST 056/CPLT 056, and any other lower-division lecture courses on Japanese literature, culture, and film chosen in consultation with the student’s advisor.

2. Upper-division requirements (20 units)

a) Eight (8) upper-division units in Japanese language from: JPN 101A, JPN 101B, JPN 101C, JPN 110. Students whose proficiency exceeds the 101 series should take the 8 required units by taking JPN 110 more than once, by using EAP language courses, or, under the JPN 190 rubric, by converting an existing “content” course into a language course with the instructor’s help.

b) Twelve (12) units in Japanese literature and culture from: AST 190, CPLT 142/JWMST 1421, JPN 110, JPN 134/CPLT 134/GER 134/JPN 134/MCS 134, CPLT 142/JWMST 142, CPLT 145/JPN 145, JPN 110, JPN 190, KOR 112, and any other upper-division lecture courses on Japanese literature, culture, and film chosen in consultation with the student’s advisor.

Japanese Courses

Foreign Language Placement Examination

A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

JPN 001 First-Year Japanese (4)

Prerequisite(s): Student must take the Japanese placement examination. An introduction to the sound system and grammar of Japanese. Emphasizes speaking, reading, writing, and comprehension skills. Classes are conducted in Japanese whenever possible. Credit is awarded for only one of the following sequences: JPN 001, JPN 002, and JPN 003 or JPN 010A and JPN 010B sequences.

JPN 002 First-Year Japanese (4)

Prerequisite(s): JPN 001 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Japanese with emphasis on speaking, reading, writing, and understanding. Classes are conducted in Japanese insofar as possible. Credit is awarded for only one of the JPN 001, JPN 002, and JPN 003 or JPN 010A and JPN 010B sequences.

JPN 003 First-Year Japanese (4)

Prerequisite(s): JPN 002 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Japanese with emphasis on speaking, reading, writing, and understanding. Classes are conducted in Japanese insofar as possible. Credit is awarded for only one of the JPN 001, JPN 002, and JPN 003 or JPN 010A and JPN 010B sequences.

JPN 004 Second-Year Japanese (4)

Prerequisite(s): JPN 003 with a grade of “C-” or better or JPN 010B with a grade of “C-” or better or equivalent. Introduces levels of speech and emphasizes reading and writing of advanced prose.

JPN 005 Second-Year Japanese (4)

Prerequisite(s): JPN 004 or equivalent. Concentrates on advanced speech levels and their cultural underpinnings.

JPN 006 Second-Year Japanese (4)

Prerequisite(s): JPN 005 or equivalent. Emphasizes the academic style of written and spoken Japanese and academic comprehension of the cultural background.

JPN 010A Intensive First-Year Japanese (6)

Prerequisite(s): JPN 010A with a grade of “C-” or better or equivalent. An intensive introduction to Japanese. Addresses speaking, reading, writing, and comprehension skills. The JPN 010A and JPN 010B sequence covers the same material as the JPN 001, 002, and 003 sequence. Credit is awarded for only one of the following sequences: JPN 001, JPN 002, and JPN 003; JPN 010A and JPN 010B.

JPN 010B Intensive First-Year Japanese (6)

Prerequisite(s): JPN 010A with a grade of “C-” or better or equivalent. An intensive introduction to Japanese. Addresses speaking, reading, writing, and comprehension skills. The intensive JPN 010A and JPN 010B sequence covers the same material as the JPN 001, 002, and JPN 003 sequence. Credit is awarded for only one of the JPN 001 or JPN 002 or JPN 003 or JPN 010A and JPN 010B.

JPN 022 Introduction to Japanese Film (4)

Prerequisite(s): JPN 001 with a grade of “C-” or better or equivalent. An introduction to the major directors and to watching and writing about Japanese film. Works studied range from the samurai epics of Kurosawa to recent anime. Film has subtitles. No previous knowledge of Japanese language or culture is required. Cross-listed with AST 022 and MCS 022.

JPN 023 Modern Japan and Personal Narrative (4)

Prerequisite(s): JPN 023 with a grade of “C-” or better or equivalent. An introduction to Japanese culture and society through the genres of biography, autobiography, diary, and confession. Explores the parallel construction of the modern nation, the modern language, and the modern self. Explores the development of Japan’s “novel.” Builds skills in close reading by studying the rhetoric of self-narrative. Cross-listed with AST 023 and CPLT 023.

JPN 034 Introduction to Classical Japanese Literature (4)

Prerequisite(s): JPN 034 with a grade of “C-” or better or equivalent. An introduction to Japanese literature from 18th century poetry collections to 18th century puppet plays. Focuses on the relationship among aesthetics, politics, language, and genre. Assignments include manga translations, creative writing, and intensive Web research. Cross-listed with AST 034.

JPN 035 Modern Japanese Society (4)

Prerequisite(s): JPN 035 with a grade of “C-” or better or equivalent. An introduction to Japanese culture and society with emphasis on the day-to-day lives of the modern Japanese people at home, work, and play.

JPN 056 Cultures of the Japanese Empire (4)

Prerequisite(s): JPN 056 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Japanese with emphasis on speaking, reading, writing, and understanding. Classes are conducted in Japanese insofar as possible. Credit is awarded for only one of the JPN 001, JPN 002, and JPN 003 or JPN 010A and JPN 010B sequences.

Comparative Literature and Foreign Languages / 194
ers the social histories and literatures of the Japanese Empire from the foundation of the Meiji state to the present. Includes the Ainu, Okinawan, Taiwanese, and Korean cultures. Explores the concepts of assimilation, citizenship, national language, nation-state, sovereignty, total war, and translation. Utilizes readings in English. Cross-listed with AST 056 and CPLT 056.

JPN 000 Special Studies (1-5) Individual study, 3-15 hours. To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems in either language or literature. Course is repeatable.

Upper-Division Courses

JPN 101A Third-Year Japanese (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): JPN 006. Designed to develop students’ reading, writing, and speaking abilities in Japanese. The course is conducted in Japanese.

JPN 101B Third-Year Japanese (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): JPN 101A. Designed to develop students’ reading, writing, and speaking abilities in Japanese. The course is conducted in Japanese.

JPN 101C Third-Year Japanese (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): JPN 101B. Designed to develop students’ reading, writing, and speaking abilities in Japanese. The course is conducted in Japanese.

JPN 110 Advanced Reading in Japanese (4) Lecture, 3 hours; extra reading, 1 hour; written work, 2 hours. Prerequisite(s): previous or concurrent enrollment in JPN 101C or equivalent. Reading of extended authentic texts in Japanese. Texts may include newspaper or magazine articles, literature, or nonfiction. Emphasis may extend to translation, textual analysis, basic research using primary sources, or discussion of texts in Japanese. Course is repeatable as content changes.

JPN 134 Cinematic War Memory (4) Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines cinematic confrontations involving World War II in Germany and Japan. Topics include desire between victims and perpetrators, representation of trauma, and ethical responsibility. All screenings have English subtitles. Cross-listed with CPLT 134, GER 134, and MCS 114.

JPN 145 Modern Japanese Thought (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of modern Japanese thought from a theoretical and intellectual historical perspective. Topics include philosophical discussions of modernization, “Westernization,” nationalism, colonialism and imperialism, “comfort women,” Japanese war crimes in continental Asia, the American bombing of Hiroshima and Nagasaki, post-WWII remembrance and denial. All readings are in English. Cross-listed with CPLT 145.

JPN 150 In Women’s Hands: Reading Japanese Women Writers (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines major works of Japanese women writers from Heian (ninth century) to contemporary, focusing on themes, gender, representations of gender, ideas of love and romance, and feminine aesthetics. Readings include fiction, poetry, essays, and drama, with the main emphasis on fictional writing. Classes are conducted in English. Cross-listed with AST 150.

JPN 152 (E-Z) Themes in Modern Japanese Literature (4) Lecture, 2 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to modern Japanese literature in translation, as seen through the lens of a particular theme or issue. All materials read or viewed in English. E. The End of the World in Japanese Literature. F. The Mask in Japanese Fiction; G. Love and Death; J. Classics and Canon; K. Dreams and Other Virtual Worlds. Cross-listed with AST 152 (E-Z).

JPN 153 (E-Z) Themes in Early Japanese Literature (4) Lecture, 2 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to early Japanese literature, as seen through the lens of a particular theme or issue. All works are read in English translation. E. Supernatural Japan; F. Warrior Japan; G. The Culture of the Floating World: Tokugawa Period Literature, Drama, and Art. Cross-listed with AST 153 (E-Z).

JPN 154 (E-Z) Themes in the Folklore and Popular Culture of Japan (4) Lecture, 2 hours; discussion, 1 hour; extra reading, 1 hour; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include myth, legend, folklore, folk performance, festival, ritual, and the development of popular or commercial culture. Considers literary versus oral tradition, ethnic identity, authenticity, nationalism, modernity, commodification, and the invention of tradition. E. Ancient Myth to Contemporary Legend: A Study of Japanese Folk Narrative; F. History of Japanese Popular Culture. Cross-listed with AST 154 (E-Z).

JPN 180 Japanese Documentary (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Studies the history of Japanese documentary cinema. Teaches strategies for reading nonfiction visual narrative. Explores other forms of documentation controversial in modern Japanese history including oral testimony, photography, and internet activism. Topics may include war, protest, peace activism, environmental activism, national politics, and green energy. Course is repeatable as topics and instructor change to a maximum of 8 units. Cross-listed with AST 180 and MCS 180.

JPN 184 Japanese Media and Cultural Studies (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates Japanese media and culture including film, television, video games, manga, anime, music, and print and digital media. Analyzes the function of media relating to issues of national identity, imperial culture, collective memory, and censorship. Includes transnational circulation of Japanese cultural forms, alternative media, and historical changes in technologies. Cross-listed with AST 184 and MCS 184.

JPN 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems in either language or literature. Course is repeatable.

Languages and Literatures/Korean Minor

The Korean minor provides students with the knowledge of Korean language, literature, culture, and society.

1. Lower-division requirements (8 units plus language proficiency)
   a) Four (4) upper-division units in Korean language from KOR 101
   b) Eight (8) units in Korean literature and culture from KOR 110 (E-Z), KOR 112/AST 112, Four (4) units in Asian literatures and cultures; can be chosen from all the upper-division lecture courses on Asian literature and culture from the department as well as Korea-related upper-division courses from other departments (with adviser’s consent), including the courses listed under (2)

Korean Courses

Foreign Language Placement Examination

A placement examination is required of all freshmen entering the humanities, arts, and social sciences who wish to minor in the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses

KOR 001 First-Year Korean (4) Lecture, 4 hours. Prerequisite(s): Student must take the Korean placement examination. An introduction to the sound system and grammar of Korean. Emphasizes reading, writing, understanding, and speaking. Credit is awarded for only one of the following sequences: KOR 001, KOR 002, KOR 003, and KOR 004; KOR 001, KOR 002, and KOR 020B; KOR 020A and KOR 020B.

KOR 002 First-Year Korean (4) Lecture, 4 hours. Prerequisite(s): KOR 001 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Korean with emphasis on reading, writing, understanding, and speaking. Credit is awarded for only one of the following sequences: KOR 001, KOR 002, KOR 003, and KOR 004; KOR 001, KOR 002, and KOR 020B; KOR 020A and KOR 020B.

KOR 003 First-Year Korean (4) Lecture, 4 hours. Prerequisite(s): KOR 002 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Korean with emphasis on reading, writing, understanding, and speaking. Credit is awarded for only one of the following sequences: KOR 001, KOR 002, KOR 003, and KOR 004; KOR 001, KOR 002, and KOR 020B; KOR 020A and KOR 020B.

KOR 004 Second-Year Korean (4) Lecture, 4 hours. Prerequisite(s): KOR 003 with a grade of “C-” or better or equivalent. A continuation of Korean language study. Emphasizes reading, writing, grammar, and conversation. Credit is awarded for only one of the following sequences: KOR 001, KOR 002, KOR 003, and KOR 004; KOR 001, KOR 002, and KOR 020B; KOR 020A and KOR 020B.

KOR 005 Second-Year Korean (4) Lecture, 4 hours. Prerequisite(s): KOR 004 or KOR 020B. A continuation of Korean language study. Emphasizes reading, writing, grammar, and conversation. Conducted primarily in Korean.

KOR 020A First-Year Korean for Heritage Learners (4) Lecture, 4 hours. Prerequisite(s): Student must take the Korean placement examination. A first-year Korean course designed for heritage learners who have some proficiency in listening comprehension
and speaking but are unable to read and write in Korean. Credit is awarded for only one of the following sequences: KOR 001, KOR 002, KOR 003, and KOR 004; KOR 001, KOR 002, and KOR 020B, KOR 020A and KOR 020B.

KOR 020B First-Year Korean for Heritage Learners (4)
Lecture, 4 hours. Prerequisite(s): KOR 002 with a grade of "C-" or better or KOR 020A with a grade of "C-" or better or equivalent or a sufficiently high test score on the Korean placement examination as determined by the department faculty. A first-year Korean course designed for heritage learners who have some proficiency in listening comprehension and speaking but are unable to read and write in Korean. Credit is awarded for only one of the following sequences: KOR 001, KOR 002, KOR 003, and KOR 004; KOR 001, KOR 002, and KOR 020B; KOR 020A and KOR 020B.

KOR 42 Korean Culture and Society (4)
Lecture, 3 hours; screening, 15 hours per quarter; extra reading, 1.5 hours. Prerequisite(s): none. An introduction to major themes, events, and trends in Korean culture and society. Covers the end of the nineteenth century to the present. All readings are in English, and all films have subtitles.

KOR 047 Introduction to Korean Film (4)
Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to the major directors and films of Korea. Covers the genres and periods of works produced from the 1960s to the present. All films have English subtitles. No previous knowledge of Korean language or culture required. Cross-listed with AST 047 and MCS 047.

Upper-Division Course
KOR 101 Advanced Korean (4)
Lecture, 3 hours; written work, 3 hours. Prerequisite(s): KOR 005 or consent of instructor. Designed to develop students' fluency in Korean to the level of intellectual conversation. Students review Korean web sites, view Korean films, read Korean short stories and journal articles, and discuss current issues of Korean society. Course is repeatable as content changes.

KOR 110 (E-Z) Themes in Modern and Contemporary Culture of Korea (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores themes of modern and contemporary Korean literature and culture. M. History, Memory, and Nostalgia; T. Tradition of Social Criticism.

KOR 112 Modern Korean Literature (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of modern Korean literature from the colonial era to the present. Topics include colonialism; cultural influence and exchange; gender, family and sexuality; nation and nationalism; Confucian tradition and patriarchal culture; and modernization and capitalism. Cross-listed with AST 112.

KOR 120 Narrating the Korean War (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the Korean War from various perspectives and through diverse reading and visual material (including film). Topics and themes may include narrative techniques, colonialism, imperialism, militarism, humanism, nationalism, the EastWest relationship, and gender ideologies.

Languages and Literatures/Russian
Subject abbreviation: RUSN

Major
The B.A. in Languages enables a student to specialize in two foreign languages through the acquisition of language competencies, as well as exposure to the theoretical basis and structure of language itself (linguistics), and the study of the cultural and literary practices, which the target languages reflect and enact. Students interested in a single language concentration should see individual language program listings in this catalog.

1. CPLT 001 or CPLT 001W, CPLT 002, and LING 020
2. Elementary and intermediate courses in languages one and two as required
3. Sixty (60) upper-division units distributed as follows:
   a) Language one — 28 units which must include the following minimums:
      (1) Sixteen (16) units in language
      (2) Twelve (12) units in literature and culture
   b) Language two — 20 units which must include the following minimums:
      (1) Twelve (12) units in language
      (2) Eight (8) units in literature and culture
      c) LING 111 — 4 units
d) One other course in Linguistics — 4 units
e) CPLT 193 (4 units). (CPLT 196 strongly recommended by not required.)

Languages and Literatures/Russian

Committee in Charge
Vinna Chidambaram, Ph.D., Chair, Linguistics/Comparative Literature
Ekaterina Yudina, Ph.D., Russian
Milagros Peña Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

Students are encouraged to consider opportunities for study through the Education Abroad Program (EAP). This is an excellent opportunity to become deeply familiar with another country and its culture while earning academic units towards graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at eap.ucop.edu.

Major
The Russian Studies B.A. has been developed for students who are interested in Russian language and literature, Russian history and civilization.

Individual major programs are dependent upon the students’ particular interests. In consultation with the advisor, each student plans a coherent program of courses to meet the requirements for the major. Normally, students’ programs are submitted for approval no later than the beginning of their junior year.

1. Lower-division requirement: CPLT 001 or CPLT 001W, and CPLT 002
2. Upper-division requirements
   a) Language requirement: 12 units from RUSN 101 (E-Z), RUSN 102 (E-Z), RUSN 120 (E-Z), RUSN 103
   b) Literature requirement: 12 units from RUSN 109A, RUSN 109B, RUSN 109C
   3. Civilization requirements: 12 units from EUR 111A, EUR 111B, EUR 111C
   4. CPLT 193 (4 units). (CPLT 196 strongly recommended but not required)

Total upper-division units: 40.

Minor
The department offers a 24-unit disciplinary minor in Russian Studies.

The requirements for the minor are as follows:
1. Eight (8) units of RUSN 101 (E-Z), RUSN 102 (E-Z), RUSN 103
2. Sixteen (16) units of Russian Literature and Civilization courses chosen from the following:
   RUSN 109A, RUSN 109B, RUSN 109C, RUSN 120 (E-Z)
   EUR 111A, EUR 111B, EUR 111C

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placement@ucr.edu for date and time. Transfer students who have taken a college-level language course may not take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Lower-Division Courses
RUSN 001 Elementary Russian (4)
Lecture, 4 hours. Prerequisite(s): none. An introduction to the sound system and grammar of Russian, with attention to the development of the four skills of listening, speaking, reading, and writing.

Committee in Charge
Heidi Brevik-Zender, Ph.D., Chair French/Comparative Literature
Heidi Waltz, Ph.D. Linguistics/Germanic Studies
Yenna Wu, Ph.D. Chinese/Civilizations/Comparative Literature
Milagros Peña Ph.D.
RUSN 002 Elementary Russian (4) Lecture, 4 hours. Prerequisite(s): RUSN 001 with a grade of "C-" or better. An introduction to the sound system and grammar of Russian. Focuses on the development of the four skills of listening, speaking, reading, and writing.

RUSN 003 Elementary Russian (4) Lecture, 4 hours. Prerequisite(s): RUSN 002 with a grade of "C-" or better. An introduction to the sound system and grammar of Russian. Focuses on the development of the four skills of listening, speaking, reading, and writing.

RUSN 004 Intermediate Russian (4) Lecture, 4 hours. Prerequisite(s): RUSN 003 with a grade of "C-" or better. A comprehensive review of the basic grammatical structures of Russian. Includes irregular and idiomatic forms, vocabulary building, and development of conversation and composition skills.

RUSN 027 Russian Conversation (1) Discussion, 1 hour. Prerequisite(s): RUSN 001. Weekly discussion of topics of current interest, intended to develop and maintain basic conversational skills. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit for a total of 6 units.

RUSN 045 Soviet Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. A survey of the Soviet cinema, beginning with the film innovations of the 1920s and continuing with representative films from each of the ensuing periods of Soviet culture. All work done in English. Cross-listed with MICS 043.

RUSN 090 Special Studies (1-5) To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable.

Upper-Division Courses

RUSN 101 (E-Z) Advanced Russian (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): RUSN 004 or consent of instructor. Students read texts in literature and expository prose, with attention to usage, style, grammar, and interpretation. Emphasis on developing reading and translating skills for adult-level reading competence. G. Readings from Poetry; J. Readings from Soviet Literature; M. Readings from Drama; N. Readings in History; O. Readings in Social Science; Q. Readings in Newspapers and Popular Literature; R. Readings from Classics of Russian Literature.

RUSN 102 (E-Z) Advanced Russian: Grammar (2) Lecture, 2 hours. Prerequisite(s): RUSN 004 or consent of instructor. Each segment will deal with a specific topic in Russian grammar at an advanced level. Texts or materials vary from quarter to quarter. E. Nominal Declensions; F. Syntax I; G. Phonetics; I. Syntax II; J. Syntax III; K. Vocabulary Building; M. Verb Morphology.

RUSN 103 Advanced Russian Conversation and Composition (2) Lecture, 2 hours. Prerequisite(s): RUSN 004 or consent of instructor. Conversation and short compositions in Russian. Intended to develop and maintain basic conversational and writing skills. Course is repeatable to a maximum of 8 units.

RUSN 109A Survey of Russian Literature in Translation (4) F Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to major literary figures and representative masterpieces of the Golden Age (1830-1880). Any course in the RUSN 109A, RUSN 109B, and RUSN 109C sequence may be taken independently.

RUSN 109B Survey of Russian Literature in Translation (4) W Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to major literary figures and representative classics of the late nineteenth century and prerevolutionary twentieth century (1880-1917). Any course in the RUSN 109A, RUSN 109B, and RUSN 109C sequence may be taken independently.

RUSN 109C Survey of Russian Literature in Translation (4) S Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to major literary figures and representative works of the Soviet period (1917-1991). Any course in the RUSN 109A, RUSN 109B, and RUSN 109C sequence may be taken independently.

RUSN 120 (E-Z) Studies in Russian Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): RUSN 004 or consent of instructor. Analysis and discussion of representative works of Russian literature. Readings are in Russian and vary from quarter to quarter. F. Readings in Twentieth Century; G. Readings in Nineteenth Century.

RUSN 190 Special Studies (1-5) To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable.

RUSN 195 Senior Thesis (1-4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Each segment will deal with a specific topic in Russian grammar at an advanced level. Texts or materials vary from quarter to quarter. E. Nominal Declensions; F. Syntax I; G. Phonetics; I. Syntax II; J. Syntax III; K. Vocabulary Building; M. Verb Morphology.

Graduate Courses

CPLT 290 Directed Studies (1-6) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CPLT 292 Concurrent Analytical Studies (2) Outside research; 6 hours. Prerequisite(s): consent of instructor; concurrent enrollment in RUSN 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the RUSN 100-series course. May be repeated with different topic. RUSN 103 may not be used for RUSN 292.

Professional Courses

CPLT 301 Teaching of Foreign Language at the College Level (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing, or senior standing with consent of instructor. Covers first and second language acquisition; general models of L2 learning; learning different types of grammar; learning other components of language: acquisition of pronunciation, vocabulary, and discourse; multilingual societies and the goals of language teaching; and implications of second language acquisition research. For the foreign language classroom. Graded Satisfactory (S) or No Credit (NC).

RUSN 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): CPLT 301 or equivalent; graduate standing; employment as a teaching assistant or associate in. Supervised teaching in lower-division courses. Required of all teaching assistants in Russian. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Linguistics

Subject abbreviation: LING

College of Humanities, Arts, and Social Sciences

Vrinda Chidambaram, Ph.D., Chair
Committee in Charge
Curt Burgess (Psychology)
Peter Graham (Philosophy)
Tenibaic (T.S.) Harvey (Anthropology)
Judith Kroll (Psychology)

Covadonga Lamar-Prieto (Hispanic Studies)
Gerald Maguire (Medical School)
Jessica Montag (Psychology)
Hyejin Nah (Anthropology)
Michael Nelson (Philosophy)
Christian Shelton (Computer Science)
Heidi Waltz (Comparative Literature & Foreign Languages)
Jon Wills (Psychology)

Linguistics is the science of language. It seeks to discover the psychological and motor mechanisms of human speech, the similarities and differences among languages, how languages change, and the way in which language is acquired. Because linguistics is largely independent of fields with which the student is likely to be familiar, no special background is required for students entering the major.

Linguistics interacts with a wide variety of fields, such as articulatory phonetics (biology), acoustic phonetics (physics), field methods (anthropology), language and culture (anthropology), sociolinguistics, psycholinguistics, neurolinguistics, logic, the philosophy of language, and the study of particular languages (including their history). This interaction provides opportunities for students with varied interests and can give new perspectives to those in related disciplines.

Major

Upon electing the linguistics major, and certainly no later than the middle of the sophomore year, a student should see the Director of the Linguistics Committee for advising.

The director can help students find a suitable advisor to file the necessary forms. In consultation with an advisor, a student plans a coherent program of specific courses to meet the requirements below. The student and the advisor must then submit a copy of the program to the Full Committee on Linguistics for approval.

Students interested in the linguistics major should request from the committee director information concerning the many possible course programs. Many of them permit double majors, thus providing strong preparation for further study in two fields.

Students may add variety and depth to their UCR linguistics major by attending a Summer Program in Linguistics (held in various places) or by participating in the Education Abroad Program (EAP). This is an excellent opportunity to become deeply familiar with another country and its culture while earning academic units towards graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is
found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Requirements for the major are as follows:
1. LING 020
2. Twenty-four (24) upper-division units distributed as follows:
   a) LING 111, LING 121, LING 131, LING 141
   b) ANTH 123
   c) PHIL 132 or PSYC 135
3. At least 12 additional upper-division units of linguistic electives, to be chosen in consultation with the advisor and with the approval of the Linguistics Program director. (The additional courses may be in linguistics or in related fields. They may relate either to a particular field or specialization or to general linguistics.)
4. Foreign language proficiency equivalent to six quarters (24 units) of study, including at least fourth-quarter proficiency in one language. (Students may arrange with the director to satisfy this requirement by examination.)

Honors Program in Linguistics

1. Linguistics requirement: LING 020, LING 111, LING 121, LING 141, LING 190, LING 191
2. Related courses requirement:
   a) ANTH 120, ANTH 123
   b) ENGL 112
   c) CS 008, CS 010, CS 012
   d) MATH 144
   e) PHIL 008 or PHIL 008H
   f) Additional courses as may be required by the Linguistics Committee

3. Language Requirement — study in at least two language areas:
   a) Primary language: 24 units of foreign language instruction in a single language (this may include any courses taught in that language) plus courses in the structure, phonetics and history of the primary language, if available
   b) Secondary language: 16 units of a single language or at least 8 units in each of two languages (none of which may be members of the same subfamily of Indo-European as the primary language) plus at least 8 units in the structure, phonetics, or history of the language(s) chosen for the secondary area

In fulfilling the language requirement, students interested in earning a degree beyond the B.A. should take into account the foreign language requirements of the graduate schools to which they may apply. Students must have at least a 3.00 GPA in courses required for the Honors Program.

Lower-Division Courses
LING 020 Language and Linguistics (4) Lecture, 3 hours. An introduction to modern linguistics. The nature of language; language structure; grammars; the languages of the world; historical and comparative linguistics; interdisciplinary approaches, including anthropological and psycholinguistics. Megenney, Waltz
LING 021 Grammar (4) Lecture, 3 hours, consultation, 1 hour. Fundamental concepts of grammatical structure: parts of speech, paradigms, word families, agreement and government, the grammar of sentences and longer units of discourse; style.

Upper-Division Courses
LING 111 Phonetics (4) Lecture, 3 hours; laboratory, 1 hour; outside research, 1 hour; extra reading, 1 hour. Prerequisite(s): LING 020. Survey of various approaches to phonetics, including acoustic and auditory phonetics. Topics in pronouncing and recognizing sounds from many languages. Covers methods of transcribing and analyzing these sounds.
LING 121 Syntax (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): LING 111. LING 111 or LING 121. Studies word structure, the lexical component of language, allomorphy, types of morphemes, and inflectional and derivational morphology. Examines various theories of lexical/morphological organization in the brain. Examples are taken from English and other Indo-European languages.
LING 141 Phonology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): LING 111. Introduction to the study of functional sound units in speech, including phonotactics, morphophonemics. Various theories are examined, including generative. Applications: speech correction, speech analysis, English, foreign languages. Levin
LING 151 Semantics (4) Lecture, 3 hours; extra reading, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): LING 121. Introduces the study of meaning and its metalinguistic preliminaries. Explores lexical, sentence, and utterance meaning (including speech acts, text, and discourse). Provides a survey of theories of meaning, such as structural semantics and language as a semiotic system.
LING 160 (E-Z) Topics in Dynamic and Comparative Linguistics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): LING 111; LING 121 or LING 141. Comparative analyses of language groups such as Spanish and Portuguese, Slavic languages, and Native American languages. E. Historical Linguistics; F. Diachronology; G. Language Change; I. Sociolinguistics.
LING 162 Language and the Brain (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): LING 020. Introduces the study of language and the brain, including speech production and comprehension, neurolinguistics, and aphasiology. Explores language acquisition problems, links between language knowledge and language use, speech disorders, and aphasia types. Presents neurolinguistic case studies with evidence from split-brain patients and fMRI data.
LING 167 Structural/Descriptive Linguistics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): LING 020 or consent of instructor. An overview, from the original sources, of the contribution of major figures and schools in linguistics from Saussure through early Chomsky. Cross-listed with ANTH 167. Kronenfeld
LING 190 Special Studies (1-5) To be taken with the consent of the chair of the Committee as a means of meeting special curricular problems. Course is repeatable.
LING 192 Tutorial Activities (1-2) Prerequisite(s): junior or senior standing and nomination by faculty. Enlarging understanding of linguistics through conducting tutorial sessions in introductory courses, under the supervision of faculty members responsible for the courses involved. Graded Satisfactory (S) or No Credit (NC). May be repeated for a maximum of three quarters.
LING 195 Senior Thesis (2-4) Thesis, 6-12 hours. Prerequisite(s): senior standing or consent of instructor. Independent research and preparation of a thesis completed under the supervision of a faculty member. Course is repeatable to a maximum of 12 units.
LING 195H Senior Honors Thesis (2-4) Thesis, 6-12 hours. Prerequisite(s): invitation by faculty to pursue honors work in Linguistics; senior standing or consent of instructor. Intensive study, research, and preparation of a thesis in consultation with a faculty member. Grades are deferred until presentation of the thesis at the end of the final quarter. Satisfactory (S) or No Credit (NC) grading is not available. To be taken during two or three successive quarters; course is repeatable to a maximum of 12 units.
LING 198 R'Course - Variable Topics (1) activity hours vary per R'Course proposal. Prerequisite(s): permission needed from department. An opportunity for UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 8 units.

Related Courses
Refer to departmental listings for course descriptions.

Anthropology
ANTH 120 (Language and Culture)
ANTH 123 (Linguistic Anthropology)
ANTH 165 (Cognitive Anthropology)
ANTH 259 (Anthropological Linguistics)

Education
EDUC 172 (Reading and Language Development)
EDUC 175 (Language Development in Content Areas)
EDUC 176 (Language Development in Content Areas)
EDUC 201A (Theories and Processes of Reading)

English
ENGL 112 (History of the English Language)

Languages and Literatures/French
FREN 104 (Phonetics)

Mathematics
MATH 144 (Introduction to Set Theory)

Philosophy
PHIL 125 (Intermediate Logic)
PHIL 126 (Advanced Logic)
PHIL 132 (Philosophy of Language)

Psychology
PSYC 110 (The Brain and Behavior)
PSYC 134 (Cognitive Processes)
PSYC 135 (Psycholinguistics)
PSYC 163 (Cognitive Development)
Major
The Computer Engineering major stresses the study of core computer science and electrical engineering topics. It prepares students for careers in the design of complex systems involving computer hardware, computer software, electronics and electrical signals for communications, networking, desktop computing, and embedded computing.

The objective of the Computer Engineering program is to produce graduates who:
- have a mastery of the fundamental areas required for designing and using computers and engineered systems that contain computers
- have an ability to apply principles of engineering, mathematics, science, and statistics to the use, design, and interfacing of computers
- are able to apply modern design methodologies and state-of-the-art tools to design problems common to modern computer engineering practice
- have had extensive, relevant laboratory and hands-on experience to strengthen their understanding of scientific, logical, statistical, and engineering principles
- have a well-rounded and balanced education through required studies in selected areas of the humanities and social sciences
- are adept at both oral and written communication
- possess the high-quality undergraduate education necessary to progress to the M.S. and Ph.D. level or succeed in a career in industry
- understand the social, cultural, ethical, and environmental context of their work

The Computer Engineering B.S. degree program at UCR is accredited by the Engineering Accreditation Commission of ABET, abet.org. For more details, visit cen.ucr.edu.

University Requirements
See Undergraduate Studies section.

College Requirements
See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The Computer Engineering major uses the following major requirements toward the satisfaction of some of the college's Natural Science and Mathematics breadth requirements.

1. MATH 008B or MATH 009A
2. PHYS 040A, PHYS 040B, PHYS 040C

Graduate Program
The Computer Engineering program offers the B.S. + M.S. program and the M.S. degree in
Computer Engineering. Specific requirements or each degree are described below.

Master’s Degree

M.S. in Computer Engineering The college offers an M.S. program in Computer Engineering.

Admission All applicants to this program must have completed a bachelor’s degree or its approved equivalent from an accredited institution and to have attained undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applicants should have at least an undergraduate major in Computer Engineering, Computer Science, Electrical Engineering or a closely related field.

Applicants who fail to meet this criterion may sometimes be admitted with course deficiencies. However, no more than three deficiencies will be allowed.

All applicants must submit scores from the Graduate Record Exam, General Test (GRE). The GRE subject test in Computer Science or Electrical Engineering is recommended but not required. Applicants whose first language is not English are required to submit acceptable scores from the TEST of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application.

Prerequisite Material Competence in the areas defined by the following UCR courses is essential to graduate study in computer engineering:

EE 100A, CS 153, CS 161, CS 120A/EE 120A

A student who is deficient in any of these competency areas may be asked to pass the corresponding UCR course with a letter grade of at least B, a grade of S if S/NC is an option for the class with the instructors approval, or to pass a challenge examination based on that course’s final exam with a grade of at least B. All such remedial work should be completed within the first year of graduate study, and in all cases the deficiency must be corrected before a student can enroll in any graduate course from the same specialty area. The admission prerequisite courses listed above may not be taken for graduate credit.

Course Requirements Students must be in residence at least one year and complete a minimum of 44 quarters units of graduate and upper division undergraduate courses in or related to the major subject area. Students who have completed similar courses elsewhere may petition for waiver of a required course or for substitution of an alternative course. For students interested in interdisciplinary research, individual study programs can be approved.

1. Core Requirement (12 units). Three courses from the list of core courses below, with no grade lower than B-.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 201</td>
<td>CS 202</td>
</tr>
<tr>
<td>CS 203</td>
<td>CS 220</td>
</tr>
<tr>
<td>EE 213</td>
<td>CS 217/EE 217</td>
</tr>
</tbody>
</table>

2. Technical Electives (16 units). Choose four from Computer Science or Electrical Engineering 200-level courses. Seminar courses (CS 260 and CS 270-level courses, EE 260-level courses), as well as CS 290, CS 297, CS 299 and EE 290, EE 297 and EE 299 may not be used.

3. Additional Credits (16 units). This category may be satisfied by a combination of the choices below:

- Additional graduate technical electives as described under (2.) above;
- Up to three of the undergraduate technical electives below to satisfy additional credits:
  - CS 111, CS 120B, CS 122A, CS 122B, CS 130, CS 141, CS 150, CS 152, CS 160, CS 161I, CS 162, CS 164, CS 165, CS 166, CS 168, CS 169, CS 170, CS 171, CS 172, CS 177, CS 179 (E-Z), CS 180, CS 181, CS 183, CS 193, EE 100B, EE 105, EE 115, EE 120B, EE 123, EE 128, EE 132, EE 133, EE 135, EE 141, EE 144, EE 146, EE 150, EE 151, EE 152, EE 165, EE 175A, EE 175B, ENGR 160; or
- Up to two seminar classes (CS260, EE260 or similar classes);
- With the pre-approval of the graduate advisor, any relevant 200-level courses from other departments in Engineering or outside. If pre-approval is not obtained, there is no guarantee that a class will be deemed relevant.

4. Professional Development Requirement, Colloquium (1 unit).

Satisfactory completion of one quarter of CS 287 (Colloquium in Computer Science) or EE 259 (Colloquium in Electrical Engineering) in one distinct quarter.

5. Capstone Experience All students must complete a capstone experience that synthesizes and integrates the knowledge and skills obtained throughout the master’s program, by either passing a comprehensive exam, writing a thesis, or completing a project. The Comprehensive Examination is the default option. If a student chooses the alternative project or thesis option, it is their responsibility to find a faculty member willing to supervise the master’s project or thesis, to form the faculty examining committee, and to schedule the oral examination.

a. Comprehensive Examination Option.

In addition to the course requirements above, students must pass a comprehensive examination administered by the Computer Engineering Program.

b. Project Option. Students may replace up to 4 units of courses listed under “Additional Credits” with 4 units of directed research (CS 297, EE 297) and/or directed studies (CS 290, EE 290).

Units obtained in graduate research for the thesis or dissertation (CS 299, EE 299) may not be used to satisfy any course requirements under this option. Students must complete a research project under the guidance of a faculty member. The project will be approved by a committee of at least two faculty members, at least one of whom is a faculty member in the Computer Engineering program, and requires a presentation and written report.

c. Thesis Option. Students may replace up to 8 units of courses listed under “Additional Credits” with 8 units of graduate research for the thesis or dissertation (CS 299, EE 299). Units obtained in directed research or directed studies (CS 290, CS 297, EE 290, EE 297) may not be used to satisfy any course requirements under this option. Students must submit a thesis. The thesis is oral research work. In addition, students must present their ability to study a research area, identify an open problem and make a research contribution. The thesis requires a presentation and must be approved by a committee of least three faculty members.

Combined B.S. + M.S. Five-Year Program. The college offers a combined five year B.S. + M.S. program, designed to allow successful UCR Computer Engineering B.S. graduates to complete the Master of Science degree in Computer Engineering in one year, by allowing up to 12 credits of coursework taken as a UCR undergraduate to be counted towards the elective requirements of the M.S. (The courses that can be double counted are those that are eligible to be counted as technical electives in the B.S. requirements.) A student may apply at the start of their senior year by submitting an application to the Computer Engineering M.S. program, provided that at the end of junior year, the student was a UCR Computer Engineering B.S. student with cumulative GPA at least 3.4 and had completed the following courses with no grade less than a B- and average grade at least 3.2: CS 100, CS 120A, CS 161. The application to the M.S. program must include at least two recommendation letters from UCR Academic Senate faculty members (at least one, and preferably both, CSE faculty). Submission of GRE scores with the application is recommended but not required. Matriculation into the combined program occurs in the Fall term following senior year, provided: (a) the M.S. application is accepted, (b) throughout senior year, the student is a Computer Engineering B.S. major with cumulative GPA 3.4 or higher, (c) by the end of senior year, the student completes the Computer Engineering B.S. degree requirements.

Incoming students who are applying to the Computer Engineering B.S. program may simultaneously apply for preliminary admission into the combined program provided their high school GPA is at least 3.6, their SAT-I combined score is at least 1950, they satisfy the Entry Level Writing requirement before matriculation, and they have sufficient math preparation to enroll in calculus upon arrival. Preliminary admission status is maintained as long as the student is a Computer Engineering or Computer Science B.S. student in good standing with a cumulative GPA of at least 3.4. Preliminary admitted students still need to apply for full admission in their senior year as
Computer Science and Engineering

Subject abbreviation: CS

The Marlan and Rosemary Bourns College of Engineering

Marek Chrobak, Ph.D., Chair
CSE Department Office,
351 Winston Chung Hall
(951) 827-5639; cs.ucr.edu

Distinguished Professor

Laxmi N. Bhuyan, Ph.D.

Professors

Victor Zordan, Ph.D.
Gianfranco Ciardo, Ph.D.
Sheldon Tan, Ph.D.
Chengyu Song, Ph.D.
Tamar Shinar, Ph.D.
Silas Richelson, Ph.D.
Zhiyun Qian, Ph.D.
Evangelos Papalexakis, Ph.D.
Amr Magdy, Ph.D.
Mohsen Lesani, Ph.D.
Jiasi Chen, Ph.D.
Heng Yin, Ph.D.
Zizhong Chen, Ph.D.
Philip Brisk, Ph.D.
Teodor C. Przymusinski, Ph.D.
Neal Young, Ph.D.
Vassilis Tsotras, Ph.D.
Chinya Ravishankar, Ph.D.
Kadangode K. Ramakrishnan, Ph.D.
Wenxiu Ma, Ph.D.

Professors Emeriti

Daniel Wong, Ph.D. (Electrical and Computer Engineering)
Qi Zhu, Ph.D. (Electrical and Computer Engineering)

Major

The Department of Computer Science and Engineering offers three majors at the undergraduate level. UCR’s offerings of all three majors are unique compared to many schools in the emphasis on theoretical foundations and practical applications. The Computer Science major stresses the study of core and advanced computer science topics. It prepares students for a large variety of careers in computing, including software engineering, networks, databases, graphics, algorithms, security, system analysis, and embedded systems.

The objective of the B.S. degree program in Computer Science is to prepare graduates for professional practice in both the private and public sectors and for life-long learning, including the option for graduate degrees, by providing them with:

- Background: the necessary technical competencies, including knowledge of scientific principles and skill at rigorous analysis and creative design
- Breadth: a broad education that includes knowledge of current issues and trends in society and technology
- Professionalism: professional attitudes and ethics and skills for clear communication and responsible teamwork
- Learning environment: a learning environment that is rigorous, challenging, open, and supportive

The Computer Science B.S. degree program at UCR is accredited by the Computing Accreditation Commission of ABET. See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The objective of the B.S. degree program in Computer Science and Business Applications is to prepare graduates for professional practice in both the private and public sectors and for life-long learning, including the option for graduate degrees, by providing them with:

- Background: the necessary technical competencies, including knowledge of scientific principles and skill at rigorous analysis and creative design
- Breadth: a broad education that includes knowledge of current issues and trends in society and technology
- Professionalism: professional attitudes and ethics and skills for clear communication and responsible teamwork
- Learning environment: a learning environment that is rigorous, challenging, open, and supportive

The Computer Science with Business Applications major uses the following major requirements toward the satisfaction of some of the college’s Natural Sciences and Mathematics breadth requirements and one of the college’s English Composition breadth requirements.

1. ENGR 180W
2. MATH 008B or MATH 009A
3. PHYS 040A, PHYS 040B, PHYS 040C

The Computer Science with Business Applications major uses the following major requirements toward the satisfaction of the college’s Natural Sciences and Mathematics breadth requirements and one of the college’s English Composition breadth requirements.

1. ECON 002, ECON 003
2. MATH 008B or MATH 009A
3. SOC 150

Major Requirements

Computer Science Major

1. Lower-division requirements (61 units)
   a) ENGR 001-I
   b) CS 010 or CS 010V, CS 012 or CS 012V, CS 014, CS 061
   c) CS 011/MATH 011
   d) MATH 008B or MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 031
   e) PHYS 040A, PHYS 040B, PHYS 040C
   f) One course of 4 or more units in an engineering discipline outside the field of computer science to be selected in consultation with a faculty advisor. (Either a lower-division or an upper-division course may be used to satisfy this requirement.)
2. Upper-division requirements (78 units minimum) (Updated: October 21, 2016)
   a) ENGR 101-I
   b) CS 100, CS 141, CS 150, CS 152, CS 153, CS 161, CS 179 (E-Z)
   c) CS 120A/EE 120A, CS 120B/EE 120B
   d) CS 111/MATH 111
   e) ENGR 180W
   f) STAT 155
   g) At least 28 units of technical electives to be chosen from an approved list of courses which currently includes CS 122A, CS 122B, CS 130, CS 134, CS 145, CS 160, CS 162, CS 164, CS 165, CS 166, CS 168, CS 169, CS 170, CS 171, CS 172, CS 175, CS 177, CS 179 (E-Z) (4 units maximum), CS 180, CS 181, CS 182, CS 183, CS 193 (4 units maximum), EE 140, MATH 120, MATH 126, MATH 135A, MATH 135B, PHIL 124.
   The technical electives selected must be distinct from those used to satisfy the requirements specified in 2.a)–f) above, with at least half of the units selected from Computer Science courses.

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

### Computer Science with Business Applications Major

1. Lower-division requirements (56 units)
   a) ENGR 001M
   b) BUS 020
   c) CS 010 or CS 010V, CS 012 or CS 012V or CS 013, CS 014, CS 061
   d) CS 011/MATH 011
   e) ECON 002, ECON 003
   f) MATH 008B or MATH 009A, MATH 009B, MATH 009C, MATH 010A, and MATH 031

2. Upper-division requirements (85 units)
   a) ENGR 101M
   b) BUS 103, BUS 104/STAT 104, BUS 106/ ECON 134
   c) CS 100, CS 141, CS 153, CS 165
   d) At least two courses from CS 164, CS 166, CS 172, CS 180
   e) CS 111/MATH 111
   f) ENGR 180W
   g) SOC 150
   h) STAT 155
   i) Sixteen (16) units of upper-division Computer Science technical electives, which must be distinct from the courses used to satisfy the above major requirements. These 16 units may be chosen from those courses listed as upper-division requirements or technical electives for the Computer Science major.

At least three courses must be in the Department of Computer Science and Engineering.

j) Sixteen (16) units of Business Administration technical electives, including at least 8 units of courses listed in the Information Systems concentration within the Business Administration major. These 16 units must be distinct from the courses used to satisfy the above major requirements and may be chosen from any of the available Business Administration courses, with the following restrictions: no credit will be given for BUS 101, only one of BUS 171 and CS 180 can be taken for credit, only one of BUS 173 and CS 166 can be taken for credit, only one of BUS 175 and CS 164 can be taken for credit, and only one of BUS 125 and CS 177 can be taken for credit.

Students may petition for exceptions to the above degree requirements. Exceptions to Computer Science course requirements must be approved by the Computer Science and Engineering undergraduate advisor or chair. Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

### Minor in Computer Science

The minor in Computer Science is designed to enhance majors with limited computational theory or practice. As such, students with majors in Computer Engineering, Computer Science, Computer Science and Business Applications, and Mathematics (Computational Mathematics option) are not eligible.

Requirements for the minor in Computer Science are:

1. Lower-division courses: CS 010 or CS 010V, CS 012 or CS 012V or CS 013, CS 014, CS 061
2. Core courses: CS 100, CS 111
3. Three elective courses, each of four or more units, such that:
   a) Each is an upper-division requirement or a listed technical elective for the Computer Science major, excluding courses numbered 190-199
   b) No course may be an upper-division requirement of the student's major
   c) At least two courses must be in the Department of Computer Science and Engineering
4. All courses for the minor must be taken for a letter grade.

**Note**: Students with a minor in Computer Science must obtain approval from the undergraduate advisor in Computer Science and Engineering for a specific program of electives consistent with their career goals.

### Graduate Program

The Department of Computer Science and Engineering offers the M.S. and Ph.D. degrees in Computer Science. General requirements are listed in the Graduate Studies section of this catalog. Specific requirements for each degree are described below.

**Students enrolled prior to Fall 2008 can still follow the old Graduate Program.**

**Admission** All applicants must supply GRE General Test scores. The GRE subject test in Computer Science is recommended but not required. Applicants should have at least an undergraduate degree in computer science or a closely related field, but applicants who fail to meet this criterion may sometimes be admitted with deficiencies.

**Prerequisite Material** Competence in the areas defined by the following UCR courses is essential to graduate study in computer science:

- CS 141, CS 150, CS 152, CS 153, CS 161

A student who is deficient in any of these competency areas may be asked to complete the corresponding UCR course with a letter grade of at least B+, or to pass a challenge examination based on that course's final exam with a grade of at least B+. All such remedial work should be completed within the first year of graduate study, and in all cases the deficiency must be corrected before a student can enroll in any graduate course from the same specialty area.

### Core Areas

Students have considerable flexibility in selecting specialty area(s) within the program. However, the following core areas introduce fundamental concepts and tools of general interest to all students.

1. Hardware design principles: CS 203 or CS 220.
2. Theoretical foundations: CS 215 or CS 218.

### Major Specialty Areas

The department has active research programs in the following major specialty areas. A list of related graduate courses is provided for each area.

- A. Algorithms, Bioinformatics, and Theory of Computation: CS 215, CS 218, CS 234, CS 238
- C. Databases, Information Retrieval, Data Mining, and Machine Learning: CS 205, CS 227, CS 229, CS 235, CS 236, CS 242
- E. Computer Networks, CS 204, CS 237, CS 239, CS 240, CS 255, CS 257
- F. Programming Languages, Compilers, and Software Engineering: CS 201, CS 206, CS 207, CS 245, CS 246

**Master's Degree**

The Department of Computer Science and Engineering offers the M.S. degree in Computer
Science, after completion of the following degree requirements.

Course Requirements 48 quarter units of graduate or upper-division undergraduate courses are required. Students who have completed similar courses elsewhere may petition for a waiver of a required course or for substitution of an alternative course. For students interested in interdisciplinary research, individual study programs can be approved. All courses used to satisfy these requirements (with the exception of CS 297 and CS 299) must be taken for a letter grade. No course can be counted towards more than one category.

1. Core Requirement (8 units). Choose one course from two of the three Core Areas listed above, with no grade lower than B-.

2. Breadth Requirement (8 units). Two approved breadth courses chosen in such a way that together the core and breadth courses cover four different Major Specialty Areas (A to G).

3. Electives (32 units). Students have the option of completing their degree by taking a comprehensive exam, writing a thesis, or completing a project. Depending on the option selected, the electives that may be taken are:

   a. Comprehensive Examination Option. For a student pursuing the M.S. degree, comprehensive examination option, the 32 elective units must include at least 16 units of approved graduate lecture courses. The remaining 16 units may include additional approved graduate lecture courses, up to 8 units of graduate seminars in CS 260-269, and up to 12 units of approved undergraduate technical electives. Research units (CS 297 or CS 299) may not be used to satisfy any course requirements under this option.

   b. Project Option. A student pursuing the M.S. degree, project option, may include up to 4 units of Directed Research (CS 297) towards the elective requirement. Of the remaining 28 units, at least 12 units must be approved graduate lecture courses. The remaining 16 units may include additional approved graduate lecture courses, up to 8 units of graduate seminars in CS 260-269, and up to 12 units of approved undergraduate technical electives.

   c. Thesis Option. A student pursuing the M.S. degree, thesis option, may include up to 12 units of Directed Research (CS 297 or CS 299) towards the elective unit requirement. Of the remaining 20 units, at least 4 units must be approved graduate lecture courses. The remaining 16 units may include additional approved graduate lecture courses, up to 8 units of graduate seminars in CS 260-269, and up to 8 units of approved undergraduate technical electives.

Capstone Experience All students must complete a capstone experience that synthesizes and integrates the knowledge and skills obtained throughout the master's program, by either passing a comprehensive exam, writing a thesis, or completing a project. The Comprehensive Examination Option is the default option. If a student chooses the project or thesis option, it is the responsibility of the student to find a faculty member willing to supervise the master's project or thesis, to form the faculty examining committee, and to schedule the oral examination.

a. Comprehensive Examination Option Students must pass a comprehensive examination administered by the Department of Computer Science and Engineering.

b. Project Option Students must complete a research project under the guidance of a faculty member. The project will be approved by a committee of at least two faculty members and requires a presentation and written report.

c. Thesis Option Students must submit a master's thesis in accordance with the general requirements of the university. The thesis is original research work, and it should demonstrate the student's ability to study a research area, identify an open problem, and make a research contribution. The thesis requires a presentation and must be approved by a committee of at least three faculty members.

Normative Time to Degree 2 years.

Combined B.S. + M.S. Five-Year Program The college offers combined five year B.S. + M.S. programs designed to allow successful UCR Computer Science or Computer Engineering B.S. graduates to complete the Master of Science degree in Computer Science in one year, by allowing up to 12 credits of coursework taken as a UCR undergraduate to be counted towards the 32-unit elective requirements of the M.S. (The courses that can be double counted are those that are eligible to be counted as technical electives in the B.S. requirements.)

A student may apply at the start of their senior year by submitting an application to the Computer Science M.S. program, provided that at the end of junior year, the student was a UCR Computer Science or Computer Engineering B.S. student with cumulative GPA at least 3.4 and had completed the following courses with no grade less than a B- and average grade at least 3.2: CS 100, CS 120A, CS 120B, CS 161. The application to the M.S. program must include at least two recommendation letters from UCR Academic Senate faculty members (at least one, and preferably both, CSE faculty). Submission of GRE scores with the application is recommended but not required. Matriculation into the combined program occurs in the Fall term following senior year, provided: (a) the M.S. application is accepted, (b) throughout senior year, the student is a Computer Science or Computer Engineering B.S. major with cumulative GPA 3.4 or higher, (c) by the end of senior year, the student completes the Computer Science or Computer Engineering B.S. degree requirements.

Incoming students who are applying to the Computer Science or Computer Engineering B.S. programs may simultaneously apply for preliminary admission into the combined program provided their high school GPA is at least 3.6, their SAT-I combined score is at least 1950, they satisfy the Entry Level Writing requirement before matriculation, and they have sufficient math preparation to enroll in calculus upon arrival. Preliminary admission status is maintained as long as the student is a Computer Science or Computer Engineering B.S. student in good standing with a cumulative GPA of at least 3.4. Preliminary admitted students still need to apply for full admission in their senior year as described above.

Five-year programs leading to M.S. degrees in other programs (including Computer Engineering) are also available. They are described separately in the catalog sections for those programs.

Doctoral Degree The Department of Computer Science and Engineering offers the Ph.D. degree in Computer Science, after completion of the following degree requirements. It provides a research-oriented education in preparation for a career in research, industry, or academia and exploring both the fundamental aspects of computer science and engineering as well as their applications.

Course Work The course requirements for the Ph.D. degree ensure that Ph.D. students are exposed to fundamental concepts and tools (core requirement), a deep up-to-date view of their research specialty area (depth requirement), and an advanced, up-to-date view of the same topics outside their area (breadth requirement). Students are expected to complete all of these course requirements in the first two years of the program. These requirements consist of 44 quarter units of approved graduate or upper-division undergraduate courses, satisfying all four of the following course work categories. All of these courses must be taken for a letter grade, and no course can be counted towards more than one category. Students who have completed similar courses elsewhere may petition for a waiver of a required course or for substitution of an alternative course.

Units obtained in CS 270, CS 287, CS 290, CS 297, CS 298, CS 299, CS 301, and CS 302 cannot be counted in any course work category.

1. Core Requirement (12 units). Choose three courses from at least two of the three Core Areas described above, with no grade lower than B- and an overall core course GPA of at least 3.2.

2. Depth Requirement (8 units). Choose two courses listed above under the same Major Area (A to G). This requirement ensures that Ph.D. students, early on in their careers, acquire some depth of knowledge in a particular research area.

3. Breadth Requirement (12 units). Choose three courses from at least two different Major Areas (A to G) outside the student's depth area. No course that is listed in
the student’s depth area can be used to fulfill the breadth requirement, even if it is cross-listed in another area. Students, with the consent of the major professor, may petition for a non-CSE course to be counted towards the breadth requirement.

4. Electives (12 units). The remaining courses can be selected from additional CS graduate lecture courses, up to 8 units of graduate seminars in CS 260-269, and up to 8 units of approved undergraduate technical electives. Students, with the consent of the major professor, may petition for a non-CSE course to be counted as an elective.

Milestones
The Department has established three milestones to mark progress towards the Ph.D. degree in Computer Science: advancement to candidacy, presentation of the dissertation proposal, and final oral examination. A Ph.D. student must satisfy all applicable Graduate Division requirements for each milestone.

Milestone I: Advancement to Candidacy. A student advances to candidacy after having completed all of the Ph.D. course requirements described above, and passed the written and oral qualifying examinations, as described below. These two exams are intended to verify three components of the student’s preparation for Ph.D. research: (1) breadth of comprehension sufficient to enable Computer Science research in areas beyond the topic(s) of the research exam and dissertation, (2) ability to perform critical study, analysis and writing in a focused area; and (3) demonstrated research experience or ability to do research.

Written Qualifying Examination. The written qualifying examination consists of a written report summarizing the oral presentation to be given at the oral qualifying examination. This report must be written in proper technical English and in the style of a typical Computer Science conference or journal publication, and must be submitted to the Qualifying Committee for approval at least one week prior to the oral qualifying examination.

Oral Qualifying Examination. The student is expected to demonstrate research aptitude by undertaking a research study on some topic (typically a problem from student’s chosen research specialty that may be a promising area in which to conduct the dissertation research), under the guidance of his or her faculty major professor. The research must be presented orally to a Qualifying Committee, which is appointed by the Graduate Division based on nominations from the department. The committee will consist of at least four Senate faculty members, with at least three members whose home department is CSE. The committee evaluates the merits of the work and the student’s aptitude for research. The work must represent significant progress towards original and publishable research. The student must complete this requirement in no more than two attempts. The normative time for taking the Oral Qualifying Exam is by the end of the second year.

Dissertation Committee. After advancing to candidacy, the student must form a Doctoral Examination Committee chaired by his or her major professor. The committee will consist of at least four senate faculty members with at least three members belonging to the CSE department (their home department is CSE).

Milestone II: Dissertation Proposal Examination. After advancement to candidacy, the student prepares a dissertation proposal that describes the dissertation topic, summarizes the relevant background literature, and presents a comprehensive research plan for the doctoral dissertation. The Dissertation Proposal Examination evaluates appropriateness of the research topic and the feasibility of the research plan. It also establishes a realistic timeline for the completion of the Dissertation. The Dissertation Committee administers this exam. The normative time for the Dissertation Proposal Exam is by the end of the third year. The Dissertation Proposal exam must be taken at least six months prior to the Final Doctoral Examination.

Milestone III: Final Doctoral Examination. The student is required to write a dissertation in accordance with the Graduate Division requirements and may be required to defend it in a public oral final doctoral examination to the Dissertation Committee. After a satisfactory performance on the final doctoral examination, the Dissertation Committee recommends granting the Ph.D. degree. The student’s research and the dissertation must both meet the highest standards of originality and scholarship. The normative time for the completion of a Ph.D. in Computer Science is five years.

Professional Development Requirement. MS students must satisfactorily complete one of the following courses: one quarter of CS 287, GDIV 301, GDIV 403 or at least one unit of CS 298I. Other professional development courses may be used to satisfy this requirement if approved by the graduate advisor. Ph.D. students must satisfactorily complete six quarters of CS287.

Lower-Division Courses

CS 005 Introduction to Computer Programming (4) Lecture, 3 hours; laboratory, 3 hours. An introduction to computer programming for nonengineering and nonscience majors and for students considering taking CS 010 but needing additional preparation. Prerequisites: None. Includes operating system basics (Windows and Unix), word processing, spreadsheets, databases (e.g., Access), e-mail, the Internet, and the World Wide Web. Designed for students not majoring in computer science, engineering, mathematics, or science. Credit is not awarded for CS 005 if it has already been awarded for CS 010.

CS 006 Effective Use of the World Wide Web (4) Lecture, 3 hours; laboratory, 3 hours. A detailed introduction to the Internet. Covers Web tools, e-communities, e-commerce, power searching, and verification of information, privacy, and other legal and societal issues.

CS 008 Introduction to Computing (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: None. Includes operating system basics (Windows and Unix), word processing, spreadsheets, databases (e.g., Access), e-mail, the Internet, and the World Wide Web. Designed for students not majoring in computer science, engineering, mathematics, or science. Credit is not awarded for CS 008 if it has already been awarded for CS 010.

CS 010 Introduction to Computer Science for Science, Mathematics, and Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: None. Credit is not awarded for CS 010 if it has already been awarded for CS 010.

CS 011 Introduction to Discrete Structures (4) Lecture, 3 hours; discussion, 1 hour. Prerequisites: MATH 007A or MATH 008B or MATH 009A or MATH 009A; CS 010 or MATH 007B or MATH 009B or MATH 009B. Introduction to logic, discrete mathematics emphasizing applications to computer science. Topics include propositional and predicate calculus, elementary set theory, functions, relations, proof techniques, elements of number theory, enumeration, and discrete probability. Cross-listed with MATH 011.

CS 012 Introduction to Computer Science for Science, Mathematics, and Engineering II (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: CS 010 with a grade of “C” or better; familiarity with C or C++ language. Covers structured and object-oriented programming in C++. Emphasizes good programming principles and development of substantial programs. Topics include recursion, pointers, linked lists, abstract data types, and libraries. Covers software engineering principles. Utilizes examples and assignments specific to engineering disciplines such as numerical data analysis, matrix computations, and dynamic systems. Credit is awarded for only one of CS 012 or CS 013.

CS 013 Introductory Computer Science for Engineering Majors (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: CS 010 with a grade of “C” or better; familiarity with C or C++ language. Covers structured and object-oriented programming in C++. Emphasizes good programming principles and development of substantial programs. Topics include recursion, pointers, linked lists, abstract data types, and libraries. Covers software engineering principles. Utilizes examples and assignments specific to engineering disciplines such as numerical data analysis, matrix computations, and dynamic systems. Credit is awarded for only one of CS 012 or CS 013.

CS 014 Introduction to Data Structures and Algorithms (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: CS 012 with a grade of “C” or better; proficiency in C++. Topics include basic data structures such as arrays, lists, stacks, and queues. Covers dictionaries (including binary search trees and hashing) and priority queues (heaps). Offers an introductory analysis of algorithms, sorting algorithms, and object-oriented programming including abstract data types, inheritance, and polymorphism. Explores solving complex problems through structured software development.

CS 030 Introduction to Computational Science and Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: CS 012 with a grade of “C” or better; consent of instructor if credit has been awarded for CS 010. Examines fundamental programming concepts using the Matlab language including problem decomposition, control structures, elementary data structures, file input/output, graphics, and code libraries. Focuses on applications problems in engineering and science such as numerical equation solvers; matrix operations; searching and sorting; and data analysis. Emphasizes good programming style and computational efficiency.

CS 061 Machine Organization and Assembly Language Programming (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisites: CS 010 with a grade of “C” or better. An introduction to computer organization. Topics include number representation, combinational and sequential logic, computer instructions, memory or-
ganization, addressing modes, interrupt, input/output (I/O), assembly language programming, assemblers, and linkers.

Upper-Division Courses

CS 100 Software Construction (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 014 with a grade of "C-" or better. This course emphasizes development of software systems. Topics include design and implementation strategies; selection and mastery of programming languages, environment tools, and development processes. Develops skill in programming, testing, debugging, performance evaluation, component integration, maintenance, and documentation. Covers professional and ethical responsibilities and the need to stay current with technology.

CS 111 Discrete Structures (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 010; CS 011/ MATH 011; MATH 09C (or MATH 09HC). A study of discrete mathematical structures emphasizing applications to computer science. Topics include asymptotic notation, generating functions, recurrence equations, elements of graph theory, trees, algebraic structures, and number theory.

CS 120A Logic Design (5) Lecture, 3 hours; laboratory, 3 hours; individual study, 3 hours. Prerequisite(s): CS 061 with a grade of "C-" or better. Covers design of digital systems. Includes Boolean algebra; combinatorial and sequential logic design; design and use of arithmetic logic units; carry-lookahead adders, multiplier, shifters, and dividers; flip-flops, registers, and memory. State-variable and register-transfer level design. Uses hardware description languages, synthesis tools, programmable logic, and significant hardware prototyping. Cross-listed with EE 120A.

CS 120B Introduction to Embedded Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 120A/EE 120A. Introduction to hardware and software design of digital computing systems embedded in electronic devices (e.g., digital cameras or portable video games). Includes embedded processor programming, custom processor design, standard peripheral interfaces, and hardware/software tradeoffs. Involves use of synthesis tools, programmable logic, microcontrollers, and developing working embedded systems. Cross-listed with EE 120B. Credit is awarded for only one of CS 121 or CS 120B/EE 120B.

CS 121 Programming Embedded Systems (4) Discussion, 2 hours; written work, 6 hours. Prerequisite(s): CS 010 and CS 061, or consent of instructor. An online study of the programming of embedded computing systems involving C language and microcontrollers. Includes an introduction to embedded systems; overview of C programming; bit-level manipulation; and capturing time-oriented behavior using synchronous state machines. Covers input/output, concurrency; creating a simple task scheduler; task communication; utilization and scheduling; and coding issues. Credit is awarded for only one of CS 121 or CS 120B/EE 120B.

CS 121L Laboratory in Programming Embedded Systems (2) Discussion, 1 hour; laboratory, 3 hours; written work, 6 hours. Prerequisite(s): CS 121 (may be taken concurrently), or consent of instructor. An online hands-on embedded systems programming training using microcontrollers and simple input/output devices. Covers bit-level manipulation, time-oriented programming using timers, input/output, concurrency, creating a simple task scheduler, task communication, utilization and scheduling, and coding issues. Credit is awarded for only one of CS 121L or CS 120B/EE 120B.

CS 122A Intermediate Embedded and Real-Time Systems (5) Lecture, 3 hours; laboratory, 6 hours. Prerequisite(s): CS 012 or CS 013; CS 120B/EE 120B. Covers software and hardware design of embedded computing systems. Includes hardware and software code design, advanced programming paradigms (including state machines and concurrent processes), real-time programming and operating systems, basic control systems, and modern chip and design technologies. Laboratories involve use of microcontrollers, embedded microprocessors, programmable logic, and advanced simulation, and debug environments.

CS 122B Advanced Embedded and Real-Time Systems (5) Lecture, 3 hours; laboratory, 6 hours. Prerequisite(s): CS 122A. Explores state-of-the-art aspects of building embedded computer systems. Topics include real-time programming, synthesis of coprocessors, application-specific processors, hardware and software co-simulation and codesign, low-power design, reconfigurable computing, core-based design, and platform-based methodology.

CS 130 Computer Graphics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 100; MATH 031 (MATH 031 may be taken concurrently); or consent of instructor. A study of the fundamentals of computer graphics necessary to design and build graphics applications. Examines raster graphics algorithms including scan-converting graphics primitives, anti-aliasing, and clipping. Also covers geometric transformations, viewing, solid modeling techniques, hidden-surface removal algorithms, color models, illumination, and shading.

CS 134 Video Game Creation and Design (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 130. Covers the fundamentals of video game programming. Topics include game interface, character movement, intelligent behaviors, and networked or multiplayer games. Requires in-depth, structured, and simulated game project, including the design, implementation, and analysis of a computer game.

CS 141 Intermediate Data Structures and Algorithms (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 014 with a grade of "C-" or better; CS 111; MATH 009C (or MATH 09HC); proficiency in C++. Explores basic algorithm analysis using asymptotic notions, summation and recurrence relations, and algorithms and data structures for discrete structures including trees, strings, and graphs. Also covers general algorithm design techniques including divide-and-conquer, the greedy method, and dynamic programming. Integrates knowledge of data structures, algorithms, and programming.

CS 145 Combinatorial Optimization Algorithms (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 141; MATH 003 (or MATH 093). The study of algorithm design techniques for combinatorial optimization problems. Topics include shortest paths, minimum spanning trees, network flows, maximum matchings, stable matchings, linear programming, duality, two-person games, algorithmic techniques for integer programming problems, NP-completeness, and approximation algorithms.

CS 150 Automata and Formal Languages (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 014 with a grade of "C-" or better; CS 111; MATH 009C (or MATH 09HC). A study of formal languages. Includes regular and context-free languages; computational models for generating these languages such as finite state automata, regular expressions, and context-free grammars; mathematical properties of the languages and models, and equivalence between the models. Also introduces Turing machines and decidability.

CS 152 Compiler Design (4) Lecture, 3 hours; laboratory. Prerequisite(s): CS 061, CS 100, CS 111, CS 150. Covers the fundamentals of compiler design. Includes lexical analysis, parsing, semantic analysis, compile-time memory organization, code generation, and compiler portability issues.

CS 153 Design of Operating Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 061, CS 100, CS 111, C++ programming proficiency. Covers the principles and practice of operating system design. Includes concurrency, memory management, file systems, protection, security, command languages, scheduling, and system performance.

CS 160 Concurrent Programming and Parallel Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 061, CS 100, CS 111. A study of concurrent and parallel systems. Topics include modular structure and design, interprocess communication, synchronization, failure, and concurrency control. Also covers atomic transactions, recovery, language support, distributed interprocess communication, and implementation mechanisms. Provides preparation for the study of operating systems, databases, and computer networking.

CS 161 Design and Architecture of Computer Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 120A/EE 120A. A study of the fundamentals of computer design. Topics include the performance evaluation of microprocessors; instruction set design and measurements of use; microprocessor implementation techniques including microcycle and pipelined implementations; computer arithmetic; memory hierarchy; and input/output (I/O) systems.

CS 161L Laboratory in Design and Architecture of Computer Systems (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): CS 161 (may be taken concurrently). Covers the design and simulation of a complete computer system using hardware description language and simulator. Topics include instruction set architecture design; assemblers; datapath and control unit design; arithmetic and logic unit; memory and input/output (I/O) systems; and integration of all parts into a working computer system.

CS 162 Computer Architecture (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 161 with a grade of "C-" or better. The study of advanced processor design. Topics include CPU pipelining, data and control hazards, instruction-level parallelism, branch prediction, and dynamic scheduling of instructions. Also covers Very Long Instruction Word (VLIW) processing, multimedia support, design of network and embedded processors, basic multiprocessor design, shared memory and message passing, and network topologies.

CS 164 Computer Networks (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 100, CS 111, CS 153. Covers the fundamentals of computer networks. Topics include layered network architecture, communication protocols, local area networks, UNIX network programming, verification, network security, and performance studies.

CS 165 Computer Security (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 141, CS 153. Examines the ways in which information systems are vulnerable to security breaches. Topics include attacks; security labels, lattices, and policies; safeguards and countermeasures; intrusion detection; authentication and encryption; digital signatures and certificates; passwords; privacy issues, firewalls, and spoofing; Trojan horses and computer viruses; CERT Coordination Center; and electronic commerce.

CS 166 Database Management Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 100, CS 111. Covers architecture of database management systems; relational, network, and hierarchical models; distributed database concepts; query languages; implementation issues; and privacy and security of the database.

CS 168 Introduction to Very Large Scale Integration (VLSI) Design (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 120A/EE 120A or consent of instructor. Studies integrated circuit fabrication, device
characterization, and circuit simulation. Introduces basic device physics and physical design rules, MOS logic design, and timing and clock schemes. Covers layout generation, subsystem designs, and circuits for alternative logic styles. Also includes development design and simulation using hardware description language and CAD tools. Cross-listed with EE 168.

CS 169 Mobile Wireless Networks (4) Lecture, 3 hours; laboratory, 2 hours; extra reading, 1 hour. Prerequisite(s): CS 153 or consent of instructor. Introduces the fundamentals of wireless and mobile networks. Covers wireless channel models, MAC protocols, and wireless network architectures. Also covers cellular, WLAN and ad hoc routing in multi-hop wireless networks. Includes wireless security and the impact of wireless links on TCP and other transport layer solutions.

CS 170 Introduction to Artificial Intelligence (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 100 with a grade of "C-" or better, CS 111. An introduction to the field of artificial intelligence. Focuses on discrete-valued problems. Covers heuristic search, problem representation, and classical planning. Also covers constraint satisfaction and logical inference.

CS 171 Introduction to Machine Learning and Data Mining (4) Lecture, discussion, and discussion, 1 hour. Prerequisite(s): CS 100, MATH 010A or MATH 031. Introduces formalisms and methods in data mining and machine learning. Topics include data representation, supervised learning, and classification. Covers regression and clustering. Also covers rule learning, function approximation, and margin-based methods.

CS 172 Introduction to Information Retrieval (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 100. CS 111, or CS 155. Introduces information retrieval (IR) principles and techniques for indexing and searching document collections. Topics include Web search, text processing, ranking algorithms, search in social networks, and search evaluation. Also studies scalability issues in search engines. Satisfactory (S) or No Credit (NC) grading is not available.

CS 175 Entrepreneurship in Computing (4) Lecture, 3 hours, individual study, 3 hours. Prerequisite(s): CS 100, junior or senior standing. Introduces business and technological concepts to create companies based on computer technology. Covers technical aspects of relevant technologies, software and services; understanding user requirements; designing usable systems; technological assessment. Also covers market analysis and strategy; legal and intellectual property; ethics and communication business issues; financial analysis.

CS 177 Modeling and Simulation (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 100, CS 111, C++ programming proficiency. Covers validation of random number sequences; concepts in modeling and systems analysis; and conceptual models and their mathematical and computer realizations. Examines simulation modeling techniques, including object-oriented modeling and discrete-event modeling. Emphasizes the use of simulation libraries used with programming languages such as C++.

CS 179 (E-Z) Project in Computer Science (4) For hours and prerequisites, see segment descriptions. Under the direction of a faculty member, student teams propose, design, build, test, and document software and/or hardware devices or systems. Emphasizes professional and ethical responsibilities and the need to stay current on technology and its global impact on economics, society, and the environment.

CS 179E Compilers (4) Discussion, 1 hour; laboratory, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CS 100 and CS 152 with a grade of "C-" or better; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of a compiler-related system. Incorporates techniques from previous related courses. Emphasizes professional and ethical responsibilities; the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 179F Operating Systems (4) Discussion, 1 hour; laboratory, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CS 153 with a grade of "C-" or better; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of a operating systems-related system. Incorporates techniques from previous related courses. Emphasizes professional and ethical responsibilities: the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 179G Database Systems (4) Discussion, 1 hour; laboratory, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CS 100 and CS 166 with grades of "C-" or better; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of a database-related system. Incorporates techniques from previous related courses. Emphasizes professional and ethical responsibilities; the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 179I Networks (4) Discussion, 1 hour; laboratory, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CS 100 and CS 164 with grades of "C-" or better; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of a network-related system. Incorporates techniques from previous related courses. Emphasizes professional and ethical responsibilities; the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 179K Software Engineering (4) Discussion, 1 hour; laboratory, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CS 180; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of a software engineer- ing-related system. Incorporates techniques presented in previous related courses. Emphasizes professional and ethical responsibilities; the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 179M Artificial Intelligence (4) Discussion, 1 hour; laboratory, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CS 100, CS 111, and CS 170W or better; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of an artificial intelligence-related system. Incorporates techniques presented in previous courses. Emphasizes professional and ethical responsibilities: the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 179N Artificial Intelligence (4) Discussion, 1 hour; laboratory, 9 hours. Prerequisite(s): CS 130 with a grade of "C-" or better; ENGR 180W; 8 additional upper-division units in Computer Science. Covers the planning, design, implementation, testing, and documentation of a graphics- or electronic game-related system. Incorporates using techniques presented in previous related courses. Emphasizes professional and ethical responsibilities; the need to stay current on technology; and its global impact on economics, society, and the environment.

CS 180 Introduction to Software Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 100, CS 111. A study of software techniques for the development, maintenance, and evolution of large software systems. Topics include requirements specification; system design and implementation; debugging, testing, and quality assurance; re-engineering; project management; software process; tools, and environments.

CS 181 Principles of Programming Languages (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 061, CS 063, CS 100, CS 111, CS 150. Covers the principles of programming language design. Includes the study and comparison of several programming languages, their features, and their implementations.

CS 182 Software Testing and Verification (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 100. A study of modern techniques to assess the quality of software artifacts through functional, performance, and reliability testing. Includes black box and white box testing techniques. Covers the application of modern testing tools to software units, components, subsystems, and entire systems. Also covers verification as a complementary technique to testing.

CS 183 UNIX System Administration (4) Seminar, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 100. Explores the technical aspects of system administration on a Unix system, including advanced Unix. Includes managing system devices, operating system installation, communications, and networking.

CS 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): consent of instructor and department chair. Individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

CS 191 Seminar in Research Topics in Computer Science (1-5) Seminar, 1 hour. Prerequisite(s): upper division or graduate standing or consent of instructor. An introduction to the range of research topics and methods in Computer Science and Engineering and to the research opportunities available within the department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 3 units.

CS 193 Design Project (1-4) laboratory, 1-6 hours; scheduled research, 1-3 hours; individual study, 1-3 hours. Prerequisite(s): CS 141; consent of instructor. Individual hardware or software design project to include establishment of objectives and criteria, scheduling, analysis, implementation, testing, and documentation. Course is repeatable to a maximum of 8 units.

CS 194 Independent Reading (1-4) Prerequisite(s): consent of instructor. Independent reading in material not covered in course work. Normally taken in senior year. Total credit for CS 194 may not exceed 8 units.

CS 198-I Individual Internship in Computer Science (1-4) Internship, 3-12 hours. Prerequisite(s): upper-division standing; at least 12 units in Computer Science courses. An academic internship to provide the student with career experience as a computer scientist in a governmental, industrial, or research unit under the joint supervision of an off-campus faculty member and a faculty member in Computer Science. Each individual program must have the prior approval of both supervisors and the Department chair. A final written report is required. Course is repeatable to a maximum of 8 units.
Graduate Courses

CS 201 Compiler Construction (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 152. Covers theory of parsing and translation. Also addresses compiler construction, lexical analysis, syntax analysis, code generation, and optimization. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 202 Advanced Operating Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 153. Examines recent developments in operating systems. Also covers multiprogramming, parallel programming, time sharing, scheduling and resource allocation, and selected topics. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 203 Advanced Computer Architecture (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): CS 161. Covers contemporary computer systems architecture including pipelined CPU design, VLSI instruction level parallelism (ILP), memory hierarchy, thread level parallelism, introduction of parallel processing, and evaluation of computer performance. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 204 Advanced Computer Networks (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): CS 142 with a grade of “C-” or better, or CS 164. Covers advanced topics in computer networks, layering, Integrated Services Digital Networks (ISDN), and high-speed networks. Also covers distributed system performance models and analysis, distributed systems and databases, and case studies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 205 Artificial Intelligence (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 170 or equivalent. Examines knowledge representation and automated reasoning and their use in capturing common sense and expert knowledge. Also addresses predicate and nonmonotonic logic resolution and term rewriting; reasoning under uncertainty; theorem provers; planning systems; and belief networks. Includes special topics in natural language processing, perception, logic programming, expert systems, and deductive databases. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 206 Testing and Verification Techniques in Software Engineering (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): CS 150 or equivalent; graduate standing. Introduces techniques to verify that software runtime behavior meets its specifications. Topics include model checking (safety, liveness, temporal logics, and abstraction); static and dynamic analysis (data flow analysis, concept analysis, program slicing, and invariant detection); testing (test generation, prioritization, suite reduction, and regression); and automated debugging (fault location and visualization). May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 207 Advanced Programming Languages (4) Lecture, 3 hours; outside research, 3 hours; written work, 1.5 hours. Prerequisite(s): CS 152, CS 181, or equivalent. Introduces the techniques for analyzing program semantics and correctness. Covers simply-typed lambda calculus as well as basic and advanced type systems, type inference, operational, and denotational semantics. Explores programming-language constructs and tools for specifying, reasoning, and verifying correctness properties. Includes safe memory accesses and safe concurrent programming or security. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 210 Scientific Computing (4) Lecture, 4 hours. Prerequisite(s): CS 012 or CS 012V; MATH 010A; MATH 031 or equivalent; or consent of instructor. Utilizes scientific computing in a specific computer science research area. Provides a foundation for pursuit of further studies of special topics in scientific computing. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 211 High Performance Computing (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): CS 161 or consent of instructor. Introduces performance optimization for sequential computer programs. Covers high performance computing on multicore shared memory computers and on distributed memory computing clusters. Also covers high performance scientific libraries and computing application development using pthreads, OpenMP, and Message Passing Interface (MPI). Parallel file systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 213 Multiprocessor Architecture and Programming (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 203 or consent of instructor. Introduces multiprocessor, multithreaded architectures, and C/C++ using MPICH parallel development systems. Also covers heterogenous multiprocessors and interconnection networks. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 215 Theory of Computation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 150 or consent of instructor. Covers phrase structure grammars and languages; turing machines; relation of languages to automata; solvable and unsolvable problems; and theoretical limitations of computers. Also examines algorithmic complexity theory, undecidability, and how to (un)decide problems P and NP, and correctness proofs. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 217 GPU Architecture and Parallel Programming (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 160 with a grade of “C-” or better or consent of instructor. Introduces the popular CUDA based parallel programming environments based on Nvidia GPUs. Covers the basic CUDA model. Also covers the common data-parallel programming patterns needed to develop a high-performance parallel computing applications. Examines computational theory, a broader range of parallel execution models, and parallel programming principles. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D. Cross-listed with EE 217.

CS 218 Design and Analysis of Algorithms (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141. A study of efficient data structures and algorithms for solving problems from almost any area such as sorting, searching, selection, linear algebra, graph theory, and computational geometry. Also covers worst-case and average-case analysis using recurrence relations, generating functions, upper and lower bounds, and other methods. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 220 Synthesis of Digital Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141. CS 161. Covers the synthesis and simulation of digital systems. Topics include synthesis at the behavioral, register-transfer, and logic levels; application-specific processors; simulation; and emerging systems design methodologies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 223 Reconfigurable Computing (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): CS 202 or CS 203; consent of instructor. Covers reconfigurable computing, a novel computational model that is fast becoming part of the mainstream in high-performance computing. Addresses architectures, software tools and compilers, programming models, and applications. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 227 Probabilistic Models for Artificial Intelligence (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): CS 141, STAT 155. Covers methods for representing and reasoning about probability distributions in complex domains. Focuses on graphical models and their extensions such as Bayesian networks, Markov networks, hidden Markov models, and dynamic Bayesian networks. Topics include algorithms for probabilistic inference, learning models from data; and decision making. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 229 Machine Learning (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 100, STAT 155. CS 229 online section; enrollment in the Online Master-in-Science in Engineering program. A study of supervised machine learning that emphasizes discriminative models and areas of regression and classification. Includes linear methods, instance-based learning, neural networks, kernel machines, and additive models. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 230 Computer Graphics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141 or CS 218; MATH 031 or MATH 131; graduate standing or consent of instructor. Covers computer graphics topics related to graphics and necessary fundamentals. Includes geometry representations; affine and perspective transforms; rendering with global illumination and other light models; shading and texture mapping; ray tracing; and anti-aliasing techniques. Also includes projects and in-depth programming assignments. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 231 Computer Animation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 130 or CS 230. Covers topics in computer animation including motion capture, inverse kinematics, and dynamic simulation. Also examines deformable systems and other natural phenomena, facial animation, high-level behavior control, creature evolution, and procedural techniques. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 233 Pen-Based Computing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor; computer programming experience. Introduces computational techniques for pen-based user interfaces. Covers fundamental issues such as ink segmentation, sketch parsing, and shape recognition. Explores the topic of sketch understanding, including reasoning about context and correcting errors; and addressing issues related to practical pen-based systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with ME 231.

CS 234 Computational Methods for Biomolecular Data (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 111; CS 141 or CS 218, STAT 155 or STAT 160A. A study of computational and statistical methods aimed at automatically analyzing, clustering, and classifying biomolecular data. Includes combinatorial algorithms for pattern discovery; hidden Markov models for sequence analysis; analysis of expression data; and prediction of the three-dimensional structure of RNA and proteins. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 235 Data Mining Techniques (4) Lecture, 3 hours; term paper, 1.5 hours; project, 1.5 hours per week. Prerequisite(s): CS 141, CS 166; CS 170 is recommended. CS 235 online section; enrollment in the Online Master in Science in Engineering program. Provides students with a broad background in the design and use of data mining techniques. Includes clustering, classification, association rules mining, time series clustering, and Web mining. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.
CS 236 Database Management Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141; CS 153 or equivalent; CS 166; or consent of instructor. Covers principles of file systems; architecture of database management systems; data models; and relational databases. Also examines logical and physical design of databases; hardware and software implementation of database systems; and distributed databases (e.g., query processing, concurrencies, recovery). May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 237 Advanced Topics in Modeling and Simulation (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): CS 177. Covers formal computer simulation models such as Discrete Event Specified Models and differential equation models. Examines current developments in simulation languages. Also addresses integrated model development and its applications to complex, large-scale problems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 238 Algorithmic Techniques in Computational Biology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141 or CS 218. A study of fundamental algorithms for solving combinatorial or computational problems in molecular biology and genomics. Includes sequence alignment and multiple alignment; bio-database search; gene and regulatory signal recognition; DNA sequence assembly; physical mapping; and reconstruction of evolutionary trees. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 239 Performance Evaluation of Computer Networks (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 164. Offers models and analytical techniques for evaluating network performance. Examines general principles and specific routing protocols and technologies. Topics include Internet, Asynchronous Transfer Mode (ATM), optical, wireless, and ad hoc networks. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 240 Network Routing (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141 or CS 204; CS 164. An in-depth study of routing in computer networks. Examines general principles and specific routing protocols and techniques. Topics include Internet, Asynchronous Transfer Mode (ATM), optical, wireless, and ad hoc networks. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 241 Advanced Topics in Network Measurements and Security (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 164 or equivalent. Introduces measuring and building real network systems. Includes hands-on measurement studies and tools. Covers fundamental mathematical and statistical tools; exposure to implementation studies and techniques; principles of network architectures; and challenges in building testbeds and conducting measurements. Explores measurements and modeling of wireline, ad hoc, sensor, and cellular networks. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor. Graduated standing. Covers the principles, tools, and techniques for disciplines software evolution. Includes migration strategies, change patterns, software maintenance, legacy system reengineering, reverse engineering for program understanding, middleware, source code analysis, software visualization, and program transformation tools. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 245 Software Evolution (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): CS 180 or equivalent; graduate standing. Covers the principles, tools, and techniques for disciplined software evolution. Includes migration strategies, change patterns, software maintenance, legacy system reengineering, reverse engineering for program understanding, middleware, source code analysis, software visualization, and program transformation tools. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 246 Advanced Verification Techniques in Software Engineering (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 111, CS 141, CS 150, or equivalents or consent of instructor. A study of advanced theoretical techniques to verify the correctness of complex systems and software. Focuses on concurrent and distributed behavior, formal description languages, temporal logics, model checking and symbolic model checking, partial order reduction, and the use of verification tools. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 253 Distributed Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 153. Integrates the theory and practice of distributed systems with a focus on recent developments in distributed systems. Includes middleware architecture, distributed computation, protocols, and real-time scheduling; decidability; and group communication protocols. Also covers distributed process management; replication; large-scale peer-to-peer systems; Internet content delivery; and Web caching. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 256 Modeling and Synthesis of Cyber-Physical Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. Introduces challenges and advanced techniques for modeling cyber-physical systems. Introduces modeling concepts in functional modeling, real-time embedded architecture, design synthesis and validation. Introduces modeling of cyber-physical systems. Discusses design principles and applications of cyber-physical systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 257 Wireless Networks and Mobile Computing (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141; CS 164 or CS 204. Introduces basic and advanced concepts of wireless networks and mobile computing. Covers both cellular and ad hoc networking techniques for medium access control, resource allocation, and routing, as well as transport layer optimizations for the wireless environment. Also covers standards, Bluetooth, and the IEEE 802.11 for wireless local area networks. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CS 260 Seminar in Computer Science (4) Seminar, 4 hours. Prerequisite(s): consent of instructor. Diracated research on selected projects in computer science under the sponsorship of assigned faculty members. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

CS 261 Seminar in Artificial Intelligence and the Design of Expert Systems (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. A review of recent research topics in the fields of artificial intelligence and logic programming. Emphasizes expert systems, automated reasoning, and knowledge representation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 8 units.

CS 262 Algorithms and Data Structures (4) Seminar, 4 hours. Prerequisite(s): CS 215, CS 218; or consent of instructor. Selected topics in theoretical computer science. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 8 units.

CS 263 Seminar in Distributed Systems (4) Seminar, 4 hours. Prerequisite(s): graduate standing; CS 153 or previous operating systems course. Introduces the fundamental topics in distributed computer systems. Topics include distributed file systems, replicated data, load management, and distributed shared memory. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 8 units.

CS 264 Seminar in Databases (4) Seminar, 4 hours. Prerequisite(s): CS 236 or consent of instructor. Focuses on recent research and development issues in the database area. Includes object-oriented databases, heterogeneous databases, parallel databases, database architectures, transaction processing, query optimization, and performance evaluation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 8 units.

CS 265 Seminar in Computer Security (4) Seminar, 4 hours. Prerequisite(s): CS 120A/EE 120A; consent of instructor. Presents state-of-the-art software and hardware design techniques for embedded computing systems. Topics include specification models, languages, simulation, partitioning algorithms, estimation methods, model refinement, and design methodology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 8 units.

CS 266 Seminar in Computer Architecture (4) Seminar, 4 hours. Prerequisite(s): consent of instructor. Reviews state-of-the-art design approaches and tools in both academia and industry. Introduces fundamental concepts in functional modeling, real-time embedded architecture, design synthesis and validation. Introduces emerging design principles and their applications in embedded systems, smart buildings, and consumer electronics. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 258.

CS 267 Seminar in Artificial Intelligence and Expert Systems (4) Seminar, 4 hours. Prerequisite(s): consent of instructor. Special studies in computer science. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

CS 268-1 Individual Internship (1-12) Written work, 1-12 hours; internship, 2-24 hours. Prerequisite(s): graduate standing; consent of instructor. Individual apprenticeship in computer science. Includes fieldwork with an approved professional individual or organization and academic work under the direction of a faculty member. A final written report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.
CS 299 Research for Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing and consent of instructor. Research in computer science under the direction of a faculty member. To be included as part of the thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Professional Courses

CS 302 Apprentice Teaching (1) Activity, 3 hours. Prerequisite(s): enrollment limited to teaching assistants and associates in Computer Science. Supervised teaching in upper- and lower-division Computer Science courses. Aids in the learning of effective teaching methods such as the handling of Computer Science discussion sections, preparation and grading of examinations, and student relations. Required each quarter of all Computer Science teaching assistants and associates. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 15 units.

Conservation Biology

Subject abbreviation: BLCN
College of Natural and Agricultural Sciences

Program Office, 1223 Pierce Hall
(951) 827-7294; ccb.ucr.edu

The major in Conservation Biology is not currently accepting new students. Students who are interested in this field should see the academic advisors at the CNAS Undergraduate Academic Advising Office, (951) 827-7294.

Upper-Division Courses

BLCN 190 Special Studies (1-4) Individual study, 3-12 hours. Prerequisite(s): consent of instructor and Program Chair. To be taken as a means of meeting special curricular needs. Course content, style, requirements, and grading basis is selected in consultation with the instructor and Program Chair. Course is repeatable to a maximum of 12 units.

BLCN 197 Research for Undergraduates (1-2) Outside research, 3-6 hours. Prerequisite(s): sophomore, junior, or senior standing in Conservation Biology; consent of instructor and Program Chair. An introduction to research providing the opportunity, through reading and preliminary laboratory work, to develop a research project suitable for BLCN 199. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

BLCN 198-I Individual Internship in Conservation Biology (2-4) Internship, 6-12 hours; consultation, 1 hour; outside reading, 2-4 hours. Prerequisite(s): upper-division standing in Conservation Biology. An off-campus practical experience in the public or private sector related to conservation biology that is conducted under the joint supervision of an off-campus sponsor and a faculty mentor from the Conservation Biology Program. A written report on the internship is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

BLCN 199 Senior Research (1-4) Laboratory, 3-12 hours. Prerequisite(s): junior or senior standing in Conservation Biology; consent of instructor and Program Chair. BLCN 197 is recommended. Research in conservation biology performed under the supervision of a faculty member in the Conservation Biology Program. A written research report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Creative Writing

Subject abbreviation: CRWT
College of Humanities, Arts, and Social Sciences

Andrew Winer, M.F.A., Chair
Department Office, INNT 3033C
(951) 827-5424; creativewriting.ucr.edu

Professors
Reza Askari, Ph.D.
Steve Erickson, M.A.
Kate Ford, M.F.A.
Allison Hedge Coke, M.F.A
Nalo Hopkinson, M.A.
Laila Lalami, Ph.D.
Tom Lutz, Ph.D.
Jane Smiley, Ph.D.
Susan C. Straight, M.F.A.

Associate Professors
Josh Emmens, M.F.A
Michael Jayme, M.F.A
Andrew Winer, M.F.A.

Assistant Professors
Allison Benis White, M.F.A.
Charmaine Craig, M.F.A.
Emily Rapp Black, M.F.A.

Lecturers
Sara Borjas, M.F.A.
Rachelle Cruz, M.F.A.
Joshua Hardina, M.F.A.
Goldberry Long, M.F.A.
Brandon Williams, M.F.A.

Major

TThe Creative Writing major offers a series of workshop courses in poetry, fiction, and nonfiction as well as reading courses in poetry, fiction, and nonfiction presented from a writer’s point of view. They are taught for the most part by poets, fiction and nonfiction writers.

The writing courses are taught as workshops, so that the subject matter (the students' stories and poems) is different each time the course is offered.

 Incoming freshmen and transfer students can apply for a Chancellor's Performance Award, for up to $4,500. Contact the department office for more information.

University Requirements

See Undergraduate Studies section.

Collegen Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The major requirements for the B.A. degree in Creative Writing are as follows:

Prerequisite courses: CRWT 056 or equivalent, and ENGL 001A or equivalent.

1. Lower-division requirements (20 units; five courses)

2. Upper-division requirements (20 units)
a) Four (4) units from Two Creative Writing survey courses from CRWT 046S, CRWT 047S, or CRWT 048S, CRWT 046, CRWT 047 or CRWT 048

b) One workshop in second genre: CRWT 130, CRWT 132, CRWT 134, CRWT 150, CRWT 152, CRWT 160, CRWT 162*, CRWT 170*, CRWT 172*

b) One workshop in second genre: CRWT 130, CRWT 132, CRWT 134, CRWT 150, CRWT 152, CRWT 160, CRWT 162*, CRWT 170*, CRWT 172*

These workshops may be repeated; however, only 4 units total can be applied to the major.

c) One workshop in third genre: CRWT 130, CRWT 132, CRWT 134, CRWT 150, CRWT 152, CRWT 160, CRWT 162*, CRWT 170*, CRWT 172* These workshops may be repeated; however, only 4 units total can be applied to the major.

d) Three upper-division courses in Creative Writing: CRWT 136, CRWT 143, CRWT 146, CRWT 151, CRWT 155, CRWT 165, CRWT 171, CRWT 173, CRWT 174, CRWT 175, CRWT 176, CRWT 180, CRWT 182, CRWT 185, CRWT 187/CPMT 187, CRWT 191 (may be taken twice but used only once for major credit), CRWT 198I (may be taken only once, for 4 units)

e) Four (4) units of CRWT 195 or CRWT 195H (Senior Honors Thesis) or any upper division course in another subject area outside of Creative Writing

Minor

1. Lower-division requirements (12 units)

a) One introductory writing workshop: CRWT 056

b) One introductory reading course: CRWT 040, CRWT 043, CRWT 046S, CRWT 047S, CRWT 048S, CRWT 046, CRWT 047, or CRWT 048.

c) One introductory workshop course: CRWT 057, CRWT 057B, CRWT 057C.

2. Upper-division requirements (20 units)

a) Four (4) units from Two Creative Writing introductory courses from CRWT 057A, CRWT 057B, or CRWT 057C
programs by specific areas at uc.eap.ucop.edu.

Graduate Program
See Creative Writing and Writing for the Performing Arts in this catalog for more information on the M.F.A. in this area.

Lower-Division Courses

CRWT 012 The Writer in Writing (4) Lecture, 3 hours; written work, 2 hours; outside research, 1 hour. Prerequisite(s): none. Targeted at the fledgling creative writer and apprentice literary critic, surveys the complex legacy surrounding the figure of the writer in world literature. Discussion and weekly writing exercises demonstrate the use of brainstorming in creating and critiquing literature. Cross-listed with CPLT 012.

CRWT 014 The German Big Ten: German-Speaking Authors That Writers Should Know (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): none. An introduction to ten key authors in German literature. Covers from the Brothers Grimm to contemporary writers such as Elfriede Jelinek and Patrick Suskind. Course conducted in English. Cross-listed with GER 014.

CRWT 040 Fiction and Film (4) Lecture, 3 hours; screening, 3 hours; practice writing, 1 hour. Prerequisite(s): none. A survey of how film from the writer’s point of view. Emphasizes narrative elements and literary techniques found in both forms. Explores how novels are translated into film.

CRWT 041 Poetry and Fiction: A Reading Course for Writers (4) Lecture, 3 hours; creative imitation practice, 3 hours. Prerequisite(s): none. Active, analytical reading of contemporary poetry and fiction in order to broaden and deepen students’ understanding of the craft of writing. Students analyze and practice poetic and fictional techniques.

CRWT 042 Poetry and Drama: A Reading Course for Writers (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): none. A study of the craft of writing and how craft contributes to meaning. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of CRWT 042 or CRWT 048.

CRWT 046S Craft of Writing: Survey in Contemporary Fiction (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of selected works of contemporary fiction and related texts. Emphasizes the craft of fiction and how craft contributes to meaning. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of CRWT 046 or CRWT 046S.

CRWT 047 Craft of Writing: Survey in Contemporary Poetry (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. A survey of selected works of contemporary fiction and related texts. Emphasizes the craft of fiction and how craft contributes to meaning. Course is repeatable as content changes to a maximum of 8 units. Credits is awarded for only one of CRWT 047 or CRWT 047S.

CRWT 047S Craft of Writing: Survey in Contemporary Poetry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of selected works of contemporary fiction and related texts. Emphasizes the craft of fiction and how craft contributes to meaning. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of CRWT 047 or CRWT 047S.

CRWT 048 Craft of Writing: Survey in Contemporary Nonfiction (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. A survey of selected works of contemporary fiction and related texts. Emphasizes the craft of fiction and how craft contributes to meaning. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of CRWT 048 or CRWT 048S.

CRWT 048S Craft of Writing: Survey in Contemporary Nonfiction (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of selected works of contemporary fiction and related texts. Emphasizes the craft of fiction and how craft contributes to meaning. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of CRWT 048 or CRWT 048S.

CRWT 056 Introduction to Creative Writing (4) Lecture, 3 hours; discussion, 1 hour. An introduction to the craft of creative writing. Focuses on the elements of a number of genres, including poetry, fiction, nonfiction, journalism, drama, and the graphic novel.

CRWT 057A Introduction to Fiction (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): CRWT 056, ENGL 001A. Introduction to the elements and the craft of fiction.

CRWT 057B Introduction to Poetry (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): CRWT 056, ENGL 001A. Introduction to the elements and craft of poetry.

CRWT 057C Introduction to Creative Nonfiction (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): CRWT 056, ENGL 001A. Introduction to the elements and craft of nonfiction.

CRWT 066 Screenwriting: How Movies Work (4) Lecture, 3 hours; discussion, 1 hour; screening, 8 hours per quarter. Prerequisite(s): none. An Introduction to writing for stage and screen. Addresses structure, character, dialogue, theme, and story. Cross-listed with MCS 066 and TFDP 066.

CRWT 076 The Verbal Coliseum: Spoken Word Workshop (3) Workshop, 3 hours; discussion, 1 hour; written work, 1 hour; extra reading, 2 hours. Explores forms and issues in contemporary spoken word poetics, including performance and writing, multimedia and audience, community relations, media culture and power, music and art, and cultural production. Course is repeatable to a maximum of 8 units.

CRWT 097H Freshman Honors Project: Poetry, Fiction,
or Nonfiction (4) Seminar, 3 hours; individual study, 1 hour; extra reading, 1 hour; creative projects, 2 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. An introduction to poetry, fiction, and nonfiction. Utilizes reading, commentary, and criticism in one of these three genres. Fosters exploration of the diversity of literary styles. Promotes awareness of the aesthetic, cultural, and personal resonances of artistic choices. Satisfactory (S) or No Credit (NC) grading is not available.

Upper-Division Courses

CRWT 130 Beginning Creative Nonfiction (4) Workshop, 3 hours; extra reading, 3 hours. Prerequisite(s): two of the following courses: CRWT 057A, CRWT 057B, CRWT 057C. Focuses on writing articles, features, and editorials. Covers the history and strategies for writing and critically evaluating nonfiction essays. Focuses primarily on memoir, personal experience, and nature and science writing. Course is repeatable to a maximum of 8 units.

CRWT 132 Intermediate Creative Nonfiction (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): CRWT 056, CRWT 130; or consent of instructor. Reviews the essential strategies for writing and critically evaluating nonfiction essays. Focuses primarily on memoir, autobiography, history, and interview writing and how to work toward a sequence of longer work of nonfiction in that mode, as well as the “fact” or “immersion” essay. Course is repeatable to a maximum of 8 units.

CRWT 134 Advanced Creative Nonfiction (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): CRWT 056, CRWT 130, CRWT 132; or consent of instructor. Explores strategies for writing and critical evaluation of creative nonfiction essays. Focuses primarily on memoir, autobiography, history, and interview writing and how to work toward a sequence of longer work of nonfiction in that mode, as well as the “fact” or “immersion” essay. Course is repeatable to a maximum of 8 units.

CRWT 136 Professional Creative Nonfiction Workshop (5) Workshop, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): CRWT 056, CRWT 130, CRWT 132; or consent of instructor. A workshop in creative nonfiction writing for students who want to study creative nonfiction at the graduate and professional level. Focuses on producing and polishing work and discusses the professional aspect of writing, such as submitting and publishing.

CRWT 143 Generational Texts: A Survey of Immigration (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): CRWT 043. Explores the chronological development of the graphic novel. Focuses on theme, style, and artistic presentation. Course is repeatable as content changes to a maximum of 8 units.

CRWT 145 Special Topics in Nonfiction (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): CRWT 045 or CRWT 045S; CRWT 056; or consent of instructor. Explores contemporary prose poetry. Studies the history of contemporary essays that define the mechanics and parameters of the prose poem. Requires substantial writing and critiquing. Course is repeatable as content changes to a maximum of 8 units.

CRWT 147 Topics in Craft of Writing (4) Lecture, 3 hours; extra reading, 2 hours; practice writing, 2-3 hours. Prerequisite(s): CRWT 056, CRWT 150, CRWT 160 or consent of instructor. An examination of the techniques and styles representative of modern feature journalism. Writing assignments incorporate advanced reporting skills.

CRWT 148 Special Topics in Nonfiction (4) Lecture, 3 hours; extra reading, 3 hours; practice writing, 2-3 hours. Prerequisite(s): CRWT 056, CRWT 150, CRWT 160 or consent of instructor. An introduction to the journalistic writing of the mechanics and parameters of the prose poem. Requires substantial writing and critiquing. Course is repeatable as content changes to a maximum of 8 units.

CRWT 150 Advanced Poetry Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 150, CRWT 160; or consent of instructor. A workshop in poetry writing for students who wish to attempt, with criticism from class members, to fashion a significant long poem or group of poems. Course is repeatable.

CRWT 151 Advanced Poetry Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 150, CRWT 160; or consent of instructor. An introductory study of poetics, including traditional and contemporary forms. Students write in the various poetic forms studied.

CRWT 152 Beginning Fiction Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 056; CRWT 152, CRWT 162; or consent of instructor. A workshop in fiction writing for students who wish to attempt, with criticism from class members, to fashion a collection of stories or a novel. Course is repeatable.

CRWT 153 Professional Fiction Workshop (5) Workshop, 3 hours; outside research, 3 hours; extra reading, 1 hour. Prerequisite(s): CRWT 056, CRWT 150, CRWT 160 or consent of instructor. An introduction to the construction of a collection of stories or a novel. Course is repeatable to a maximum of 8 units.

CRWT 154 Advanced Fiction Workshop (5) Workshop, 3 hours; extra reading, 1 hour. Prerequisite(s): CRWT 056; CRWT 150, CRWT 160; or consent of instructor. Explores the chronological development of the novel. Focuses on theme, style, and artistic presentation. Course is repeatable as content changes to a maximum of 8 units.

CRWT 155 The Novel Workshop (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): CRWT 046 (or CRWT 046S) or CRWT 047 or (CRWT 047S) or CRWT 048 (or CRWT 048S); CRWT 150; or consent of instructor. Explores the chronological development of the novel. Focuses on theme, style, and artistic presentation. Course is repeatable as content changes to a maximum of 8 units.

CRWT 160 Intermediate Poetry Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 056, CRWT 150; or consent of instructor. Students produce and bring to class for analysis and commentary, a large quantity of original work in poetry. Course is repeatable to a maximum of 8 units.

CRWT 162 Intermediate Fiction Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 056, CRWT 150; or consent of instructor. Class work consists of intensive analysis of students' work. Course is repeatable to a maximum of 8 units.

CRWT 164A Beginning Playwriting (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): CRWT 056 or TFDP 100 or consent of instructor. Seminar in the practice of playwriting centering on the construction of a plot. Cross-listed with TFDP 164A.

CRWT 164B Intermediate Playwriting (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): CRWT 056 or TFDP 164B. Seminar in the practice of playwriting. Revisions of works in progress emphasizing character development and techniques for writing dialogue. Cross-listed with TFDP 164B.

CRWT 164C Advanced Playwriting (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): CRWT 164B/TFDP 164B. Seminar in the practice of playwriting centering on the construction of a plot. Cross-listed with TFDP 164C.

CRWT 165 Fundamentals and Concepts of Journalism (4) Lecture, 3 hours; laboratory, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 056, CRWT 057C. An introduction to the journalistic writing process. Includes history, the role of journalism in society, function and form, editing principles, ethics, and legalities. Provides exposure to interviewing, story construction and organization, format options, and variations in style.

CRWT 170 Advanced Poetry Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 150, CRWT 160; or consent of instructor. A workshop in poetry writing for students who wish to attempt, with criticism from class members, to fashion a significant long poem or group of poems. Course is repeatable.

CRWT 171 Anatomy of Poetry (4) Lecture, 3 hours; creative writing, 3 hours. Prerequisite(s): CRWT 160 or consent of instructor. An introductory study of poetics, including traditional and contemporary forms. Students write in the various poetic forms studied.

CRWT 172 Advanced Fiction Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CRWT 150, CRWT 162; or consent of instructor. A workshop in fiction writing for students who wish to attempt, with criticism from class members, to fashion a collection of stories or a novel. Course is repeatable.
Creative Writing and Writing for the Performing Arts

Subject Abbreviation: CWPA, CWLR

College of Humanities, Arts, and Social Sciences

Main Campus Traditional M.F.A
Katie Ford, M.F.A., M.Div., Director
Rickerby Hinds, M.F.A., Advisor (Theatre, Film and Digital Production)
Allison Benis White, M.F.A., Advisor (Creative Writing)
Program Office, ARTS 124 (951) 827-5568
writingmfa.ucr.edu

Main Campus Traditional M.F.A Faculty

Professors
Reza Aslan, Ph.D. (Creative Writing)
Steve Erickson, M.A. (Creative Writing)
Charles Evered, M.F.A. (Theatre, Film and Digital Production)

Stuart Knegner, B.A. (Theatre, Film and Digital Production)
Laila Lalami, Ph.D. (Creative Writing)
Tom Lutz, Ph.D. (Creative Writing)
Robin Ruscini, M.F.A. (Theatre, Film and Digital Production)
Jane Smiley, Ph.D. (Creative Writing)
Susan C. Straight, M.F.A. (Creative Writing)
Haibo Yu, Ph.D. (Theatre, Film and Digital Production)

Professors Emeriti
Mike Davis, C.Phil. (Creative Writing)
Juan Felipe Herrera, M.F.A. (Creative Writing)

Associate Professors
Josh Emmons, M.F.A. (Creative Writing)
Michael Jayme, M.F.A. (Creative Writing)
Keun-Pyo “Root” Park, M.F.A. (Theatre, Film and Digital Production)

Assistant Professors
Allison Benis White, M.F.A. (Creative Writing)
Charmaine Craig, M.F.A. (Creative Writing)
Emily Rapp Black, M.F.A. (Creative Writing)

Palm Desert Low Residency M.F.A.
Tod Goldberg, M.F.A., Administrative Director (760) 834-0928
Agam Patel, Program Manager (760) 834-0926
palmdesertmfa.ucr.edu

Low Residency M.F.A. Core Faculty
Elizabeth Crane-Brandt, B.A. (Creative Writing)
Jill Alexander Essbaum, M.A., M.A.R. (Creative Writing)
Tod Goldberg, M.F.A. (Creative Writing)
Mark Haskell Smith, M.F.A. (Creative Writing)
Stephen Graham Jones, Ph.D. English, (Creative Writing)
Goldbery Long, LSD
Joshua Malkin, M.F.A. (Theatre, Film and Digital Production)
Anthony McCann, M.F.A. (Creative Writing)
Mary Ols, (Creative Writing)
William Rabkin, M.F.A., (Theatre, Film and Digital Production)
Robert Roberge, M.F.A. (Creative Writing)
John Schimmel, M.F.A. (Theatre, Film and Digital Production)
Deanne Stillman, (Creative Writing)
David Ulin, B.A. (Creative Writing)
Mary Yukari Waters, M.F.A. (Creative Writing)

Graduate Program

Master of Fine Arts

The Master of Fine Arts (M.F.A.) degree in Creative Writing and Writing for the Performing Arts (CPWA) offers writers the ability to move fluidly within various arenas of creative writing, including the genres of poetry, fiction, nonfiction, playwriting, and screenwriting, as well as in multimedia studies. The program integrates scholarly studies of narrative, style, voice, structure, and history of these writing disciplines with traditional workshop formats, forming writers who can actively direct the literature of the 21st century.

For students in the Main Campus Traditional M.F.A. program, financial assistance may include teaching assistantships and fellowships, as well as fellowships for community projects through the Gluck Fellows Program of the Arts.

UCR Palm Desert Center (PDC) An M.F.A. in Creative Writing and Writing for the Performing Arts is offered at UCR’s Palm Desert Center, in the Low Residency program. Students in the Low Residency program can receive limited financial assistance through editorial positions on The Coachella Review, the student run literary journal of the program.

Palm Desert Low Residency Program

Students enroll in a prescribed number of units each term. Requirements are similar to the full-time program at UC Riverside, but courses are modified to fit low residency requirements. Low Residency MFA students come to Rancho Mirage, California for two ten-day sessions in the Fall and Spring quarters that include lectures, seminars, workshops and readings (please refer to website palmdesertmfa.ucr.edu for specific dates). Students also attend a final thesis or manuscript residency their last quarter to file. Students also enroll in a one unit Professional Development Course during this quarter. During the rest of the academic year, students participate in online workshops and seminars and work individually with faculty. Cross-enrollment between programs is not allowed. Full time enrollment in this program is 8 units per quarter for 7 quarters, and students pay a per unit fee.

Admission

Applicants to either program should demonstrate significant professional skill by submitting in thesis or manuscript form one of the following: 10-15 pages of poetry, a maximum of 25 pages of fiction or nonfiction, or the first act or a maximum of 25 pages of a screen play or play. Applicants must have a B.A. or B.S. degree from an accredited institution and submit 3 letters of recommendation, a self-statement, and original transcripts. Applications for the Main Campus Traditional Program are accepted for Fall quarter only; applications for the Palm Desert Low Residency program are accepted for the Fall and Spring quarters.

Plan I (Thesis or Manuscript) Both M.F.A. programs (Main Campus and PDGCC Low Residency) require completion of a thesis or manuscript, the requirements of which are the same. Each student will decide which title - thesis or manuscript - best suits their work.

Main Campus Traditional Program

Consists of workshops in chosen genres, culminating in a final project (the master’s thesis or manuscript) that showcases the writer’s cultivated talents, in the form of a poetry collection, novel, memoir, screenplay, or full-length play. The M.F.A. requires students to major in one genre but encourages them to explore the other genres as well, allowing for creative movement within disciplines. Structure and focus in screenwriting and playwriting can also be applied to fiction and nonfiction, and lyricism and metaphor in poetry can also enhance description and dialogue in the other genres, for example. Students can also engage in course work in varied areas of directing and acting, in film history and literature, in literary criticism and translation, with supplemental courses selected from departments such as Comparative Literature and Foreign Languages, English, Hispanic Studies, and Media and
Course Requirements

Minimum requirements consist of 56 units of course work (12 courses) and 8 units of master’s thesis or manuscript project. The core curriculum includes the following:

1. Students in the Creative Writing Track (fiction, nonfiction, and poetry) are required to take six workshop courses in their chosen genre (18 units total). Students in the Writing for Performance Arts Track (playwriting and screenwriting) are required to take four workshop courses in their chosen genre (12 units).

2. CWPA 201 (4 units)

3. Two graduate seminars from Creative Writing and Writing for the Performing Arts (8 units).

4. Two graduate seminars from any department(s) outside of Theatre and Creative Writing. Seminar subject matter should be relevant to student’s thesis or manuscript project. Requirement can be met with upper-division courses, with instructor and graduate advisor approval, as an appropriate 292 course (8 units).

5. Three electives in workshop, graduate seminar on thesis or manuscript, and the following limitations: Students may take a maximum of six workshops (24 units) within their chosen genre, and a maximum of 16 thesis or manuscript units within the normative time to degree (six terms). Students are encouraged to take seminars or cross-genre workshops, as available; elective thesis or manuscript units beyond the 8 required units must be approved by the student’s thesis or manuscript advisor and graduate advisor (12 units).

6. Thesis or manuscript (8 units) In the areas of playwriting and screenwriting, the final written project is a full-length play of two or three acts (90–120 pages) or screenplay or teleplay (approximately 120 pages). In the areas of poetry, fiction, and nonfiction, the final written project is a poetry collection (approximately 60 pages), novel, short story collection, essay collection, memoir or full-length work (between 100–200 pages). Each student is paired with three faculty members who serve as the thesis advisor(s).

5. One unit Professional Fundamentals Course.

Normative Time to Degree

7 quarters

Creative Writing Program

Graduate Courses

CWPA 200 Advanced Play Analysis (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. An analysis of dramatic structure from a sophisticated perspective. Covers strategies for dealing with openness, ambiguity, and metatheatre. Also discusses tied versus gratuitous elements, archetypes, motifs, and symbolism.

CWPA 201 The Writer’s Life: Literary Strategies and Structures (4) Seminar, 3 hours; extra reading, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores the artistic, practical, and professional aspects of a writer's work, such as networking, playwriting, screenwriting, or essayist. Topics include publishing, literary journals, commercial magazines, the film industry, the theatre industry, agents, and models of genre and art.

CWPA 210 Literature and Improvisation: The Intersection of Culture and Performance (4) Lecture, 3 hours; studio, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the development and performance of literature and performance in their cultural and historical contexts. Focuses on the relationship between text and performance.

CWPA 214 Acting for Writers (4) Lecture, 2 hours; discussion, 2 hours; outside research, 2 hours. Prerequisite(s): CWPA 264 or CWPA 266. Examines the theory and practice of acting to enable writers to better understand how language reflects character, as well as how actors turn the written word into spoken language. Includes text work and improvisation. Credit is awarded for only one of CWPA 214 or TFDP 114. Barr

CWPA 227 Theories of the Modern Theatre (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the major theories underlying twentieth-century theatre practice. Emphasizes the wide range of styles in modern theatre, including realism, symbolism, expressionism, surrealism, absurdism, Epic Theatre, and Theatre of Cruelty.

CWPA 230 Creative Nonfiction (4) Workshop, 3 hours; extra writing and reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor; consent of program chair is required for students with credit for CWLR 211N, CWLR 212N, or CWLR 222N. A formal study of contemporary creative nonfiction. Emphasizes style, structure, and form. Focuses on the production of original work. Course is repeatable to a maximum of 20 units.

CWPA 231 Directing for Writers (4) Seminar, 3 hours; extra reading, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): graduate standing or consent of instructor. An examination of the theory and practice of directing for the stage. Enables writers to better understand how to produce their own work and to interact more effectively with directors.

CWPA 246 Special Topics in Fiction (4) Seminar, 3 hours; extra reading, 3 hours; term paper, 1 hour. Prerequisite(s): graduate standing. Explores various movements and themes in literature. Course is repeatable as content changes to a maximum of 8 units.

CWPA 250 Theory for Writers (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A survey of literary theory designed especially for creative writers. Focuses on aspects of various theories that might be useful for creative work. Involves a close reading of theoretical texts with a strong emphasis on issues of form.

CWPA 251 Hollywood and the Novel: The Transformation of Fiction into Film (4) Lecture, 2 hours; screening, 1 hour; extra reading, 2 hours; outside research, 2 hours; written work, 1 hour. Prerequisite(s): graduate standing. Explores the transformation of novels into screenplays and films. Examines four novels and their corresponding screenplays and films. Focuses on differences in style, content, and format. Course is repeatable as content changes to a maximum of 8 units.

CWPA 252 (E-Z) Theory and Craft of Writing (4) Seminar, 3 hours; outside research, 2 hours; extra reading, 1-2 hours. Prerequisite(s): graduate standing; consent of program chair is required for students with credit for a segment of CWLR 201 (E-Z) or a segment of CWLR 202 (E-Z). Analyzes writing techniques, structures, and approaches to the craft in traditional, contemporary, and avant-garde literary works. E. Fiction; F. Poetry; G. Nonfiction; I. Playwriting; J. Screenwriting; K. First Person. Each segment is repeatable to a maximum of 8 units.

CWPA 253 Stories as Collections (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing in Creative Writing and Writing for the Performing Arts. An analysis of the order, shape, and structure of story collections to aid in appreciation of characters, conflicts, and themes. Course is repeatable as content changes to a maximum of 8 units.

CWPA 255 The Graphic Novel (4) Seminar, 2 hours; studio, 2 hours; extra reading, 1.5 hours; outside research, 1.5 hours. Prerequisite(s): graduate standing. An in-depth consideration of the historical development and craft of graphic novels. Examines the intellectual, literary, and artistic evolution of this narrative form.

CWPA 256 Contemporary Literature of the Middle East (4) Seminar, 3 hours; extra reading, 3 hours; term paper, 1 hour. Prerequisite(s): graduate standing. An overview of contemporary literature from the Middle
East. Proposes some of the ways in which the historical and cultural aspects of Islamic literature differ from that of Western culture. Includes English translations of works in Arabic, Persian, Turkish, Danish, and Urdu. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CWP 257 The Sufis (4) Seminar, 3 hours; term paper, 2 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to Sufism through an in-depth reading of the great Sufi poets. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with RLST 257.

CWP 260 Shakespeare and Film (4) Seminar, 3 hours; outside research, 1 hour; screening, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the influence of Shakespeare on film from faithful adaptations to broad reinventions of his works. Compares Shakespeare in his period and the present; the wide range of movies that Shakespeare inspired; and how modern filmmakers deal with issues of language and structure.

CWP 262 Fiction (4) Workshop, 3 hours; extra writing and reading, 4 hours. Prerequisite(s): graduate standing or consent of instructor; consent of program chair is required for credit for CWLR 211F, CWLR 212F, CWLR 221F, or CWLR 222F. A formal study of contemporary fiction. Emphasizes style, structure, and form. Focuses on production of original work. Course is repeatable to a maximum of 20 units.

CWP 263 Fiction Workshop (4) Workshop, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): graduate standing. A comprehensive introduction to the craft of fiction writing. Develops fiction writing abilities through reading and writing skills of the genre. Intended for students whose primary emphasis is not fiction. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CWP 264 Playwriting (4) Workshop, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Intensive formal study of playwriting with emphasis on plot, character, theme, dialogue, and style. Course is repeatable.

CWP 265A Four Forms (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Explores similarities and differences of three kinds of creative writing: fiction, nonfiction, and screenwriting. Includes participation in live stagings and video shoots, translating stories from one form to another to highlight the unique qualities of each form as well as areas of commonality. Course is repeatable.

CWP 265B Four Forms (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): CWP 265A; graduate standing. Includes adaptation of a one-act play into a screenplay not longer than 15 pages. Demonstrates how to develop work dependent on dialogue into work dependent on visuals and action. Covers shooting, editing, and screening of short films. Course is repeatable.

CWP 266 Screenwriting (4) Workshop, 3 hours; consultation, 1 hour; screening, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Involves outline and completion of an initial draft of a feature-length screenplay. Also includes a comparison study of two movies in the same genre. Course is repeatable.

CWP 267 Writing for Television (4) Workshop, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor; consent of program chair is required for students with credit for CWLR 211S, CWLR 212S, CWLR 221S, or CWLR 222S. Provides intensive formal study of writing for television. Emphasizes creating guidelines for a one-hour pilot and a 13-episode series. Course is repeatable to a maximum of 24 units.

CWP 268 Writing the Half-Hour Television Comedy (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): graduate professional standing or written consent of instructor. Introduction to the style, form, content, and creation of a half-hour television comedy series. Course is repeatable to a maximum of 8 units.

CWP 269 Rewriting the Script (4) Workshop, 4 hours. Prerequisite(s): CWP 264 or CWP 266 or consent of instructor; consent of instructor is required for students repeating the course. Addresses the processes involved in rewriting a full-length script (screenplay or play). Course is repeatable to a maximum of 8 units. Credit is awarded for only one of CWP 269 or TFDP 169.

CWP 270 Poetry Workshop (4) Workshop, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive formal study of contemporary poetry with emphasis on style, structure, and form. Focuses on production of original work. Course is repeatable to a maximum of 36 units.

CWP 275 Modern American Poetry (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): graduate standing. Focuses on various modern poets. Explores their contributions to the evolution of America’s literary tradition. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 8 units. Simon

CWP 276 Poetry and Translation (4) Workshop, 3 hours; extra reading, 1.5 hours; outside research, 1.5 hours. Prerequisite(s): graduate standing; reading proficiency in Spanish. Discusses the efficacy and difficulty of translating poetry from the Spanish language into English. Explores the works of twentieth- and twenty-first century major language poets. Provides a forum to render and compare translations. Cross-listed with SPN 277.

CWP 277 Poetry and the Sacred (4) Seminar, 2 hours; extra reading, 2 hours; outside research, 2 hours; written work, 2 hours. Prerequisite(s): graduate standing. An in-depth introduction to sacred poetic texts from antiquity to the present. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CWP 278 Contemporary American Poetry (4) Workshop, 3 hours; extra reading, 3 hours; written work, 1 hour. Prerequisite(s): graduate standing. Focuses on influential contemporary American poets. Discusses their styles and the evolution of poetry over the last fifty years. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 8 units.

CWP 279 The Fire This Time: Twentieth-Century Poetry of Witness (4) Seminar, 3 hours; extra reading, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): graduate standing. Examines the poetry of crises and witness written by poets in the twentieth and twenty-first centuries from America and around the world. Topics may include war, genocide; religious, ethnic, and political persecution; exile; imprisonment; ecological degradation; and domestic and urban violence in the United States.

CWP 280 Writers’ Colloquium (1) Colloquium, 1 hour. Prerequisite(s): graduate standing. Colloquia featuring writers in fiction, nonfiction, poetry, playwriting, and screenwriting. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 6 units.

CWP 281 Oscar Wilde and Late Victorian Theatre (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. A study of late Victorian theatre and culture through the works of Oscar Wilde (1854–1900), an Irish, feminist, aesthete, socialist, homosexual Victorian author. Includes readings of Wilde’s plays and nontraditional writings as well as plays by contemporaries such as Ibsen and Shaw.

CWP 282 Film Noir: Stories and Cinema from the Shadows (4) Seminar, 3 hours; screening, 2 hours; outside research, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the genre of fiction and cinema known as “film noir.” Looks at films, writing, and art to understand how “film noir” reshapes the way America looks at itself. Each week examines a different aspect of the genre, combining readings and films to understand its roots and rules.

CWP 283 Multigener Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A peer-review workshop for students with ongoing projects in any and all genres. Focuses on student work that can profit from exposure to readings by people working in a number of different genres. Course is repeatable to a maximum of 16 units.

CWP 284 Intensive Workshop (1-2) Workshop, 10-12 hours per quarter; discussion, 10-12 hours per quarter. Prerequisite(s): graduate standing or consent of instructor. Explores the work of contemporary writers and provides an opportunity for those same writers to respond to the students’ work. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

CWP 285 The Literary Memoir (4) Workshop, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. An in-depth survey of the literary memoir. Explores how memoirists employ craft and memory to create meaning. Addresses what obligation memoirists have to drama and to real lives and places. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

CWP 288 Thesis/Manuscript Workshop (4) Workshop, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Designed for M.F.A. students working on their thesis or manuscript, usually in the last two quarters of the program. Open to any and all genres. Focuses on student work, emphasizing the completion of thesis and manuscript projects.

CWP 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Literature studies directed by a faculty member on special topics. Course is repeatable.

CWP 292 Concurrent Analytical Studies in Creative Writing and Writing for the Performing Arts (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Taken concurrently with a 100-series course but on an individual basis. Devoted to research, criticism, and written work related to the 100-series course. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CWP 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Develops a creative writing project with possibility of publication or production, and any topic not intended for the final project manuscript or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

CWP 299 Research for the Thesis or Manuscript (1-12) Thesis, 3-36 hours. Prerequisite(s): consent of thesis or manuscript director. Research and preparation for the Master of Fine Arts thesis or manuscript. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 24 units.
Professional Courses

CWPA 301 Directed Studies in the Teaching of Creative Writing and Writing for the Performing Arts (4) Lecture, 2 hours; practicum, 1 hour; outside research, 2 hours; written work, 3 hours. Prerequisite(s): enrollment in the M.F.A. program in Creative Writing and Writing for the Performing Arts. Prepares for teaching introductory undergraduate Creative Writing courses by offering a flexible curriculum of meetings and conferences on effective pedagogical methodology. Includes creating course syllabi and lesson plans and discussing a range of practical teaching issues. Required of all TAs for at least one quarter. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

CWPA 302 Teaching Practicum (1-6) Consultation, 1-4 hours; practicum, 2-8 hours. Prerequisite(s): graduate standing. Supervised teaching in undergraduate Creative Writing courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Palm Desert Low Residency Program

Graduate Courses

See also graduate courses in the Theatre, Film and Digital Production section of this catalog.

CWLR 200 Professional Fundamentals (1) Colloquium, .5 hours; consultation, .5 hours; practicum, .5 hours. Prerequisite(s): graduate standing. Focuses on professional development. Involves mechanics of industry queries, book proposals, contracts, rights, and agent interviews. Culminates in craft lecture during residency. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 2 units.

CWLR 201 (E-Z) Low Residency Seminar in Literature, Theatre, and Film (4-6) Seminar, 21-31.5 hours per quarter; consultation, 1-1.5 hours; extra reading, 3-4.5 hours. Prerequisite(s): graduate standing. A study of a period, style, author, or issue in relation to literary, theatrical, or film history. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 16 units.

CWLR 202 (E-Z) Low Residency Seminar in Literature, Theatre, and Film (2-4) Seminar, 1-2 hours; extra reading, 3-6 hours. Prerequisite(s): graduate standing. A study of a period, style, author, or issue in relation to literary, theatrical, or film history. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 4 units.

CWLR 211 (E-Z) Low Residency Genre Workshop (2-4) Workshop, 10-20 hours per quarter; consultation, 1-2 hours. Prerequisite(s): graduate standing. Focuses on the production of original work. Includes study of chosen genre(s), emphasizing technique, structure, style, and form. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 8 units. If credit has already been awarded for a segment of CWLR 211 (E-Z) or CWLR 221 (E-Z), it is not awarded for the corresponding lettered segment of CWLR 211 (E-Z) or CWLR 221 (E-Z).

CWLR 212 (E-Z) Low Residency Genre Workshop (4-6) Workshop, 3-4.5 hours; extra reading, 3-4.5 hours. Prerequisite(s): graduate standing. Focuses on the production of original work. Includes study of chosen genre(s), emphasizing technique, structure, style, and form. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 8 units. If credit has already been awarded for a segment of CWLR 212 (E-Z) or CWLR 222 (E-Z), it is not awarded for the corresponding lettered segment of CWLR 211 (E-Z) or CWLR 221 (E-Z).

CWLR 221 (E-Z) Low Residency Cross-Genre Workshop (2-4) Workshop, 10-20 hours per quarter; consultation, 1-2 hours. Prerequisite(s): graduate standing. Focuses on the production of original work. Includes introductory study of chosen cross-genres. Emphasizes technique, structure, style, and form. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 8 units. If credit has already been awarded for a segment of CWLR 211 (E-Z) or CWLR 212 (E-Z), it is not awarded for the corresponding lettered segment of CWLR 211 (E-Z) or CWLR 222 (E-Z).

CWLR 222 (E-Z) Low Residency Cross-Genre Workshop (2-4) Workshop, 1-2 hours; extra reading, 3-6 hours. Prerequisite(s): graduate standing. Focuses on the production of original work. Includes introductory study of chosen cross-genres. Emphasizes technique, structure, style, and form. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 4 units. If credit has already been awarded for a segment of CWLR 211 (E-Z) or CWLR 212 (E-Z), it is not awarded for the corresponding lettered segment of CWLR 211 (E-Z) or CWLR 222 (E-Z).

CWLR 221 (E-Z) Low Residency Cross-Genre Workshop (2-4) Workshop, 10-20 hours per quarter; consultation, 1-2 hours. Prerequisite(s): graduate standing. Focuses on the production of original work. Includes introductory study of chosen cross-genres. Emphasizes technique, structure, style, and form. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 8 units. If credit has already been awarded for a segment of CWLR 211 (E-Z) or CWLR 212 (E-Z), it is not awarded for the corresponding lettered segment of CWLR 211 (E-Z) or CWLR 222 (E-Z).

CWLR 222 (E-Z) Low Residency Cross-Genre Workshop (2-4) Workshop, 1-2 hours; extra reading, 3-6 hours. Prerequisite(s): graduate standing. Focuses on the production of original work. Includes introductory study of chosen cross-genres. Emphasizes technique, structure, style, and form. F. Fiction; N. Nonfiction; P. Poetry; S. Screenwriting; T. Playwriting. Each segment is repeatable as its content changes to a maximum of 4 units. If credit has already been awarded for a segment of CWLR 211 (E-Z) or CWLR 212 (E-Z), it is not awarded for the corresponding lettered segment of CWLR 211 (E-Z) or CWLR 222 (E-Z).

Dance

Subject abbreviation: DNCE
College of Humanities, Arts, and Social Sciences

Anthea Kraut, Ph.D., Chair
Department Office, 108 Arts
(951) 827-3944; dance.ucr.edu

Professors Emeriti
Anthea Kraut, Ph.D.
Wendy L. Rogers, M.A.
Susan Rose, M.F.A.
Marta Savigliano, Ph.D.
Christina Lindborg Schlundt, Ph.D.
Fred Strickerl, B.S.

Associate Professors
Jacqueline Shea Murphy, Ph.D.
Joel Smith, M.F.A.
Linda J. Tomko, Ph.D.

Assistant Professors
Imani Kai Johnson, Ph.D.
Luis Lara Malvacias, M.F.A.
Taisha Paggett, M.F.A.
Joseph Reynoso, Ph.D.
Nicola Whitson M.F.A.

Acting Assistant Professor
Maria Firmino-Castillo M.A

Lecturers
Brandon Aiken
Kelli King, M.F.A.

Major

The Dance major focuses for its outstanding faculty of nationally and internationally recognized scholars and artists who draw from a variety of academic and creative backgrounds, including choreography, history, literature, performance studies, and cultural studies.

The B.A. degree in Dance focuses on choreography and the cultivation of cultural and historical perspectives on dance. Movement practice, dance composition, performance, and critical dance studies courses are required. Elective courses are also required. Movement practice courses are offered in a variety of dance/movement forms. Dance majors choose an emphasis in Dance Making or Dance Studies. Majors may elect to participate in “UCR is Dancing,” the department’s annual annual concert series featuring original choreography and performance projects by students.

In addition, visiting professional dancers, choreographers, and scholars come to UCR frequently to give special workshops, master classes, and lectures.

Opportunities to perform include “UCR is Dancing,” MFA students’ final projects, and the Gluck Fellows Arts Outreach Touring programs.

Dance majors are eligible for the Chancellor’s Performance Award, a scholarship of up to $2,000. Student assistantships and other forms of financial aid are also available. Undergraduate majors may apply for research grants and stipends for summer dance studies. Selected students receive $1,000 Maxwell H. Gluck Fellowships.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The Dance major focuses on two broad areas of study: Dance Making and Dance Studies. After completing a number of shared required courses, Dance majors will choose an emphasis in either Dance Making or Dance Studies and complete a Capstone Research Seminar.

1. Lower-division requirements (8 units): DNCE 014, DNCE 019
2. Dance Making (12 units): Three courses from DNCE 115E, DNCE 115F, DNCE 115G or DNCE 115J
3. Dance Studies: (8 units), 2 courses from the following: DNCE 131/132, DNCE 132, DNCE 133, DNCE 134, DNCE 135
4. Production: DNCE 140
5. Movement Practice (up to 24 units)

Dance majors must enroll in at least one movement practice course per quarter, and must pursue a concentration in two
different dance genres of at least 6 units each. Up to 24 units may be counted towards the major from:

a) DNCE 066A, DNCE 066B (West African Dance)
b) DNCE 067A, DNCE 067B, DNCE 067C (Modern Technique)  
c) DNCE 068 (Somtics)
d) DNCE 069A, DNCE 069B (18th Century Dance)  
e) DNCE 070A, DNCE 070B, DNCE 070C (Hip Hop Dance)  
f) DNCE 071A, DNCE 071B (Ballet)  
g) DNCE 073A, DNCE 073B (Jazz Dance)  
h) DNCE 074A, DNCE 074B (Yoga for Dancers)  
i) DNCE 075A, DNCE 075B (Dance Techniques and Practices)  
j) DNCE 081, DNCE 181 (Dance Cultures, Culture in Dance)

Dance Making Emphasis:

1. Eight units from Dance Making/Practice Electives:

DNCE 167, DNCE 168, DNCE 180(E-Z), DNCE 181*, or any DNCE 115(E-Z) not used to fulfill requirement #2 above.

No more than 4 units may be drawn from the following movement practice courses to fulfill this eight unit elective requirement:


2. Four units from Dance Studies Electives:

DNCE 155(E-Z), DNCE 161/MCS 161, DNCE 162/MCS 162, DNCE 171(E-Z)/MCS 151(E-Z), DNCE 172(E-Z), DNCE 173(E-Z), DNCE 181* or any of DNCE 131/GSST 127, DNCE 132, DNCE 133, DNCE 134, DNCE 135 not used to fulfill requirement #3 above.

*DNCE 081 and 181 may be used to fulfill either the Dance Making or the Dance Studies requirement, but not both.

3. Dance Studies Capstone:

a) DNCE 188  
b) DNCE 189E  

Dance Studies Emphasis:

1. Eight units from Dance Studies Electives:

DNCE 155(E-Z), DNCE 161/MCS 161, DNCE 162/MCS 162, DNCE 171(E-Z)/MCS 151(E-Z), DNCE 172(E-Z), DNCE 173(E-Z), DNCE 181* or any of DNCE 131/GSST 127, DNCE 132, DNCE 133, DNCE 134, DNCE 135 not used to fulfill requirement #3 above.

2. Four units from Dance Making/Practice Electives:


*DNCE 081 and 181 may be used to fulfill either the Dance Making or the Dance Studies requirement, but not both.

3. Dance Studies Capstone: DNCE 189F

Minor

Students who minor in Dance receive introductions to choreography, movement practices, and critical dance studies that enable them to pursue upper-division courses germane to a particular focus in dance.

1. Lower-division preparation (14 units)

a) DNCE 014, DNCE 019  


See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Program

The Department of Dance offers a Master of Arts (M.A.) in Critical Dance Studies, a Master of Fine Arts (M.F.A.) in Experimental Choreography, and a Ph.D. in Critical Dance Studies.

Master’s Degrees

M.A. in Critical Dance Studies

Admission Students gaining admission to the Ph.D. program in Critical Dance Studies, after advisement and with the approval of the faculty committee, elect to pursue an M.A. degree in Critical Dance Studies.

Plan I (Thesis) Students must complete a minimum of 36 quarter units of undergraduate (100 series) and graduate (200 series) courses. At least 24 of these units must be in graduate courses and must include the following UCR courses:

DNCE 239 (Introduction to Graduate Study of Dance)  
DNCE 254 (Political Approaches to Dance Studies)  
DNCE 255 (Historical Approaches to Dance Studies)  
DNCE 257 (Rhetorical Approaches to Dance Studies)  
DNCE 258 (Cultural Approaches to Dance Studies)

A maximum of 12 units of DNCE 299 (thesis research) can be counted towards the 36-unit minimum. Other courses (to fulfill the 36-unit requirement) should be selected, with the consent of the program graduate advisor, from relevant upper-division and graduate courses.

Candidates for the degree must prepare and present an acceptable thesis to the Department of Dance.

M.F.A. in Experimental Choreography

The Master of Fine Arts (M.F.A.) program in Experimental Choreography constructs opportunities for highly motivated choreographers to conduct both research in dance and an assessment of contemporary issues in dance aesthetics, history, and culture. The focus of this program is the development of experimental choreography that challenges cultural assumptions and is informed by a critical and reflective perspective. Core courses focus on what constitutes an experiment in contemporary dance, improving choreography, systems of representation used to create choreographic meaning, and the collaborative process. Through close cooperation with the Ph.D. program in Critical Dance Studies, students explore the dynamic relationships between theory, method, and object of study. A final project demonstrates a thorough investigation and committed execution of a defined choreographic problem. Financial assistance includes teaching assistantships and fellowships for community projects through the Gluck Fellows Program of the Arts.

Admission Applicants to the program should demonstrate significant professional experience as an active choreographer making and producing work, must have a B.A. or B.F.A. degree from an accredited institution. It is recommended that applicants take the GRE if their GPA is below a 3.0. A video sample of choreography is required. Contact the department for specific details. The program is especially designed for the practicing artist who desires to return to an institutional context for advanced study.

The program seeks applicants who desire to contextualize their aesthetic inquiry through the study of historical, cultural, and political perspectives on dance. Students will be asked to examine their own artistic production from these various perspectives, as they produce new work. They will be involved in a rigorous investigation of contemporary aesthetic issues as formulated in their own research projects.

Course Work Requirements consist of 40 units of course work (10 courses) and 12-14 units of independent research for a final project. Students’ total number of units of graduate and upper-division undergraduate courses must equal at least 54. The core curriculum, normally to be completed in the first two years of residency, shall comprise the following 16 units:

DNCE 240 (Improvising Choreography):
Scores, Structures, and Strategies)
DNCE 241 (Creating the Experiment: Identifying the New)
DNCE 242 (Dancing Representation: Figures, Forms, and Frames)
DNCE 243 (Collaborating in Dance Making: Materials, Methods, and Interactions)

Students must also take 4 units in each of the following:
DNCE 180R (Dance Practicum: Pedagogy)
DNCE 239 (Introduction to Graduate Study of Dance)
DNCE 244 (Special Topics in Dance Making)

In addition, students must complete 8 units from the following Critical Dance Studies courses:
DNCE 254 (Political Approaches to Dance Studies)
DNCE 255 (Historical Approaches to Dance Studies)
DNCE 257 (Rhetorical Approaches to Dance Studies)
DNCE 258 (Cultural Approaches to Dance Studies)

Students must also take Dance 301, (which does not count toward the total 54 units required for the degree) plus 4-6 graduate-level units of electives either within or outside the Dance Department. These units should be taken for a letter grade and can include, but are not limited to: any of the core PhD courses (Dance 254-258) not previously taken; a Dance 200-level seminar course in history and theory; Dance 280 (the Colloquium); the bundling of an upper-division undergraduate-level course with 2 units of 292 (Concurrent Analysis).

An additional 12-14 units are taken through DNCE 297 or DNCE 299 for work on phases of the final project. During the second year, students form a committee consisting of three faculty members, one of whom may be outside the department. The committee approves the project proposal and supervises the final project. The student’s progress through the program culminates in the final project, which reflects a serious investigation of a specific choreographic problem.

Foreign Language Requirement None

Written and/or Oral Qualifying Examination
During the second year, the student writes a 5–15-page proposal for the final project to be approved by the committee.

Final Project
The final project could take the form of a concert of dances or some other performance event in which the student’s research is made evident. Because of the experimental nature of the program, it is difficult to specify the exact form the project may take. For example, students may 1) undertake to create site-specific dances occurring in different locales over several months, 2) organize opportunities for interactive choreography with distinct groups of performers, or 3) choreograph a dance

to be viewed on CD-ROM. Whatever its final form, the project must demonstrate a thorough investigation and committed execution of a defined aesthetic concern. The final project includes a written requirement to be completed within one quarter following the performance event. This document, 20-40 pages long, outlines the aesthetic focus of the student’s research and provides a historical and philosophical contextualization for the project.

Normative Time to Degree 9 quarters

Doctoral Program
Ph.D. in Critical Dance Studies

The Ph.D. program in Critical Dance Studies provides an advanced interdisciplinary base for innovative research in the field of cultural, political, and historical studies of dance. The program of study embraces a theoretical consideration of all dimensions of the practice of dance. These dimensions include, but are not limited to, body politics; media and digital cultures; globalization and cultural translation; race, ethnicity, sexuality, and gender; mobilization and class; and corporeal knowledges and choreography. In addition to theoretical and historical concerns, the program promotes the articulation of a variety of methodological approaches to the analysis of bodily performance.

UCR faculty put into motion various modes of production: performance studies, history, ethnography, critical race theory, feminist studies/masculinities & queer studies, Marxism or post-Marxism, and other specific area studies related to, for example, South Asian, Asian Diaspora and Asian American studies, African Diaspora studies, Indigenous studies, Latina/Latin American studies, and Global South studies. The program provides a provocative environment for investigating cutting-edge strategies for original scholarly work in dance.

Admission
Students must meet the general requirements for admission to the Graduate Division as shown in the Graduate Studies section of this catalog. Students must submit a statement of background about experience in dance history and theory, a previously prepared research paper, or the equivalent, demonstrating analytical and interpretive skills, and GRE scores.

Prerequisites include the following:
1. A working knowledge of movement
2. An acquaintance with some system of movement observation and analysis
3. Preparation in general historical and cultural studies

Deficiencies may be corrected with appropriate coursework.

Course Work
Core curriculum normally to be completed in the first two years of residency includes the following:
DNCE 239 (Introduction to Graduate Study of Dance)
DNCE 254 (Political Approaches to Dance Studies)
DNCE 255 (Historical Approaches to Dance Studies)
DNCE 257 (Rhetorical Approaches to Dance Studies)
DNCE 258 (Cultural Approaches to Dance Studies)
DNCE 301 (Seminar in Dance Studies Pedagogy and Professional Development)

Six additional graduate-level courses are required. Two from other disciplines related to the student’s research interest, and four from Dance. A maximum of one Dance M.F.A. core course may be included as one of the four additional graduate-level dance courses required.

Language Requirement
All students must show competence in at least one language other than English. Further requirements in specific forms of dance or music notation or ancient or contemporary languages may be determined for each student in consultation with relevant faculty and the graduate advisor of the program.

Written Qualifying Examination
Students must prepare one field for examination with each of four members of the committee in whose courses the student has completed degree requirements. The committee is composed of two Dance faculty members, one of whom is chair, and two other members who may be Dance faculty or “outside members” (not a UCR Dance faculty member or cooperating faculty member). The written qualifying examination may be completed as a “take-home” format (seven-day, open-book) or a “sit-in” format (two-hour exam periods for each field, conducted on site in the department, and completed in one five-day work week).

Qualifying Essay
One quarter after successfully completing the written examination, students complete a rough draft of the qualifying essay, under the direction of the same group of faculty members who monitored the written examination. Students finalize the qualifying essay and sit for the oral examination before the end of the following quarter. The qualifying essay is generally 25 pages in length and demonstrates the student’s ability to articulate a viable dissertation research project. It must consist of written work but may include other forms of video or film productions with the approval of the relevant committee and the graduate advisor.

Oral Qualifying Examination
Students must prepare qualifying essay and be examined by a five-person oral qualifying examination committee. The committee, nominated by the department and appointed by the dean of the Graduate Division, consists of all four written examination committee members, plus a fifth member chosen so that the five-person committee would be comprised of no more than two “outside faculty members,” and no fewer than one “outside faculty member.” All members of the committee must be physically present for the exam. The committee examines the adequacy of the student’s preparation to conduct the research proposed in the qualifying essay. Advancement to candidacy for the doctoral degree depends
on completing required course work, fulfilling language requirements, and passing the written examination, qualifying essay, and the oral examination.

The Dance department expects students to complete the entire examination process by the end of their tenth quarter in the program (end of the first quarter of their fourth year) to make satisfactory progress toward completing the degree.

Dissertation and Final Oral Examination
A dissertation committee is composed of three members: a chair from Dance, a Dance faculty member, and either a Dance faculty member, or an outside faculty member. The committee directs and approves the research and writing of the dissertation. The dissertation must consist of written work but may include other forms of video or film productions with the approval of the relevant committee and the graduate advisor. It must present original scholarly work and be approved by the dissertation committee before the student takes the final oral examination. Students must have satisfactory performance on a final oral examination, conducted by the dissertation committee and open to all members of the faculty. The examination emphasizes the dissertation and related topics.

Normative Time to Degree
18 quarters

Lower-Division Courses

DNCE 005 Introduction to Dance (4) Seminar, 3 hours; individual study, 1 hour; extra reading, 1 hour; several short essays. As a survey of approaches to dancing and dance making, this course introduces students to dance technique, performance, and composition as fundamental components in the art of dance. Students will cultivate the ability to enact and remember patterns of rhythm, effort, and visual design in movement and will become acquainted with various procedures for organizing movement. Especially designed for students with no experience in dance.

DNCE 007 Dance: Cultures and Contexts (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Provides historical and cultural context for selected dance forms and practices. Students study dance as an art form, cultural practice, and meaning-making activity, with particular attention to histories of race, gender, sexuality, class, and nation. Intended for non-majors. Credit will be awarded for only one of DNCE 007 or DNCE 007W.

DNCE 007W Dance: Cultures and Contexts (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. Provides historical and cultural context for selected dance forms and practices. Students study dance as an art form, cultural practice, and meaning-making activity, with particular attention to histories of race, gender, sexuality, class, and nation. Intended for non-majors. Credit will be awarded for only one of DNCE 007 or DNCE 007W.

DNCE 014 Introduction to Choreography (4) Lecture, 4.5 hours; individual study, 1.5 hours. Prerequisite(s): a major or minor in Dance or consent of instructor. Analysis of basic principles and issues of choreography. Emphasis is on improvisational methods as an approach to the investigation of space, time, and energy in motion as the fundamental elements of a dance. Course is repeatable to a maximum of 8 units.

DNCE 019 Introduction to Dance Studies (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): none. Introduces major concepts, approaches, and issues in the study of dance as a cultural, historical, and artistic practice. Uses text, video, studio, demonstration, and performance to expose students to ways of writing, speaking, researching, and thinking clearly and critically about dance.

DNCE 066A Beginning West African Dance (2) Studio, 3 hours; screening, 1 hour; extra reading, 1 hour; individual study, 1 hour. West African dance techniques at the beginning level. Focuses on rhythm, songs, and dance as well as dance choreographies traditionally performed for rites of passage, courtship, coming of age, and storytelling. Emphasizes community building and individual potential. Course is repeatable.

DNCE 066B Intermediate West African Dance (2) Studio, 3 hours; screening, 1 hour; extra reading, 1 hour; individual study, 1 hour. West African dance technique at intermediate level. Vigorous class with focus on rhythm, songs, and culture as well as dance choreographies traditionally performed for rites of passage, courtship, coming of age, and storytelling. Emphasizes community building and individual potential. Course is repeatable.

DNCE 067A Beginning Modern Dance Technique (2) Studio, 3 hours; individual study, 1 hour; extra reading, 1 hour. Prerequisite(s): none. Modern dance technique at the beginning level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for non-dancers and dancers. Course is repeatable.

DNCE 067B Intermediate Modern Dance Technique (2) Studio, 3 hours; individual study, 1 hour; extra reading, 1 hour. Prerequisite(s): DNCE 067A recommended. Modern dance technique at the intermediate level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Course is repeatable.

DNCE 067C Advanced Modern Dance Technique (2) Studio, 3 hours; individual study, 1 hour; extra reading, 1 hour. Prerequisite(s): DNCE 067B recommended. Modern dance technique at the advanced level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Course is repeatable.

DNCE 068 Somatic Techniques and Experiential Anatomy (2) Studio, 3 hours; extra reading, 1 hour; individual studio, 2 hours per week. Introduces physical practices and concepts from a variety of somatic techniques. Explores how the body functions through actions and interactions of its structures. Utilizes a possibilities-in-the-field approach to study and embody some of the varied interpretations that can arise from the same set of anatomical facts. Course is repeatable to a maximum of 16 units.

DNCE 069A Beginning Eighteenth-Century Dance (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Eighteenth-century dance technique at the beginning level. Focuses on movement practices, corporeality, spatial navigation, and relationships with music. Explores dances in historical, cultural, and political frameworks. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for non-dancers and dancers. Course is repeatable.

DNCE 069B Intermediate Eighteenth-Century Dance (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Eighteenth-century dance technique at intermediate level. Focuses on movement practices, corporeality, spatial navigation, and relationships with music. Explores dances in historical, cultural, and political frameworks. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for non-dancers and dancers. Course is repeatable.

DNCE 070A Beginning Hip Hop Dance (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Hip Hop dance technique at beginning level. Uses high-energy class with focus on dance steps, isolation techniques, rhythm, confidence, and bringing style and personality to movements. Stresses Hip Hop dance as fun, diverse, self-expres- sive, innovative, and transformative. Grounded in histories of Hip Hop as a cultural movement. Course is repeatable.

DNCE 070B Intermediate Hip Hop Dance (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Hip Hop dance technique at intermediate level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for non-dancers and dancers. Course is repeatable.

DNCE 070C Advanced Hip Hop Dance (2) Studio, 2 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Hip Hop dance technique at advanced level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Course is repeatable.

DNCE 071A Beginning Ballet Technique (2) Studio, 3 hours; individual study, 1 hour; extra reading, 1 hour; screening, 1 hour. Prerequisite(s): DNCE 071A recommended. Ballet technique at the intermediate level. Assignments include attending dance concerts and other dance showings. Recommended for nondancers and dancers. Course is repeatable.

DNCE 071B Intermediate Ballet Technique (2) Studio, 3 hours; individual study, 1 hour; extra reading, 1 hour; screening, 1 hour. Prerequisite(s): DNCE 071A recommended. Ballet technique at the intermediate level. Assignments include attending dance concerts and other dance showings. Course is repeatable.

DNCE 073A Beginning Jazz Dance (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Jazz dance technique at beginning level. Uses focused on rhythm, isolations, syncopation, and performance quality. Students learn a variety of jazz styles from lyrical to funk and classical to musical theater. Outside-of-class assignments include readings, video viewings, and written assignments in historical, cultural, and aesthetic issues pertaining to jazz dancing. Course is repeatable.

DNCE 073B Intermediate Jazz Dance (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Jazz dance technique at intermediate level. Focuses on rhythm, isolations, syncopation, and performance quality. Students learn a variety of jazz styles from lyrical to funk and classical to musical theater. Outside-of-class assignments include readings, video viewings, and written assignments in historical, cultural, and aesthetic issues pertaining to jazz dancing. Course is repeatable.

DNCE 074A Beginning Yoga for Dancers (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Yoga for dancers at beginning level. Focuses on alignment; understanding how to practice safely; increasing strength, flexibility, and balance; developing focus and bodily awareness; and exploring yoga’s relation to dance. Coursework includes reading and discussion of yoga texts, concepts, and philosophy. Recommended for non-dancers and dancers. Course is repeatable.
DNCE 074B Intermediate Yoga for Dancers (2) Studio, 3 hours; extra reading, 1 hour; individual study, 1 hour; screening, 1 hour. Yoga for dancers at intermediate level. Focuses on alignment; understanding how to practice safely, increasing strength, flexibility, and balance; developing focus and bodily awareness; and exploring yoga’s relation to dance. Coursework includes reading and discussion of yoga texts, concepts, and philosophy. Recommended for non-dancers and dancers. Course is repeatable.

DNCE 075A Beginning Dance Techniques and Practices (2) Studio, 3 hours; individual study, 1 hour; extra reading, 1 hour; screening, 1 hour. Prerequisite(s): none. Dance Techniques and Practices at beginning level. Focus varies each quarter. Outside-of-class assignments may include attending dance concerts, writing assignments in historical, cultural and aesthetic issues relating to the quarter’s dance form, and regular individual practice sessions. Course is repeatable.

DNCE 075B Intermediate Dance Techniques and Practices (2) Studio, 3 hours; extra reading, 1 hour; screening, 1 hour. Prerequisite(s): DNCE 075A recommended. Dance Techniques and Practices at intermediate level. Focus varies each quarter. Outside-of-class assignments may include attending dance concerts, writing assignments in historical, cultural and aesthetic issues relating to the quarter’s dance form, and regular individual practice sessions. Course is repeatable.

DNCE 081 Dance Cultures, Culture in Dance (4) Lecture, 2 hours; studio, 6 hours. Explores non-presentational dance forms that are intricately woven into the culture of a particular society. Focuses on performance integrity and cultural memory. Incorporates videos, books, field trips, and guest lectures in addition to studio time. Course is repeatable to a maximum of 8 units.

Upper-Division Courses

DNCE 114A Dance Composition I (4) Lecture, 3 hours; studio, 3 hours. Prerequisite(s): DNCE 007 or DNCE 007W or DNCE 014 and two quarters of dance technique, or equivalent. Analyzes dance as an art form. Emphasizes space, time, and energy in motion as elements in choreographic style. Course content presented at the beginner’s level.

DNCE 114B Dance Composition II (4) Lecture, 3 hours; studio, 3 hours. Prerequisite(s): DNCE 114A. The continuing analysis of dance as an art form with emphasis on space, time and energy in motion as elements in choreographic style. In DNCE 114B, this is done on the intermediate level.

DNCE 114C Dance Composition III (4) Lecture, 3 hours; studio, 3 hours. Prerequisite(s): DNCE 114B. The continuing analysis of dance as an art form with emphasis on space, time, and energy in motion as elements in choreographic style. In 114C, this is done on the advanced level.

DNCE 115 (E-Z) Dance Making (4) Lecture, 3 hours; studio, 3 hours; outside research, 2 hours. Prerequisite(s): DNCE 014, or consent of instructor. Advanced analysis of dance-making as an art form with emphasis on storytelling, ritual, political activation, site, media and technology, contact, and materials.

DNCE 123 Southeast Asian Performance (4) Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the roles and genres of expressive culture in Southeast Asia, including dance, music, theater, film, and digital culture. Performance is discussed as both a time-honored and a contemporary medium for cultural production, from the courts to everyday experience. Cross-listed with ANTH 125, AST 123, MUS 123, and SEAS 123.

DNCE 127 Music Cultures of Southeast Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in the Philippines, Indonesia, Malaysia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Geographically, regions of Asia: Central, East, South and Southeast. No Western music background is required. Cross-listed with ANTH 176, AST 127, ETST 172, and MUS 127.

DNCE 128 Performing Arts of Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in the Philippines, Indonesia, Malaysia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Geographically, regions of Asia: Central, East, South and Southeast. No Western music training is required. Course is repeatable to a maximum of 8 units. Cross-listed with ANTH 128, AST 128, and TDFP 176.

DNCE 131 Dance, Gender, Sexuality (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): DNCE 019 (may be taken concurrently) or consent of instructor. Explores some of the ways that studying dance (as an art form whose medium is the body) illuminates feminist, gender, and sexuality studies — and vice versa. No previous dance experience required. Cross-listed with GSST 127.

DNCE 132 Dance, Citizenship, Location (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): DNCE 019 (may be taken concurrently) or consent of instructor. Explores the flow among non-presentational and presentational dance forms, state productions and treaties, and design factors that are meant to enable our daily lives such as buildings, parks, and roadways. Students take advantage of video, books, field trips, guest lectures and studio lab time.

DNCE 133 Dance, Space, Time (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): DNCE 019 (may be taken concurrently) or consent of instructor. Explores the flow among non-presentational and presentational dance forms, state productions and treaties, and design factors that are meant to enable our daily lives such as buildings, parks, and roadways. Students take advantage of video, books, field trips, guest lectures and studio lab time.

DNCE 135 Dance, Genre, Institutions (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): DNCE 019 (may be taken concurrently) or consent of instructor. Explores intersections between dancing bodies, questions of race, and notions of cultural property. Investigates issues of embodied identity and racialization, cultural appropriations, cultural archiving, parody, and hybridity, and ownership and copyright.

DNCE 136 Hip Hop Dance, Collectivity, & Change (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): DNCE 019 (may be taken concurrently) or consent of instructor. Explores the roles in the production of flash mobs, and the ways in which these were made, the agencies such representations enabled, interpretive communities, and cross-cultural interactions. Cross-listed with MUS 155F.

DNCE 155F The Ballets Russes (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces relationships and representations between music and dance. Explores musical and choreographic form, compositional strategies, hybridization of style, cultural meanings and registers in which these were made, the agencies such representations enabled, interpretive communities, and cross-cultural interactions. Cross-listed with MUS 155F.

DNCE 161 Choreographing the Screen (4) Lecture, 3 hours; screening, 2 hours; term paper, 1 hour. Prerequisite(s): DNCE 019 or consent of instructor. Focuses on choreography for the camera and the screen. Topics include video art, classic film choreography, music video, and digital dance technologies. Students prepare a choreographic piece for the camera as a final project. Cross-listed with MCS 161.

DNCE 162 Tool, Technology, Technique (4) Lecture, 3 hours; screening; 3 hours; laboratory, 3 hours. Prerequisite(s): DNCE 019 or MCS 020; or consent of instructor. Practicum in video and digital production with an emphasis on capturing and editing the moving body. Students are encouraged to bring their own video or digital recording device. Editing equipment will be available. Cross-listed with MCS 162.

DNCE 167 Dance Production (2) Studio, 6 hours. Prerequisite(s): by audition. Study, production, and performance of dances. Course may be repeated for credit.

DNCE 168 Dance Touring Ensemble (4) Studio, 6 hours; outside research, 3 hours. Prerequisite(s): consent of instructor. Dance Touring Ensemble members work with the instructor to create a lecture-demonstration and create and learn repertoire which is performed at various sites within the community. Course is repeatable to a maximum of 16 units.

DNCE 171 (E-Z) Filmic Bodies (4) For hours and prerequisites, see segment descriptions. Assesses a multiplicity of filmic genres through the portals of the dancing and mobilized body as related to race, gender, class, and other identifiers. Explores the politics of movement on film, the mechanics of making film work, and the political economy of dance on film. Dance experience is usually not required. Segments are repeatable. Cross-listed with MCS 151 (E-Z).

DNCE 177F Ethnographic Representation of Dance in Film: “...and then they danced” (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the juncture between representation and presentation in everyday dance genres on film. Explores race, class, tropes of authenticity, and ownership of cultural production through screenings, lectures, and theoretical writings. No previous dance experience required. Course is repeatable. Cross-listed with MCS 151F.

DNCE 171G Gender, Mechanization, and Shape (4)}
DNCE 171K Attractions, Intuitions, and Disruptions in Narrative Film: Fight Scenes, Dance Sequences, and Special Effects (4) Lecture; 3 hours; screening; 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the nature of film studies through the eyes of the audience. Uses film, video, and outside research; a list of films in cinematic locales to formulate how viewing film constructs the viewer's subjectivity and a film's cultural context. Course is repeatable. Cross-listed with MCS 151J.

DNCE 171M Bollywood (4) Lecture; 3 hours; laboratory; 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the vast corpus of films that constitute the genre called Bollywood. Focuses on the genre's music and dance styles. Includes weekly film screenings. No previous dance experience required. Course is repeatable. Cross-listed with MCS 151M.

DNCE 172 (E-Z) Televisual Bodies (4) Lecture; 3 hours; laboratory; 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes choreographic practices within television broadcast and marketing and their relation to popular culture. Also examines situational or tactical use and misuse of satellite, cablecast, and broadcast television by un-intentional audiences that subsequently reconstitute themselves as communities via the programming. Focuses on video as an archival and/or choreographic tool. J. Corporations and Corporalities: Commercial, Culture, and Television as Location: The Satellite Feed; M. Music Television (MTV) and Popular Culture. Segments are repeatable. Cross-listed with MCS 152 (E-Z).

DNCE 173 (E-Z) Digitized Bodies (4) Lecture; 3 hours; screening; 2 hours; laboratory; 1 hour. Prerequisite(s): MCS 202; upper-division standing or consent of instructor. Provides a theoretical approach to digital subjectivities, bodies in motion, products, and realities. Addresses issues of liveness, new media, mediated cultural identities, speed, transfer, telepresence, and coded and encoded sexuality within programming. Focuses primarily on the body-computer interface. J. Digital Games, Violence, and the Body; K. Virtual Subjectivity: Personal Space and Television as Location; L. Theory of Individual Choreographers; M. Dance for Children; N. Dance in Therapy; O. Improvisation; P. Role Preparation; Q. Dance Notation; R. Pedagogy; S-Z to be announced. Each segment is repeatable to a maximum of 12 units.

DNCE 171 Spectatorship (4) Lecture; 3 hours; screening; 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the nature of film studies through the eyes of the audience. Uses film, video, and outside research; a list of films in cinematic locales to formulate how viewing film constructs the viewer's subjectivity and a film's cultural context. Course is repeatable. Cross-listed with MCS 151J.

DNCE 178 Improvisation Studies (4) Seminar; 3 hours; outside research; 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Presents the emerging field of improvisation studies, moving beyond traditional genre boundaries to explore improvisation as a cultural phenomenon and social practice. Draws from jazz studies, ethnomusicology, music theory, musicology, American studies, and the histories of dance, theatre, and the visual arts.

DNCE 188 Individual Projects in Creative Activity (2) Studio; 2 hours; outside research; 2 hours; written work; 1 hour. Prerequisite(s): upper-division standing in Dance; or consent of instructor. Facilitates the discovery and design of a capstone artistic project.

DNCE 189 (E-Z) Capstone Research Seminar (4) Lecture; 3 hours; outside research; 3 hours. Prerequisite(s): upper-division standing in Dance; consent of instructor. Provides a theoretical approach to digital subjectivities, bodies in motion, products, and realities. Includes screenings both in class and outside of class. Course is repeatable. Cross-listed with MCS 151K.

DNCE 189-I Individual Internship in Dance (1-12) Prerequisite(s): 1) upper-division standing; 2) evidence of prior arrangement with the professional(s) involved; and 3) approval of the UCR dance faculty sponsor. Provides a theoretical and/or practical approach to the function of the choreographer as principal director which a dance achieves its meaning. Course is repeatable to a maximum of 12 units.

DNCE 239 Introduction to Graduate Study of Dance (4) Lecture; 3 hours; outside research; 3 hours. Prerequisite(s): graduate standing or consent of instructor. A graduate-level introduction to the field of critical dance studies. Focuses on the foundational works and issues that have shaped the field. Topics include genealogies of dance studies, approaches to embodiment, the influences of cultural studies and critical theory, and the research of Dance Department faculty.

DNCE 240 Improvising Choreography: Scores, Structures, and Strategies (4) Lecture; 3 hours; outside research; 3 hours. Prerequisite(s): graduate standing or consent of instructor. An evaluation of the use of the score or structure as a predetermining guide to the production of choreography. Students create choreography in ensemble, co-choreographing dances in the moment of performance and assessing immediately the efficacy of a given approach. Course is repeatable to a maximum of 8 units.

DNCE 241 Creating the Experiment: Identifying the New (4) Lecture; 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An inquiry into what constitutes an experiment in contemporary dance, critically examining how artists bring new dance into existence. Questions the working process in originating movement, sequencing, and images for dance and assesses this process with respect to larger historical and cultural frameworks. Course is repeatable to a maximum of 8 units.

DNCE 242 Dancing Representation: Figures, Forms, and Frames (4) Lecture; 3 hours; outside research; 3 hours. Prerequisite(s): graduate standing or consent of instructor. An examination of the systems of representation used to create choreographic meaning. Considers the body codes and the cultural associations attached to distinct qualities of movement and the conventions of space, time, and narrative through which a dance achieves its meaning. Course is repeatable to a maximum of 8 units.

DNCE 243 Collaborating in Dance Making: Materials, Methods, and Interactions (4) Lecture; 3 hours; outside research; 3 hours. Prerequisite(s): graduate standing or consent of instructor. A examination of the function of the choreographer as principal director of the dance project. Analysis of various approaches to the making of dance works that involve distinctive forms of collaboration with artists working in allied media. Course is repeatable to a maximum of 8 units.

DNCE 244 Special Topics in Dance Making (4) Lecture; 3 hours; outside research; 3 hours. Prerequisite(s): graduate standing or consent of instructor. Study of emerging issues in embodied practice, dance creation, and/or dance production. Focus varies by quarter. Topics may include intersections between theoretical and practical approaches to dance; dance and digital technologies; cultural specificity and dance making; curatorial practices; concepts or models of dance production; and embodying dances past. Letter Grade or Satisfactory/No Credit (S/N/C). No petition required. Course is repeatable as content changes.

DNCE 254 Political Approaches to Dance Studies (4) Seminar; 3 hours; consultation, 1 hour. Prerequisite(s): reading knowledge of a language other than English; working knowledge of notation; graduate standing or consent of instructor. The study of dances past and how dance practices have changed over time. May include study of changing modes for production and reception of dance, emphasis on dance and its social, cultural, economic and class relations, gender, and political affiliation and resistance.

DNCE 255 Historical Approaches to Dance Studies (4) Seminar; 3 hours; studio; 2-3 hours. Prerequisite(s): reading knowledge of a language other than English; working knowledge of notation; graduate standing or consent of instructor. The study of dances past and how dance practices have changed over time. May include study of changing modes for production and reception of dance, emphasis on dance and its social, cultural, economic and class relations, gender, and political affiliation and resistance.

DNCE 257 Rhetorical Approaches to Dance Studies (4) Seminar; 3 hours; consultation, 1 hour. Prerequisite(s): reading knowledge of a language other than English; graduate standing or consent of instructor. The study of dance structure and the structure of dance study. May include the analysis of narrative or representational structures in dance; narrative structures in dance writing; dance semiotics; dance philosophy; and the accuracy, reliability, and value of critical studies of dance.

DNCE 258 Cultural Approaches to Dance Studies (4) Seminar; 3 hours; consultation, 1 hour. Prerequisite(s): reading knowledge of a language other than English; graduate standing or consent of instructor. The study of dance in and across cultures including cross-cultural studies and theories; multicultural approaches to dance history; ethnological, ethnoarchaeological, and cultural studies approaches to dance analysis; and analysis of the different roles and functions dance plays in cultural systems.

DNCE 260 (E-Z) Seminar in Dance History (4) Seminar; 3 hours; written work, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Studies in contemporary dance, with emphasis on the history of dance. Prerequisite(s): graduate standing or consent of instructor. The study of dance in and across cultures including cross-cultural studies and theories; multicultural approaches to dance history; ethnological, ethnoarchaeological, and cultural studies approaches to dance analysis; and analysis of the different roles and functions dance plays in cultural systems.

DNCE 260 (E-Z) Seminar in Dance History (4) Seminar; 3 hours; written work, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Studies in contemporary dance, with emphasis on the history of dance.
DNCE 264 Oral History and Ethnographic Methods (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Theory and practice of oral history and ethnography as research techniques. Cultural and political perspectives on oral history and ethnography; methods for research preparation, interview procedures, transcription, editing, and legal responsibilities. Ethnographic and/or interview project and analytical paper required.

DNCE 267 Choreographies of Writing (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. An analysis of the types of relationships that may exist between dance and text. Examines the methods and strategies for translating choreographed action into a written description of that action. Students' writing is a major focus of discussions.

DNCE 280 Colloquium in Current Topics in Dance Research (2) Colloquium, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Presents current research topics in dance, including selected professional development workshops. Conducted by students, faculty, visiting scholars, and artists. Students attend all colloquium sessions and complete an additional written component. Course is repeatable to a maximum of 4 units.

DNCE 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and Department Chair. To be taken to meet special curricular problems. Normally graded Satisfactory (S) or No Credit (NC) only, but students may petition the instructor for a letter grade for specialized topics pursued with close faculty supervision. Course is repeatable.

DNCE 291 Individual Study in Coordinated Areas (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. A program of study designed to advise and assist graduate students who are preparing for written and oral qualifying examinations. Does not count toward the unit requirement for the Ph.D. degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

DNCE 292 Concurrent Analytical Studies in Dance (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor and Graduate Advisor. To be taken concurrently with some 100-series course, but on an individual basis. Limited to research, criticism, and written work of a graduate level. Students who plan to get this credential must take the unit requirement for the Ph.D. degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

DNCE 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): consent of instructor and graduate advisor. Individualized studies in specially selected topics in Dance under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

DNCE 298-I Individual Internship (1-4) Internship, 3-12 hours; term paper, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Individual study or apprenticeship with an appropriate professional individual or organization to gain experience and skill in activities related to dance studies. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

DNCE 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): consent of thesis or dissertation director. Research for and preparation of the thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

DNCE 301 Seminar in Dance Studies Pedagogy and Professional Development (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Prepares for the teaching of dance studies in an academic setting and for participating in the dance studies profession. Includes creating course syllabi, discussing a range of practical teaching and professionalism issues, and developing skills necessary to succeed in the academic field of dance. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

DNCE 302 Teaching Practicum (1-4) Lecture, 1-4 hours. Prerequisite(s): graduate standing; Supervised teaching in upper-division Dance History and lower-division Dance courses. Must be taken at least once by all teaching assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Earth Sciences

Subject abbreviation: GEO
College of Natural and Agricultural Sciences

David D. Oglesby, Ph.D., Chair
Mary L. Droser, Ph.D., Vice Chair
Department Office: 1324A Geology
(951) 827-3182; earthsciences.ucr.edu

John Herring, Graduate Student Affairs Officer
Office: Batchelor Hall, 1140A
(951) 827-2441

CNAS Undergraduate Academic Advising Center, 1223 Pierce Hall
ncasstudent.ucr.edu

Professors
Mary L. Droser, Ph.D.
Marilyn L. Fogle, Ph.D.
Nigel C. Hughes, Ph.D.
Gordon Love, Ph.D.
Timothy W. Lyons, Ph.D.
Richard A. Minnick, Ph.D.
David D. Oglesby, Ph.D.
Andrew Ridgwell, Ph.D.
Peter M. Sadler, Ph.D.

Professors Emeriti
Shawn Bieber, Ph.D.
Lewis H. Cohen, Ph.D.
James H. Dietrich, Ph.D.
Wilfred A. Elders, Ph.D.
Harry W. Green, II, Ph.D.
Tien-Chang Lee, Ph.D.
Michael A. Murphy, Ph.D.
Stephen K. Park, Ph.D.
Michael O. Woodburne, Ph.D.

Associate Professors
Robert J. Allen, Ph.D.
Gareth Funning, Ph.D.
Michael A. McKibben, Ph.D.

Assistant Professors
Nicolas Barth, Ph.D.
Andrey Bekker, Ph.D.
Mary J. Brounce Ph.D.
Heather Ford, Ph.D.
Abhijit Ghosh, Ph.D.
Sandra Kitland Turner, Ph.D.

Adjunct Professors
Larissa F. Dobrzynkevskaya, Ph.D.
Douglas M. Morton, Ph.D.

Adjunct Assistant Professors
Elizabeth Cochran, Ph.D.
Katherine J. Kendrick, Ph.D.
Thomas A. Scott, Ph.D.

**

Majors

The Department of Earth Sciences offers B.S. degrees in Earth Sciences, Geology and Geophysics. These degree programs are designed for students with a strong interest in acquiring academic understanding and relevant vocational training in the Earth Sciences, and for students interested in secondary teaching with a science emphasis. The B.S. programs include fieldwork with field courses, and field trips in all appropriate courses.

Academic Advising

Undergraduate advising in the Department of Earth Sciences is designed to allow close professional contact with faculty and staff. Counseling on graduation, departmental requirements and enrollment is handled by the major's professional academic advisors housed in the CNAS Undergraduate Academic Advising Center and the faculty undergraduate advisor for each major.

Faculty undergraduate advisors counsel students on career goals and research opportunities. The department recommends that students meet with their faculty advisor at least once every quarter to clarify career objectives and revise the program of study so it is commensurate with the developing interests and objectives of the student.

Teaching Credential

Teachers in the public schools in California must have a credential approved by the State Commission on Teacher Credentialing. The credential requires an undergraduate major, baccalaureate degree, and completion of a graduate credential program such as that offered by the Graduate School of Education at UCR.

Before admission and student teaching in a graduate credential program, the candidate must pass the California Basic Education Skills Test (CBEST) and demonstrate subject-matter proficiency by passing an examination. All candidates for a multiple subject credential to teach in the elementary grades must pass the Multiple Subjects, California Subject Exam for Teachers (CSET). Students are urged to start early, preferably as freshmen, selecting courses most helpful for this career. Details and counseling on the Prepare to Teach Program, a program for the multiple subject credential, are available in the Office of Interdisciplinary Programs, 2417 Humanities and Social Sciences, (951) 827-2743. Details and counseling on other programs are available in the Department of Earth Sciences or the Graduate School of Education.

UCR does not yet have a state-approved subject matter undergraduate program for earth science majors who wish to teach at the secondary level. The Teaching Credential in Science, geoscience authorization, is required for teachers who want to teach earth science/geoscience in middle school and high school. Students who plan to get this credential must take the CSET exams in Geosciences and should make certain their academic program includes preparatory course work. The
examination includes geoscience in depth and general science with introductory, college-level biology, chemistry, physics, and geoscience (geology, meteorology, oceanography, astronomy). CSET test guides are available at cset.nesinc.com.

Further information about courses, requirements, and examinations can be obtained in orientation meetings, the CalTEACH-SMI Office (1104 Pierce Hall) and the Graduate School of Education (1124 Sproul Hall).

Earth Science students interested in a secondary school science teaching career, who intend to obtain a Teaching Credential in Science, geoscience authorization, should pursue both the B.S. in Earth Science or in Geology as well as the teaching credential from the Graduate School of Education. Students who want to have the option to become either a professional geoscientist or to teach earth science in secondary school should pursue the B.S. in Geology as well as the teaching credential from the Graduate School of Education.

Students in CNAS who intend to pursue a Teaching Credential in Science, with authorization in another science, should consider pursuing a Minor in Earth Sciences.

**Geology Major**

Students who choose the Geology major study the structure, composition, processes, and history of the Earth. In particular, the Geology major stresses features of the Earth's surface and interactions between its atmosphere, hydrosphere, biosphere, rocky crust, and interior.

**Geophysics Major**

Students who choose the Geophysics major apply the principles and concepts of physics, mathematics, geology, and engineering to the study of the physical characteristics of the earth and other planets. They make measurements of gravity and magnetic fields, seismic waves, temperatures, and natural electric current. Geophysicists study these topics from the standpoint of the physics of solid bodies, gases, and fluids. Some geophysicists are field oriented, some laboratory oriented, some theoretical, and some combine these areas.

**Change of Major and Continuation Criteria**

Students wishing to change into or continue in the Geology major must begin in good academic standing and show potential to graduate without exceeding 216 units.

Freshmen (2nd and 3rd quarter) must demonstrate progress in basic sciences and aptitude for geology by satisfying the following three criteria by Spring Quarter or Summer Session:

- **CHEM 001C completed with passing grades**
- **MATH 009C or MATH 046 eligible (e.g., MATH 007B or MATH 009B with grade of C- or better)**
- **Two of GEO 001, GEO 002, or GEO 003 completed with no grade below C- after repeats**

Juniors (90 – 134.9 units) must demonstrate near completion of basic sciences and aptitude for upper-division geology by satisfying the following three criteria by Spring Quarter or Summer Session:

- **CHEM 001C and MATH 009C or MATH 046 completed with passing grades**
- **PHYS 040B or PHYS 002B and PHYS 002LB eligible (i.e. completion of one quarter of college physics with C- or better)**
- **GEO 002, GEO 003 and GEO 115 or GEO 122 (and all prerequisites) completed with no grade below C- after repeats**

Seniors (135+ units): must have completed all but 1 course of the geology core requirements by Spring Quarter or Summer Session, as follows:

- **CHEM 001C, MATH 009C or MATH 046 and PHYS 040C or PHYS 002C and PHYS 02LC completed with passing grades.**
- **BIOL 002 or BIOL 05A and BIOL 05LA or BIOL 020, and STAT 100A or STAT 155 completed with passing grades.**
- **GEO 001, GEO 003, GEO 115, and GEO 122 or GEO 101 (and all prerequisites) completed with no grade below C- after repeats**

**Transfer Selection Criteria**

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with “C” grades or better:

- **MATH 007A or MATH 009A, MATH 007B or MATH 009B, and MATH 009C or MATH 046 (mandatory)**
- **One of GEO 011, GEO 115, GEO 157**

At least one sequence from:

- **BIOL 005A and BIOL 05LA or BIOL 020**
- **Either CHEM 001A or CHEM 011A or CHEM 01HA and CHEM 1HLA, either CHEM 001B and CHEM 01LB or CHEM 01HB and CHEM 01HLB**
- **GEO 002, GEO 009 or GEO 011**
- **Two of GEO 001, GEO 002, or GEO 003 completed with a grade of C- or better**

Sophomores (up to 89.9 cumulative units) must demonstrate sustained progress in basic sciences and aptitude for geology by satisfying the following three criteria by Spring Quarter or Summer Session:

- **CHEM 001C completed with passing grades**
- **MATH 009C or MATH 046 eligible (e.g., MATH 007B or MATH 009B with grade of C- or better)**
- **Two of GEO 001, GEO 002, or GEO 003 completed with no grade below C- after repeats**

Juniors (90 – 134.9 units) must demonstrate near completion of basic sciences and aptitude for upper-division geology by satisfying the following three criteria by Spring Quarter or Summer Session:

- **CHEM 001C and MATH 009C or MATH 046 completed with passing grades**
- **PHYS 040B or PHYS 002B and PHYS 002LB eligible (i.e. completion of one quarter of college physics with C- or better)**
- **GEO 002, GEO 003 and GEO 115 or GEO 122 (and all prerequisites) completed with no grade below C- after repeats**

Seniors (135+ units): must have completed all but 1 course of the geology core requirements by Spring Quarter or Summer Session, as follows:

- **CHEM 001C, MATH 009C or MATH 046 and PHYS 040C or PHYS 002C and PHYS 02LC completed with passing grades.**
- **BIOL 002 or BIOL 05A and BIOL 05LA or BIOL 020, and STAT 100A or STAT 155 completed with passing grades.**
- **GEO 001, GEO 003, GEO 115, and GEO 122 or GEO 101 (and all prerequisites) completed with no grade below C- after repeats**

**Earth Sciences Major**

All courses in Geosciences that are prerequisites for other courses in the major must be passed with a grade of “C-” or better before proceeding in the sequence. For example, GEO 001 is a prerequisite for GEO122.

The department offers four concentrations to majors in Earth Science: Geosystems, Climate Change, Geophysics, and Geobiology. All students majoring in Earth Sciences are normally required to take the core curriculum.

**Geosystems, Climate Change, Geobiology, and Geophysics Concentrations**

Core Requirements (61-66 units)

1. **Lower division core requirements (48-53 units)**
   - a) GEO 001
   - b) GEO 002 or GEO 009 or GEO 011
   - c) GEO 003/BIOL 010
   - d) GEO 004 or GEO 007 or GEO 008 or GEO 010 or GEO 012
   - e) BIOL 005A and BIOL 005LA or BIOL 020
   - f) Either CHEM 001 and CHEM 011A and CHEM 01HA and CHEM 01HLA, either CHEM 01B and CHEM 01LB or CHEM 01HB and CHEM 01HLB
   - g) MATH 007A or MATH 009A, MATH 007B or MATH 009B, MATH 046
   - h) Either PHYS 040A, PHYS 040B or PHYS 002A and PHYS 002B and PHYS 002LB Students interested in elective classes in Geophysics are recommended to take PHYS 040C or PHYS 002C. Students interested in elective classes in Geochemistry are recommended to take CHEM 011C.

2. **Upper division core requirements (13 units)**
   - a) GEO 111, GEO 115, GEO 157

**Geosciences Concentration**

1. **Upper division requirements (34–40 units)**
   - a) GEO 101, GEO 118
   - b) Three of GEO 100, GEO 116, GEO 122,
GEO 132, GEO 151, GEO 152, GEO 162

C) Three additional classes from GEO 100, GEO 116, GEO 122, GEO 132, GEO 136, GEO 137, GEO 138, GEO 140, GEO 144, GEO 145, GEO 147, GEO 151, GEO 152, GEO 160, GEO 161, GEO 162, GEO 169, STAT 100A, STAT 100B

Students interested in pursuing professional licensure through the California Geologist In Training (GIT) are advised to take the Geology Major.

**Climate Change Concentration**

1. Lower division requirements (5 units)
   - a) CHEM 001C and CHEM 001LC, or CHEM 001HC and CHEM 001HLC

2. Upper division requirements (32–35 units)
   - a) GEO 160, GEO 161
   - b) Three of GEO 136, GEO 137, GEO 162, ENSC 102
   - c) Three additional classes from GEO 100, GEO 101, GEO 116, GEO 118, GEO 122, GEO 132, GEO 136, GEO 137, GEO 140, GEO 144, GEO 145, GEO 147, GEO 151, GEO 152, GEO 162, GEO 169, STAT 100A, STAT 100B

**Geobiology Concentration**

1. Lower division requirements (8 units)
   - a) BIOL 005B, BIOL 005C

2. Upper division requirements (32–35 units)
   - a) GEO 151 and GEO 152/Biol 152
   - b) Three of GEO 136, GEO 137, GEO 161, ENSC 102, ENMT/BPSC/Biol 112, BIOL 151
   - c) Three additional classes from GEO 100, GEO 101, GEO 116, GEO 118, GEO 122, GEO 132, GEO 136, GEO 137, GEO 140, GEO 144, GEO 145, GEO 147, GEO 151, GEO 152, GEO 160, GEO 162, GEO 169, STAT 100A, STAT 100B

**Geophysics Concentration**

1. Lower division requirements (5 units)
   - a) PHYS 002C and PHYS 002LC, or PHYS 040C

2. Upper division requirements (33–37 units)
   - a) GEO 140, GEO 145
   - b) Three of GEO 116, GEO 118, GEO 144, GEO 147
   - c) Three additional classes from GEO 100, GEO 101, GEO 116, GEO 118, GEO 122, GEO 132, GEO 136, GEO 137, GEO 140, GEO 144, GEO 145, GEO 147, GEO 151, GEO 152, GEO 160, GEO 161, GEO 162, GEO 169, STAT 100A, STAT 100B

**Geology Major**

All courses in Geosciences that are prerequisites for other courses in the major must be passed with a grade of “C-” or better before proceeding in the sequence. For example, GEO 001 is a prerequisite for GEO 122.

All students majoring in Geology are normally required to take the core curriculum.

1. Lower-division requirements (43-44 units)
   - a) GEO 001, GEO 002 or GEO 009 or GEO 011, GEO 003/Biol 010
   - b) BIOL 002 or BIOL 005A, BIOL 005A (or BIOL 020)
   - c) Either CHEM 001A and CHEM 010A or CHEM 010A and CHEM 010B, either CHEM 001A and CHEM 010A or CHEM 010B and CHEM 010B
   - d) STAT 100A or STAT 155

2. Upper-division requirements (46-51 units)
   - a) GEO 111, GEO 115, GEO 116, GEO 140, GEO 145
   - b) One of GEO 144 or GEO 147
   - c) Five of GEO 100, GEO 101, GEO 118, GEO 122, GEO 132, GEO 144 OR GEO 147, GEO 157, PHYS 130A, PHYS 130B, PHYS 132 OR PHYS 134, PHYS 135A, PHYS 135B, PHYS 136, PHYS 139L, PHYS 177, MATH 120, MATH 131, MATH 132, MATH 135A, MATH 135B, MATH 146A, MATH 146B, MATH 146C, MATH 147, MATH 149A OR STAT 160A, MATH 149B or STAT 150B, or STAT 160C, MATH 168, STAT 100A or STAT 155, STAT 100B

Students wishing to continue on to graduate school may wish to earn a Minor in Mathematics, Physics, Statistics, or Computer Science, requiring an additional 24 upper division units of study, and/or completion of a Senior Thesis, which includes up to 9 units of independent research.

**Minor**

Students who wish to Minor in Geology, Geophysics or Global Climate Change must complete 20-28 units of organized upper division courses in Geosciences. A minimum of 16 of these units must be unique to the minor and cannot be used to satisfy major requirements. To satisfy prerequisites, additional preparatory coursework in Earth Sciences and other sciences (Biology, Chemistry, Mathematics, Physics) may be required.

**Minor in Geology:** GEO 001, GEO 115; plus 15-23 additional upper division Geosciences units.

**Minor in Geophysics:** GEO 001; GEO 140; plus 16-24 additional units taken from GEO 115, GEO 116, GEO 132, GEO 144, GEO 145, and GEO 190.

**Minor in Global Climate Change:** GEO 001 or GEO 002; GEO 011; GEO 160; plus 16-24 additional upper division Geoscience units.

Before submitting a petition for a Minor to the college, students interested in pursuing a Minor in Geology or Geophysics or Global Climate Change must consult with the undergraduate faculty advisor in Earth Sciences.

**Graduate Programs**

The department of Earth Sciences offers the M.S. and Ph.D. in Geological Sciences.

Graduate education in the Geological Sciences emphasizes general geology combined with specialization in fields such as evolutionary paleobiology, invertebrate and vertebrate paleontology, Quaternary geology, neotectonics, applied geophysics, geotectonics, crustal processes, geochemistry, groundwater, mineral deposits, stratigraphy, sedimentology, sedimentary geochemistry, basin analysis, landscape ecology, fire ecology, and natural resource conservation. Integrated field and laboratory studies are encouraged.

**Admission** An undergraduate degree in geology or geophysics is the normal preparation for
graduate work; however, a degree from a related field of science or engineering is often appropriate. Applicants to graduate status must supply GRE General Test (verbal, quantitative, analytical) scores before admission.

**Master's Degree**

In addition to the general requirements listed under the Graduate Studies section of this catalog, the requirements for the M.S. degree in Geologic Sciences, under the Plan 1 (Thesis), are as follows.

**Admission** Students must make up any deficiency in preparation. The background required is course preparation equivalent to the bachelor's degree in Geology or Geophysics at UCR. Courses taken to remedy background deficiencies are not applicable to the graduate degree. Such courses are designated in the letter of admission to the program sent by the dean of the Graduate Division to the student.

**Biannual Reviews** All students must undergo biannual reviews by the departmental Graduate Progress Committee. A student's progress is assessed in these reviews, and the committee may recommend changes in a student's plans after these reviews.

**Course Work** All students must enroll each quarter in the Graduate Seminar in Geosciences (GEO 250). Students must attend the weekly Hewett Club lecture series.

Students must complete a minimum of 36 units of course work in the major and related subjects and obtain advance approval of a coherent plan of study from the graduate advisor.

A maximum of 12 upper-division units beyond the requirements for the bachelor's degree may be applied to the 36-unit requirement. Students must complete a minimum of 12 units of graduate courses which must include at least four graduate-level instructional courses taught by four different faculty members as approved by the graduate advisor.

Subject to the approval of the graduate advisor, a limited number of upper-division courses in the major and related subjects, if not required for the bachelor's degree and not taken previously, may be accepted for graduate credit.

**Thesis and Final Oral Examination** Before the end of the third quarter of study and before embarking on research, the student must submit a thesis proposal based on original work for approval by the thesis committee. A maximum of 8 units of research credit can be counted toward the 36 unit minimum. Students present an open research seminar as a final oral examination.

**Doctoral Degree**

The Department of Earth Sciences offers the Ph.D. in Geologic Sciences. In addition to the general university requirements of the Graduate Division as found in the Graduate Studies section of this catalog, the Ph.D. in Geological Sciences normally requires the following.

**Biannual Reviews** All students meet with the Graduate Progress Committee during their first week at UCR to discuss general interests, goals, and plans. The committee recommends courses designed to prepare a student for research and to correct deficiencies in background. This committee also reviews a student's progress biannually and may recommend transfer to the master's program if normal progress is not maintained.

**Course Work** Students must complete at least four graduate-level instructional courses taught by four different faculty members as approved by the graduate advisor. Up to four 100 level classes can count subject to Graduate Advisor approval. Course work used in satisfaction of the M.S. degree may be accepted with the graduate advisor's approval. All students must enroll each quarter in the Graduate Seminar in Geosciences (GEO 250). Students are also required to attend the weekly Hewett Club lecture series.

**Written and Oral Qualifying Examinations** Students must write two research proposals. The proposal topics must be approved by an examination committee to ensure breadth. The committee reviews the proposals and, if acceptable, recommends proceeding to the oral qualifying examination. An oral examination committee appointed by the dean of the Graduate Division examines the adequacy of the student's preparation to conduct the proposed research. Advancement to candidacy in the Ph.D. program follows successful completion of the oral examination. All Ph.D. candidates must satisfy the course requirements and have passed their written and oral qualifying exams within two years of entering the program, otherwise they will not be eligible to continue in the Ph.D. track. Exceptions can only be granted by the Graduate Advisor or by the Chair.

**Dissertation and Final Oral Examination** A dissertation normally evolves from one of the research proposals. The dissertation must present original scholarly work and be approved by a dissertation committee before the student may take the final oral examination. Students must have satisfactory performance on the final oral examination given by the dissertation committee. Major emphasis in this examination is on the dissertation and related topics.

**Normative Time to Degree from the B.S.** 17 quarters

**Lower-Division Courses**

**GEO 001 The Earth's Crust and Interior** (4) Lecture, 3 hours; laboratory, 3 hours; one 1-day field trip. An introduction to the physical development of the Earth. Emphasis will be on Earth materials (rocks and minerals), processes (weathering, erosion, mountain building), structures (olds and faults), and current theories regarding the Earth's crust and interior.

**GEO 002 Earth's Climate through Time** (4) Lecture, 3 hours; laboratory, 3 hours; one 2-day field trip. Prerequisite(s): none. An introduction to the history of Earth's changing climate and its relationship to the evolution of life on a geologic timescales. Topics include the interrelationships among short- and long-term carbon cycling; plate tectonics; ocean and atmosphere circulation; and greenhouse gases through time.

**GEO 003 Headlines in the History of Life** (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): none. Evolution of life beginning with precellular life. Topics include the origin of sex, multicellularity, vertebrate classes, morphological specializations, adaptive radiations, extinction dynamics, and the biology of dinosaurs. Cross-listed with BIOL 010.

**GEO 004 Natural Hazards and Disasters** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 003A or equivalent (may be taken concurrently). Application of basic principles of climate and geology to recognition of natural hazards and their mitigation. Topics include fires, freezes, floods, winds, landslides, volcanoes eruptions, earthquakes and tsunamis. Emphasis is on confronting hazards of concern to home-buyers, planners, and conservationists in the western United States, especially southern California.

**GEO 007 Minerals and Human Health** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introductory overview of the role of minerals in human life and industrial activities. Topics include the impact of minerals on human health, the role of minerals in modern technologies, asbestos and silica problems, occupational diseases caused by inhalation of mineral dust, and environmental protection in California. May include a field trip.

**GEO 008 Earthquake Country** (4) Lecture, 3 hours; discussion, 1 hour. An introduction to the study of earthquakes and the problems of living in earthquake country. Why earthquakes occur, how they are recorded, and what the effects are on man and his structures. The scientific and social consequences of earthquake prediction.

**GEO 009 Oceanography** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A general
introduction to the geological, physical, chemical, and biological processes related to the characteristics and evolution of the ocean system. Explores the role oceans play in regulating climate and the cycling of elements on Earth. Illustrates how the ocean system has been, and continues to be, one of the most important influences on life. Credit is awarded for only one of GEO 009 or GEO 009H.

GEO 009H Honors Oceanography (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GEO 009. A general introduction to the geological, physical, chemical, and biological processes related to the characteristics and evolution of the ocean system. Explores the role oceans play in regulating climate and the cycling of elements on the Earth’s surface. Illustrates how the ocean system has been, and continues to be, one of the most important influences on life. Credit is awarded for only one of GEO 009 or GEO 009H.

GEO 010 Earth Resources and Sustainability (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the occurrence, availability, marketing, and usage of metals, minerals, fossil fuels, nuclear fuels and other geologic resources, including both historic and recent trends. Discusses conflicts between modern society’s need for increasingly scarce resources and mounting environmental problems. Also covers achieving sustainability through conservation, recycling, and substitution.

GEO 011 Global Climate Change and Sustainability (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Provides an understanding of Earth’s feedback systems that regulate the climate over long- and short-term time scales. Includes ocean and atmospheric circulation patterns, the major reservoirs and global carbon cycle, and the influence and origin of greenhouse gases. Investigates sustainability, climate change policies, adaptation, and mitigation. Credit is awarded for only one of GEO 011 or GEO 011H.

GEO 011H Honors Global Climate Change and Sustainability (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GEO 011. Provides an understanding of Earth’s feedback systems that regulate the climate over long- and short-term time scales. Includes ocean and atmospheric circulation patterns, the major reservoirs and global carbon cycle, and the influence and origin of greenhouse gases. Investigates sustainability, climate change policies, adaptation, and mitigation. Satisfaction (S) or No Credit (NC) grading is not available. Credit is awarded for only one of GEO 011 or GEO 011H.

GEO 012 At Home in the Universe (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Considers the place of humans in space and time and the means by which this is discerned. Presents a synopsis of the history of the cosmos, Earth, life, and humanity from a science-based perspective. Discuss the implications of such knowledge for how responsible individuals choose to conduct themselves.

Upper-Division Courses

GEO 100 Igneous and Metamorphic Petrology (5) Lecture, 3 hours; laboratory, 6 hours; four field trips. Prerequisite(s): GEO 115 and GEO 122 with grades of “C-” or better. An introduction to the nomenclature and classification of igneous and metamorphic rocks. Includes identification of the major rock-forming minerals and their identification using structural, crystallographic, and optical microscopy methods. Stresses distinctive structural and chemical features, diagnostic physical and optical properties, andrographitic and mineral assemblages, and the growth and development of minerals in various geologic environments.

GEO 123 Analytical Mineralogy (5) Lecture, 3 hours; laboratory, 6 hours. Prerequisite(s): both CHEM 001C and CHEM 01LC or both CHEM 01HC and CHEM 1HLC; GEO 122 with a grade of “C-” or better. Advanced techniques in mineralogy. Covers optical crystallography, with an introduction to X-ray diffraction, electron microscopy, and other analytical techniques.

GEO 124 Advanced Petrogenesis (4) Lecture, 2 hours; laboratory, 6 hours; two 1-day field trips. Prerequisite(s): GEO 100 with a grade of “C-” or better. Explores advanced topics in the petrogenesis of igneous and metamorphic rocks in the Earth’s crust and mantle. Examines field and structural relationships of crystalline rocks and how thermodynamics, experimental phase equilibria, and computer modeling are used to study petrogenesis. Each student completes a field and laboratory research project and prepares a written and oral report on the project.

GEO 132 Groundwater Geology (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CHEM 001B and CHEM 01LB or CHEM 01HB and CHEM 1HLB; MATH 007B or MATH 009B or MATH 099B; PHYS 002A or PHYS 040A. Covers the character of waters in geologic media; including the chemical nature of groundwater and geothermal fluids; principles of fluid flow in sediments and rocks; chemical reactions between solutes and geologic media; contaminant migration in groundwater; behavior of geothermal fluids; modeling of groundwater and geothermal fluid flow in geologic media.

GEO 136 Introduction to Molecular and Petroleum Geochemistry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): both CHEM 01LC and CHEM 01LC or both CHEM 01HC and CHEM 1HLC or equivalents; a grade of “C-” or better in one of the following courses: GEO 001, GEO 002, GEO 009 or GEO 011. Explores the global carbon cycle and the origin and fate of organic carbon molecules throughout Earth’s history. Covers production and composition of biogenic matter and microbial, chemical, and thermal processing of sedimentary organic matter, leading to oil, gas, and coal formation. Addresses important applications to the petroleum and environmental sectors.

GEO 137 Geochemistry of Natural Waters (4) Lecture, 3 hours; laboratory, 3 hours; 30 hours per quarter. Prerequisite(s): both CHEM 001C and CHEM 01LC or both CHEM 01HC and CHEM 1HLC or equivalents; a grade of “C-” or better in one of the following courses: GEO 001, GEO 002, GEO 009 or GEO 011. Explores the global carbon cycle and the origin and fate of organic carbon molecules throughout Earth’s history. Covers production and composition of biogenic matter and microbial, chemical, and thermal processing of sedimentary organic matter, leading to oil, gas, and coal formation. Addresses important applications to the petroleum and environmental sectors.

GEO 138 Soils of Natural Ecosystems and Landforms (4) Lecture, 3 hours; laboratory, 4 hours per quarter; one half-day field trip and three 1-day field trips. Prerequisite(s): both GEO 001, GEO 001, GEO 001H, GEO 001L, GEO 011, GEO 011H, and GEO 011L may be taken concurrently); GEO 001 with a grade of “C-” or better. Provides an introduction to soil processes and soil formation.
concepts of solid earth geophysics as applied at the global or planetary scale. Includes plate tectonics and dynamics of the lithosphere; seismology and earth structure; geothermal behavior and heat flow; and geodynamics and planetary geophysics.

**GEO 144 Earthquake Seismology** (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): GEO 001 with a grade of “C-” or better. MATH 007B or MATH 009B; MATH 046, PHYS 002C or PHYS 040C; or consent of instructor. Introduces the theories and observations of earthquake seismology. Student utilizes physical principles and mathematical techniques to study the earthquake process, wave propagation, and ground motion. Laboratory emphasizes computer-assisted analysis of various types of seismic data as well as simple modeling techniques.

**GEO 145 Applied and Exploration Geophysics** (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): GEO 001 with a grade of “C-” or better. MATH 007B or MATH 009B or MATH 091B; PHYS 002C or PHYS 040C; or consent of instructor. Introduces applied geophysical methods used to explore and characterize the shallow subsurface. Topics include gravity, magneticsm, seismic reflection and refraction, electrical resistivity, electromagnetism, and ground penetrating radar. Explores techniques to solve problems related to groundwater, as well as environmental, mineral, and petroleum exploration and engineering issues. Requires a weekend field trip.

**GEO 147 Active Tectonics and Remote Sensing** (4) Lecture, 2 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): GEO 115 or consent of instructor. A computer-based course that introduces active tectonics and the earthquake cycle and how and when they are studied using remote sensing data. Explores examples of actively deforming areas from around the world using computer visualization software and freely available data sources (satellite imagery, digital topography, GPS and earthquake data).

**GEO 151 Principles of Paleontology** (4) Lecture, 3 hours; laboratory, 3 hours; one 1-day field trip. Prereq-uisite(s): BIOL 010/GEOT 003 with a grade of “C-” or better or BIOL 005C. Emphasis is on understanding fossils as living organisms. Topics include fundamental evolution of the fossil record, introductory morphometrics and biomechanical theory, functional morphology, and metazoan organization and classification.

**GEO 152 Principles of Invertebrate Paleobiology and Paleoecology** (4) Lecture, 2 hours; laboratory, 3 hours; three 1-day field trips. Prerequisite(s): BIOL 005C with a grade of “C-” or better or BIOL 010/GEOT 003 with a grade of “C-” or better. Topics include evolution and the fossil record, introductory paleobiology, classification theory; the nature of adaptive radiations, and extinctions. Cross-listed with BIOL 152.

**GEO 157 Introduction to Geographical Information Science** (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing. Introduces the fundamental theory and application of geographic information science. Topics include geographic information systems, data structures, databases, and spatial data models. Explores various spatial data, including their coordinate systems, data acquisition, and associated errors. Introduces data analysis methods within geographical information systems.

**GEO 158 Advanced Geographic Information System (GIS)** (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): GEO 157 or consent of instructor. Multidisciplinary applications of GIS analysis techniques including vector, grid, image, surface, and network systems. Covers photographometry and processing of remotely sensed imagery emphasizing data quality and error assessment. Introduction to graphical programming tool, ModelBuilder, and Python scripting language for automation and customization of tasks. No previous programming experience assumed.

**GEO 160 Global Climate Change** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor; PHYS 002B or PHYS 040B recommended. Surveys historical and paleoclimatic change using basic principles on gas laws, radiant energy exchange, atmospheric circulation, and oceanography, and proxy data. Topics include variability in modern climate, greenhouse gases, global warming, El Nino, Pacific decadal oscillation, ozone hole, and the changing climate in the Holocene and Illinoi-kovich cycles. Also covers stable isotope profiles, plate tectonics, greenhouse climates, paleovegetation, modern species diversity, and snowball Earth.

**GEO 161 Cenozoic Climate Change** (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): one of the following courses with a grade of “C-” or better; GEO 001 or GEO 002 or GEO 009 or GEO 011. Examines physical, chemical evidence and effects of climate and environmental change throughout the Cenozoic Era (last 65 million years) to provide a framework for understanding natural environmental change and for predicting future change. Introduces students to computer-based numerical methods of data analysis for interpreting past records of environmental change.

**GEO 162 Geomorphology** (4) Lecture, 2 hours; laboratory, 6 hours; one 2-day field trip. Prerequisite(s): ENSC 100 or GEO 115 or GEO 115 Ms may be taken concurrently; or consent of instructor. A study of surficial processes related to the development and evolution of landforms and landscapes at the Earth’s surface. Examines weathering, erosion, transport, and deposition in a variety of landscapes (tectonic, volcanic, arid, karst, fluvial),<B><U><B>glacial, coastal</B>,<B>, anthropogenic, planetary, etc.). An emphasis is placed on processes and landscapes important to California.

**GEO 167 Conservation Biogeography** (4) Lecture, 3 hours; laboratory and field, 3 hours. Prerequisite(s): BIOL 005C with a grade of “C-” or better or BIOL 010/GEOT 003 with a grade of “C-” or better. Application of biogeographic and ecological theories in the conservation of plants, animals, and wildlife. Topics include biological preserve design, ecological consequences of land development, and wildlife-habitat relationships.

**GEO 169 California Vegetation** (4) Lecture, 3 hours; laboratory, 3 hours; two 1-day field trips. Prerequisite(s): BIOL 005C with a grade of “C-” or better or BIOL 010/GEOT 003 with a grade of “C-” or better. Survey of the flora and distribution of the vegetation of California ecosystems, including Mediterranean shrubland, conifer forests, desert scrub, valley forbs, and exotic grasslands. Discusses vegetation in relation to climate, physiography, fire, landscape steady states, biological invasions, and broad-scale change due to land development, invasive species, grazing, and fire suppression.

**GEO 180 Special Studies (1-5)** Individual study, 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and department chair. Individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

**GEO 191 Undergraduate Seminar in Geological Sciences** (1) Seminar, 1 hour. Prerequisite(s): open to upper division Geological Sciences majors only. For undergraduate students who desire formal participation in the weekday departmental seminar. In addition to attending the seminar, students must write abstracts describing two of the presentations. Graded Satisfactory (S) or No Credit (NC). May be repeated to a total of 6 units.

**GEO 195A Senior Thesis** (3-5) hours per week to be established by supervisor. Prerequisite(s): senior status; consent of instructor. Preparation of a thesis based upon supervised field and/or laboratory research and literature review in the geological sciences. The thesis may be undertaken as a one-, two-, or three-quarter sequence. In the case of a two- or three-quarter sequence, the final grade will be deferred until completion of the last quarter. Total credits for GEO 195A, GEO 195B, and GEO 195C may not exceed 9 units.

**GEO 195C Senior Thesis** (3-5) Prerequisite(s): senior status; consent of instructor. Preparation of a thesis based upon supervised field and/or laboratory research and literature review in the geological sciences. The thesis may be undertaken as a one-, two-, or three-quarter sequence. In the case of a two- or three-quarter sequence, the final grade will be deferred until completion of the last quarter. Total credits for GEO 195A, GEO 195B, and GEO 195C may not exceed 9 units.

**GEO 198 Independent Internship (1-12) Field, 3-36 hours. Prerequisite(s): consent of instructor, undergraduate advisor, and department chairman. Independent study in a surrogate job condition under non-university supervision. Internships are normally in public or private institutions such as planning departments, research institutes, consulting firms, conservation organizations, government agencies, nongovernmental organizations, non-profit organizations, or commercial organizations. Includes preparation and discussion of small grant proposals, as well as short oral presentations related to applicable areas of study. Graded Satisfactory (S) or No Credit (NC).

**GEO 201A Research and Proposal Design (2) Seminar, 1 hour; written work, 3 hours. Prerequisite(s): graduate standing. Teaches the fundamentals of research topic selection and development of hypotheses. Addresses presentation techniques and design of research projects, experiments, and field campaigns. Includes preparation and discussion of small grant proposals, as well as short oral presentations related to applicable areas of study. Graded Satisfactory (S) or No Credit (NC).

**GEO 201B Proposal Writing and Review (2) Seminar, 1 hour; written work, 3 hours. Prerequisite(s): graduate standing, GEO 201A; or consent of instructor. Covers the writing and review processes for major grant proposals. Includes Thompson and other database, an emphasis is placed on report writing, field trips, and summarizing of full-length federal grant proposals in accordance with federal panel guidelines. Graded Satisfactory (S) or No Credit (NC).

**GEO 203 Mineral Equilibria** (4) Lecture, 4 hours. Prerequisite(s): GEO 137 or consent of instructor. Applications of thermodynamics and kinetics to evaluating equilibria among minerals and fluids in geological environments. Emphasis placed on equilibria in geothermal systems, ore deposits, metamorphic and igneous rock, and groundwater.

**GEO 205 Geohydrology** (4) Lecture, 3 hours; laboratory, 3 hours; one 1-day field trip. Prerequisite(s): GEO 132 or ENSC 163. Flow and fluid flow in geologic media, resource evaluation, and relevant geologic hazards and geo-technical problems.

**GEO 206A Stratigraphy** (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): GEO 118; consent of instructor. Covers rock stratigraphy and time stratigraphy with an emphasis on their principles, history, and methods. Includes reading and analysis of pertinent literature and field trips.

**GEO 206B Stratigraphy** (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): GEO 118; consent of instruc-
tor. Covers time stratigraphy and biostratigraphy with an emphasis on their principles, history, and methods. Includes reading and analysis of pertinent literature and field trips.

GEO 212 Ecological Systems in Space and Time (4) Lecture, 3 hours; field, 30 hours per quarter. Prerequisite(s): One upper-division undergraduate course in population or community ecology or paleoecology, or consent of instructor. Considers the ecological processes on how ecological systems are interpreted and reconciled at the community, landscape, and paleontological scales. Addresses the role of extrinsic factors operating at each of these scales. Also examines the historical development of our understanding of ecological systems at various scales. Cross-listed with EEOB 212 and ENMT 212.

GEO 219 Theory of Systematics (4) Lecture, 4 hours. Prerequisite(s): BIOL 112/113 or ENMT 112 or equivalent. Prerequisite(s): graduate standing or consent of instructor. Intro- duction to systematics and classification and the identification, description, and nomenclature of species. Explores the evolution of biological diversity. Cross-listed with EEOB 219 and ENMT 219.

GEO 221 Electron Microscopy and Microanalysis (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to electron microscopy and microanalysis of inorganic solids including minerals and synthetic materials. Students learn the physical principles, strengths, and limitations of the method. Laboratory provides hands-on experience with scanning and transmission electron microscopes and interpretation of images and data.

GEO 223 Seminar in Geobiology (1) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Discussion and demonstrations by students, faculty and invited scholars on current research topics in Geobiology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 224 Sierran Studies: The Paleoclimate Record of the Sierra (4) Field, 90 hours per quarter; term paper, 3 hours. Prerequisite(s): graduate standing. A study of climate change in the Sierra Nevada Mountains, extending from Precambrian glacial sediments to modern glaciers. Utilizes field evidence to access the controls of climate and determine the resolution and limitations of the physical record. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as topics change to a maximum of 8 units.

GEO 225A Geology of Carbonate Rocks (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): GEO 118; consent of instructor. Lecture and laboratory (4-5 units). May be taken Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 225B Geology of Detrital Rocks (4) Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): GEO 118; consent of instructor. Lecture and laboratory (4-5 units). May be taken Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 226 Soil Geomorphology (4) Lecture, 2 hours; laboratory, 6 hours; two Saturday field trips per quarter. Prerequisite(s): ENCOM 138/GEO 138, GEO 162, or equivalents. Interaction of pedogenetic and geomorphic processes during the Quaternary with an emphasis on the rate of these processes. Group research includes field data collection and analysis. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with SWSC 226.

GEO 240 Seminar in Earthquake Processes and Geophysics (1) Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores selected contemporary topics in the areas of earthquake and fault processes, geophysics, active tectonics, and seismology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

GEO 241 Advanced Field Geophysics (14) Lecture, 10 hours; laboratory, 16 hours; field, 14 hours. Prerequisite(s): GEO 140; proficiency in a word processing, spread sheet, or programming language. Advanced applications of modern geophysical field techniques to the solution of complex geophysical problems, using seismic reflection and refraction, electrical and electro- magnetic, potential field, and well-logging methods.

GEO 242 Numerical Methods and Modeling in the Geosciences (4) Lecture, 3 hours; laboratory, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers numerical computing methods and their application to problems of geological and geophysical interest. Methods include linear least-squares, matrix factorization, decomposition and inversion, nonlinear optimization, and Monte Carlo analysis and data visualization and their implementation in the MATLAB language. Applications include time series analysis, seismic tomography, and geodetic data inversion. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

GEO 243A Earthquake Physics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): GEO 144, MATH 010B, PHYS 040C, basic computer programming experience; or consent of instructor. MATH 046 is recommended. An exploration of the physics of the earthquake process including faulting, fault slip mechanics, and plate tectonics. Emphasis on understanding the earthquake process. Focuses on fault dynamics during the earthquake rupture and slip processes and its relationship to ground motion. Utilizes theoretical and computational tools and numerical models. Includes an independent project in computer modeling.

GEO 243B Earthquake Physics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): GEO 144, MATH 010B, PHYS 040C, basic computer programming experience; or consent of instructor. MATH 046 is recommended. An exploration of the physics of the earthquake process. Focuses on fault dynamics during the earthquake rupture and slip processes and its relationship to ground motion. Utilizes theoretical and computational tools and numerical models. Includes an independent project in computer modeling.

GEO 244 Space Geodesy (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): MATH 010B, PHYS 040C or consent of instructor. Explores global positioning systems and their application to problems of interpreting tectonic development of California, with special emphasis on southern California. Interdiscipli- nary approach will be emphasized. Weekly reading assignments, active participation in discussions, and appropriate field and library research will be required. Participants will prepare two papers and give presentations.

GEO 260 Global Climate Change (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): PHYS 002C or PHYS 040C or consent of instructor. Explores global climate change in historic and geologic time scales. Topics include the effects of C02, E1, NiO, Pacific decadal oscillation, anthropogenic C02, volcanism, cosmic rays, polar ozone depletion, global climate modeling, stable isotopes, “ice house” Pleisto- cene climates, “greenhouse” climates of the Mesozoic and Tertiary, plate tectonics, and the “snowball” Earth.

GEO 261 Atmosphere, Ocean and Climate Dynamics Seminar (1) Discussion, 1 hour; extra reading, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores contemporary topics in the areas of atmospheric science, oceanography, cli- mate dynamics, aerosol physics, and climate change through the twentieth and twenty-first centuries. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

GEO 263 Organic and Petroleum Geochemistry (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s):
Professional Courses

GEO 301 Teaching of Geosciences at the College
Level (1) Seminar, 1 hour. Prerequisite(s): graduate standing in Geological Sciences. A program of weekly meetings and individual formative evaluation required of new Teaching Assistants for Geosciences courses. Covers instructional methods and classroom/section activities most suitable for teaching Geosciences. Conducted by the Teaching Assistant Development Program. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 302 Teaching Practicum (1-4) Seminar, 1-4 hours; practicum, 2-8 hours. Prerequisite(s): restricted to those graduate students appointed as Teaching Assistants. Supervised teaching of upper and lower-division courses in Geosciences. Required of all Teaching Assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable for credit, but units not applicable toward degree unit requirements.

Economics

Subject abbreviation: ECON
College of Humanities, Arts, and Social Sciences
Steven M. Helfand, Ph.D., Chair
Department Office, 4133 Sproul
(951) 827-1470; economics.ucr.edu

Professors
Richard Arnott, Ph.D., Distinguished Professor
Taraes Bandyopadhyay, Ph.D.
Marcelle Chauvet, Ph.D.
Anil B. Deolalkar, Ph.D.
Gloria González-Rivera, Ph.D.
Jang-Ting Guo, Ph.D.
Robert Kaestner, Ph.D.
Tae-Hy Lee, Ph.D.
Aman Ulaha, Ph.D., Distinguished Professor

Professors Emeriti
Susan B. Carter, Ph.D.
Ronald H. Chilcote, Ph.D.
Stephen E. Cullenberg, Ph.D.
Gary A. Dymski, Ph.D.
David H. Fairris, Ph.D.
Mason Gaffney, Ph.D.
Keith B. Griffin, Ph.D.
Ait zu R. Khan, Ph.D.
Victor D. Lippitt, Ph.D.
David Maluige, Ph.D.
Prasanta K. Pattanaik, Ph.D.
R. Robert Russell, Ph.D.
Howard J. Sherman, Ph.D., Jur.D.
Richard C. Sutcliffe, Ph.D.

Associate Professors
Steven M. Helfand, Ph.D.

Assistant Professors
Michael D. Bates, Ph.D.
Joseph Cummins, Ph.D.
Sarojini Hirshleifer, Ph.D.
Urmee Khan, Ph.D.
Distinguished Professor
Keith B. Griffin, Ph.D.

Lecturers
Joab N. Cory, Ph.D.
Bree J. Lang, Ph.D.
Matthew D. Lang, Ph.D.

Cooperating Faculty
Kenneth A. Baerenklau, Ph.D. (Environmental Sciences)
Ariel Dinar, Ph.D. (Environmental Sciences)
Keith C. Knapp, Ph.D. (Environmental Sciences)
Roger L. Ransom, Ph.D. (History)
Kurt A. Schwabe, Ph.D. (Environmental Sciences)

Economics

Economics studies the production and distribution of goods and services, as well as the way in which productive activity helps shape social existence. Economists are concerned with the factors determining national income, inflation, unemployment, output, growth and inequality (macroeconomics), as well as the behavior of individual decision-making units such as households and firms (microeconomics). Economists are also concerned with the role of markets, money and interest rates, the forces affecting international trade, and many other problems of production and distribution.

Economics is the basis for many careers, some of which require only a B.A. degree while others require more advanced work. Possible careers include business, government, education and law.

The B.A. is the most general degree offered in economics. It is appropriate background for a wide variety of purposes, including graduate study and professional schools. However, those planning to attend a graduate program in economics may need more quantitative training than the B.A. requires. Students who are considering attending a graduate program in economics should consult with their undergraduate advisor. The Business Economics B.A. degree provides more specific preparation for careers in business administration or management or for graduate work in business.

Transfer Admissions

Students transferring as juniors or seniors to UCR into any of the Economics majors must have completed a calculus course equivalent to UCR’s Math 9A. The effective date of 2018 is proposed to give students the appropriate time to prepare for the proposed changes.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section. MATH 009A and MATH 009B may also be used to meet breadth requirements.

Major Requirements

The Economics Department offers B.A. degrees in Economics, Business Economics, Economics/Administrative Studies, and Economics/Law and Society.

Economics Major

The major requirements for the B.A. degree in Economics are as follows:

1. Lower-division requirements (4 courses [at least 18 units])
   a) ECON 002, ECON 003
   b) MATH 009A or MATH 009A, MATH 009B
2. Upper-division requirements (12 courses [at least 54 units])
   a) ECON 104A, ECON 104B
   b) ECON 105A, ECON 105B
   c) ECON 101, ECON 107
   d) One four or five unit course with ECON 104B or ECON 105B or ECON 107 as a prerequisite.
   e) Five additional upper-division courses in Economics worth 4 or 5 units each, including at least three that have either ECON 104A or ECON 105A or ECON 107 as a prerequisite. Two 2-unit courses can satisfy one 4- or 5-unit course.

Note: Up to 4 units of internship credit may be counted toward the upper-division electives in Economics.

Business Economics Major

The major requirements for a B.A. degree in Business Economics are as follows:

1. Lower-division requirements (five courses [at least 22 units])
   a) ECON 002, ECON 003
   b) BUS 020
   c) MATH 009A or MATH 09HA, MATH 009B

2. Upper-division requirements (12 courses [at least 54 units])
   a) ECON 104A, ECON 104B
   b) ECON 105A, ECON 105B
   c) ECON 101, ECON 107
   d) Five additional upper-division courses in Economics worth 4 or 5 units each, including at least two courses from ECON 108, ECON 130, ECON 135, BUS 153/ECN 153, BUS 160/ECON 160, BUS 162/ECON 162, ECON 163. Two 2-unit courses can satisfy one 4- or 5-unit elective course.
   e) One course chosen from POSC 182, PSYC 142, SOC 151

Note: Up to 4 units of internship credit may be counted toward the upper-division electives in Business Economics.

Economics/Administrative Studies Major

In order to receive a B.A. degree in Economics/Administrative Studies students must fulfill the following requirements:

Economics requirements (12 courses, 55 units)
   1. ECON 002, ECON 003
   2. ECON 104A, ECON 104B, ECON 105A
   3. Four additional upper-division courses in Economics worth 4 or 5 units each, including at least two that have either ECON 104A or ECON 105A or ECON 107 as a prerequisite. Two 2-unit courses can satisfy one 4-unit course.
   4. ECON 101, ECON 107
   5. One of MATH 009A, MATH 009HA, or equivalent

Note: Up to 4 units of internship credit may be counted toward the upper-division electives in Economics.

Administrative Studies requirements (37 units)

1. Lower-division courses (17 units)
   a) BUS 010, BUS 020
   b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   c) CS 008 (may be used to satisfy breadth requirements)

2. Upper-division requirements (20 units)
   a) Two courses (8 units) from the list below:
      (1) ECON 102 or ECON 104A or ECON 162/BUS 162
      (2) PSYC 140 or PSYC 142
      (3) SOC 150 or SOC 151 or SOC 171
      (4) POSC 181 or POSC 182 or POSC 183
      (5) ANTH 127 or ANTH 131
      These two courses must be outside the discipline of Economics and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.
   b) A three-course track (12 units) in Business Administration courses from one of the following:
      (1) Organizations (General): BUS 100, BUS 107, BUS 176/SOC 176, BUS 158/ANTH 105, SOC 150, SOC 151
      (2) Human Resources Management/Labor Relations: BUS 100, BUS 107, ECON 152, BUS 153/ECON 153, BUS 155, BUS 157, PSYC 142
      (3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, PSOC 186
      (4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114, BUS 117
      (5) Managerial Accounting/Taxation: BUS 108, and two from BUS 166, BUS 168A, BUS 168B
      (7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
      (8) Management Information Systems: BUS 101, BUS 171, BUS 173
      (9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127

Note: For sections 2.d) and 2.e) combined, not more than two courses may be taken from the same department. In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements. (This limitation applies to specified Economics requirements and Law and Society requirements.)

Minor

The minor in Economics provides a background in this discipline. Students take basic microeconomic and macroeconomic theory courses, and then are given freedom of choice in pursuing upper-division courses of great interest.

All candidates for the minor in Economics must take

1. Lower-division requirements (10 units): ECON 002 and ECON 003

2. Upper-division requirements (at least 26 units): ECON 102 or ECON 104A, ECON 103 or ECON 105A

b) Four additional upper-division courses (at least 22 units)
least 16 units) in Economics

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

**Graduate Program**

The Department of Economics offers the M.A. and Ph.D. degrees in Economics.

The graduate Economics program is designed to prepare students for research and teaching in academic institutions as well as for positions in government, international agencies, and the private sector.

**Admission**

Students are normally admitted only in the fall quarter. Applicants should apply electronically, at [graduate.ucr.edu](http://graduate.ucr.edu). Students submit the completed application, GRE scores, three letters of recommendation (from persons familiar with the student’s academic work), and transcripts in duplicate of previous academic work.

**Master’s Program**

Students should have first-year calculus, a course in statistics, and some background in economics before beginning course work. Students who do not meet these requirements may still be admitted but normally must take these courses as prerequisites to the required courses. Applicants to the M.A. program must have the same academic potential as Ph.D. applicants, as reflected by GPA and GRE scores. Admission to the M.A. program does not guarantee later admission to the Ph.D. program.

**Doctoral Program**

The department encourages applicants from a variety of backgrounds, but a good understanding of intermediate microeconomics, intermediate macroeconomics, multivariate calculus, and elementary linear algebra is necessary to begin taking the core requirements, described below. In addition, two courses in basic probability and statistics or econometrics are required before beginning the core econometrics sequence. Students who do not satisfy the requirements, or who have been out of school for several years, should consider enrolling in the one-year M.A. program.

**Master’s Degree**

The M.A. degree is designed as a preparatory program for those students interested in pursuing the Ph.D. but who are not adequately prepared to enter the Ph.D. program directly (e.g., students who lack the necessary prerequisites in economics or mathematics or students who have been out of school for some time).

**Doctoral Degree**

The Ph.D. is the primary degree objective of the graduate program. Students first complete a core curriculum in economic theory and quantitative methods. These courses provide training in the fundamental concepts and research methods of the discipline. Following demonstration of professional competence in the core areas, students specialize in theoretical or applied areas of economics. This leads to the development of independent research and the writing of the Ph.D. dissertation.

**Core Requirements**

1. **Economic Theory**

   Students must complete the following:
   a) ECON 200A, ECON 200B, ECON 200C (Microeconomic Theory)
   b) ECON 201A, ECON 201B, ECON 201C (Macroeconomic Theory)

   All students must pass two cumulative examinations: one in microeconomic theory (covering topics encompassed in the course sequence ECON 200A, ECON 200B, and ECON 200C) and one in macroeconomic theory (covering the topics in ECON 201A, ECON 201B, ECON 201C). Both examinations are given at the end of the first year, and at the beginning of the fall quarter. After completing the sequence of courses, students must sit for each examination at each offering until they have passed the requirement. An unexcused failure to sit for a required examination will be regarded as a failure. All students can have two attempts. Only students who pass at least one of the exams in the first or second attempts can have a third attempt in the other failed exam. No student will be given more than three attempts to achieve a satisfactory grade on each one of the two examinations.

2. **Quantitative Methods**

   Students must complete the following: ECON 205A, ECON 205B, ECON 205C (Econometric Methods I, II, III). To satisfy these course requirements, students must attain a “B” average in the sequences.

   Core courses may be waived, based on equivalent graduate work completed elsewhere. The cumulative examinations, however, may not be waived.

**Colloquium and Paper Requirement**

Students must enroll in at least one offering of ECON 289A (Colloquium in Economics) each quarter of their first year and at least one offering of ECON 289B each quarter of their formal residence from the second year on. In addition, students must write a well-rounded research paper by the fall term of the fourth year. The research paper will be evaluated by members of the oral qualifying examination committee or members of the dissertation committee, if already formed. Students must give a presentation on their thesis research by the fall term of their fifth year.

**Field Requirement**

All students must:
1. complete course work in a major field consisting of three courses.
2. take five additional field courses in any of the fields.

Students must pass a comprehensive examination in their field. Comprehensive examinations in each major field are given twice a year. After completing the major field courses, students must take the next scheduled examination. The exams are given mid-Summer and if necessary at the end of Fall quarter. All students can have a maximum of two attempts in a given field, and can take field exams in no more than two fields, after completing their respective field courses.

1. **Advanced Econometrics**

   Students must complete the courses a) and b) and one of the courses from c), d), e), or f) listed below:
   a) ECON 285E (Advanced Econometric Methods)
   b) ECON 285F (Topics in Econometrics)
   c) ECON 285G (Applied Econometrics)
   d) ECON 285-I (Macroeconometrics)
   e) ECON 285J (Nonparametric Econometrics)
   f) ECON 285K (Microeconometrics)

2. **Advanced Macroeconomic Theory**

   Students must complete the following:
   ECON 282E (Foundations of Macroeconomics)
   ECON 282F (Advanced Monetary Theory)
   ECON 282G (Special Topics in Macroeconomic Theory)

3. **Advanced Microeconomic Theory**

   Students must complete three of the following:
   ECON 247 (Recent Advances in Public Economics)
   ECON 283E (Rational Choice Theory)
   ECON 283F (Measurement and Aggregation in Economics)
   ECON 283G (General Equilibrium)
   ECON 283I (Social Choice and Welfare)
   ECON 283J (Uncertainty and Information)
   ECON 283K (Special Topics in Microeconomic Theory)
   ECON 283N (Application of Games and Information Economics)

4. **Advanced Political Economy**

   Students must complete the following:
   ECON 202 (Topics in Economic Theory: Critiques and Alternative Approaches)
   ECON 272A (Political Economy: Marxian Economics)
   ECON 272B (Political Economy: Efficiency, Justice, and Power)

5. **Development Economics**

   Students must complete three of the following:
   ECON 260 (Theories of Economic Development)
   ECON 261 (Contemporary Development Strategies)
ECON 263 (Health, Labor and Human Capital in Developing Countries)
ECON 264 (Topics in Economic Development)
ECON 265 (Agricultural and Rural Development)

6. Economic History
Students must complete three of the following:
ECON 212 (History of Economic Theory and Methodology)
ECON 213 (Methods and Themes in Economic History)
ECON 223 (American Economic History)
ECON 224 (Economic History of the World Economy in the Twentieth Century)

7. International Trade Theory/International Finance
Students must complete the following:
ECON 234 (International Trade Theory)
ECON 235 (Topics in International Trade Theory)
ECON 236/POSC 215 (Political Economy of International Finance)
ECON 237 Topics in International Finance)

8. Labor Economics
Students must complete the following two courses:
ECON 240 (Labor Demand)
ECON 241 (Labor Supply)

9. Money, Credit, and Business Cycles
Students must complete the following:
ECON 242 (Labor Market Equilibrium)
ECON 243 (Topics in Labor)
ECON 244 (Empirical Research Methods)

10. Resource and Environmental Economics
Students must complete three of the following:
ECON 207 (Environmental Economics)
ECON 208 (Models of Nonrenewable Resource Management)
ECON 209 (Models of Renewable Resource Management)
ECON 210 (Topics in Environmental Economics)

11. Public Economics
Students must complete the following two courses:
ECON 246 (Introduction to Public Economics)
ECON 247 (Recent Advances in Public Economics)
and any one of the following courses:
ECON 283E (Rational Choice Theory)
ECON 283F (Measurement and Aggregation in Economics)
ECON 283G (General Equilibrium)
ECON 283J (Social Choice and Welfare)
ECON 283K (Uncertainty and Information)
ECON 283X (Special Topics in Microeconomic Theory)
ECON 283N (Applications of Games and Information Economics)

Not all of these fields and courses are offered every year; offerings depend primarily on student demand.

As the department faculty is expanding, we expect to add additional fields in the near future. These may include International Economics and Health Economics.

Oral Qualifying Examination Students must pass an oral qualifying examination, which covers a dissertation prospectus and subject matter related to the student’s major field and other field courses. It is given by a committee of five faculty members, at least one of whom is not a Department of Economics faculty member. Students who enter the program fully prepared normally take the examination before the beginning of the third year.

Dissertation and Final Examination The final requirement is the completion of a dissertation, under the direction of a dissertation committee, and passing a final examination defending the dissertation. The dissertation committee is normally composed of three Department of Economics faculty members (including cooperating faculty), usually chosen from the oral qualifying examination committee. Students who enter the program fully prepared normally complete the dissertation by the end of the fifth year. Students are encouraged to present a dissertation prospectus to a meeting of ECON 289 in their third year.

Master's Degree
Plan II (Comprehensive Examination) Students must complete a total of 36 units, 24 of which must be at the graduate level. Students must complete the following:
1. ECON 200A (Microeconomic Theory) or ECON 206 (Mathematics for Economists)
2. ECON 204A (Microeconomic Theory for Master's Students) or ECON 200A ECON 200B (Microeconomic Theory)
3. ECON 204B (Macroeconomic Theory for Master's Students) or ECON 201A ECON 201B (Macroeconomic Theory)
4. ECON 205A (Econometric Methods I) and ECON 205B (Econometric Methods II)

Examination Requirements
Students must pass one of the following examinations:
1. Master's examination covering the topics in ECON 204A, ECON 204B
2. Doctoral cumulative examination in either microeconomic theory or macroeconomic theory (graded at the master’s level)
3. Doctoral Comprehensive Examination in any of the ten fields described above (graded at the master’s level)

Lower-Division Courses
ECON 002 Introduction to Microeconomics (5) Lecture, 3 hours; discussion, 1 hour; written work, 30 hours per quarter. Prerequisite(s): none. An introduction to the study of the microeconomic system of a firm, aggregate, and market. Includes analysis of unem-

ECON 003 Introduction to Microeconomics (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. An introduction to the study of the microeconomic system from the micro, or individual decision-maker’s, perspective. Includes analysis of competition, monopoly, and the distribution of income.

ECON 005 Data Analysis for Economics and Business (5) Lecture, 3 hours; outside research, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 002, ECON 003, or consent of instructor. Introduction to the sources of economic and business data and data analysis using graphs, plots, computers, and descriptivestatistics. Also covers index numbers, measures of inequality, and simple regression analysis.

ECON 006 Introduction to Environmental Economics (4) Lecture, 3 hours; discussion, 1 hour. An introduction to the basic principles of economics and their application to problems of environmental quality and natural resource use. Emphasis is on the failure of markets as a cause of environmental degradation and the role of government in resolving problems of resource scarcity. Does not satisfy the Natural Science breadth requirement for the College of Humanities, Arts, and Social Sciences. Cross-listed with ENGR 006. Does not satisfy the Natural Science breadth requirement for the College of Humanities, Arts, and Social Sciences.

ECON 060 Engineering Economics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009A. Covers economic decisions involving engineering alter-

Upper-Division Courses
ECON 101 Statistics for Economics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 1 hour; individual laboratory, 2 hours. Prerequisite(s): MATH 009A or MATH 09HA or MATH 022 or equivalent. An introduction to the basic statistical methods for economics. Topics include economic data analysis, index numbers, univariate and bivariate probability distributions, correlation and regression, sampling distributions, properties of estimators, and hypothesis testing.

ECON 102 Intermediate Microeconomics (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 003 or MATH 09HA or MATH 09HA or MATH 022. A comprehensive overview of the competitive market system. Includes the modern utility theory of consumer behavior, firm behavior in product and factor markets, and monopoly. Empha-

ECON 103 Intermediate Microeconomics (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 003 or MATH 09HA or MATH 09HA or MATH 022. A comprehensive overview of the competitive market system. Includes the modern utility theory of consumer behavior, firm behavior in product and factor markets, and monopoly. Emphasis is placed on theoretical applications to business enterprises. Intended for students planning to major in Business Administration. Credit is awarded for only one of ECON 102 or ECON 104A.
ECON 103 Intermediate Macroeconomics (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 002. Covers the theory of income, employment, price level and the role of the international economy. Includes fiscal and monetary policy. Intended for students planning to major in Business Administration. Credit is awarded for only one of ECON 103 or ECON 105A.

ECON 104A Intermediate Microeconomics I (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 003 with a grade of “C-“ or better or MATH 009A (or MATH 090A). A calculus-based course that addresses developing theories of consumers and firms. Provides the foundation for partial equilibrium study of competitive and monopoly markets. Explores derived welfare properties of competitive equilibria and competitor marks for evaluating monopolies. Develops theories of monopoly pricing and strategy. Evaluates alternative policies as related to monopoly. Credit is awarded for only one of ECON 102 or ECON 104A.

ECON 104B Intermediate Microeconomics II (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 102 with a grade of “C-“ or better or ECON 104A; MATH 009A (or MATH 090A); consent of instructor. A continuation of ECON 102 or ECON 104A. Covers imperfect competition, general equilibrium, and welfare economics. Also addresses intertemporal decision making, uncertainty, and related information.

ECON 105A Intermediate Macroeconomics I (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 002 with a grade of “C-“ or better. Examines the determination of the equilibrium level of national income and its allocation among consumers, investors, and government. Develops theoretical models that describe how employment, production, and inflation are determined. Focuses on the impact of government policies, as well as the current developments on these issues. Credit is awarded for only one of ECON 103 or ECON 105A.

ECON 105B Intermediate Macroeconomics II (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 103 with a grade of “C-“ or better or ECON 105A. ECON 104A is recommended. A continuation of ECON 103 or ECON 105A. Investigates developments in macroeconomic theory and current events. Presents explanations of economic growth and business cycle fluctuations. Explores their empirical relevance and policy implications.

ECON 107 Introductory Econometrics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): ECON 003 or ECON 101; or consent of instructor. An introduction to the basic tools of econometrics. Focuses on the issues relating to the linear regression model, including heteroskedasticity, serial correlation, and multicollinearity.

ECON 108 Introductory Econometrics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 1 hour; written work, 1 hour; outside research, 1 hour. Prerequisite(s): ECON 107 or consent of instructor. A continuation of ECON 107. Covers, at an introductory level, the basic concepts related to logit and probit models, simultaneous equations models, dynamic time series models, unit roots and auto-regressive conditions, heteroskedasticity (ARCH), and forecasting.

ECON 110 Mathematical Economics (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 104B, MATH 010A, MATH 131. Covers mathematical concepts and techniques used in advanced economic analysis. Explores applications to selected aspects of economic theory.

ECON 112 Forecasting in Business and Economics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 1 hour; written work, 2 hours. Prerequisite(s): ECON 002 or ECON 003 or equivalent; ECON 107; or consent of instructor. Provides a basic knowledge of forecasting and its applications, particularly by using business and economic data. Covers basic methods of forecasting, such as regression methods, exponential smoothing, algorithms, and autoregressive integrated moving average (ARIMA) methods. Also explores how to combine and evaluate various forecasts. Uses computer analysis extensively.

ECON 115 Marixian Political Economy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Fundamental concepts of Manxian political economy, including historical materialism, surplus value, exploitation, class analysis, economic crises, the state, socialism, and Manxian methodological foundations.

ECON 116 Foundations of Political Economy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores ways of thinking about economic and social issues precluded by conventional approaches to economic analysis. Topics include the class relations between labor and capital, discrimination, market socialism, and alternative perspectives on development, macroeconomic instability, and the environment.

ECON 117 Econometrics and Philosophy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 104B or consent of instructor. Examines issues on the boundary of economics and philosophy. Topics include social choice theory and economic justice, foundations of utilitarianism, ethical, and eco- nomic welfare; and epistemology and the philosophies of science of Popper, Kuhn, and others. Cross-listed with PHIL 119.

ECON 119 Law and Economics (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): ECON 003 or consent of instructor. An economic analysis of legal institutions and their evolution including the areas of property law, contract law, tort law, and criminal law.

ECON 121 (E-Z) Readings in Economics (2) for hours and prerequisite, see segment descriptions. In-depth discussion of a book that is not a textbook that offers important insights into economic issues.

ECON 121E The Wizard of Oz (2) Lecture, 15 hours per quarter; written work, 15 hours per quarter. Prerequisite(s): ECON 002, ECON 003. Focuses on the history of human development, the rise of William Jennings Bryan’s third-party presidential bid, and the contemporary political struggle regarding management of the U.S. monetary system.

ECON 121F The Revolutions in Agricultural Biology (2) Lecture, 15 hours per quarter; individual study, 15 hours per quarter. Prerequisite(s): ECON 002, ECON 003; or consent of instructor. Explores the history of biology. Covers the impact on standards of living, the distribution of welfare, and the pace and pattern of economic growth. Topics include the origin of agriculture, the Columbian Exchange, the dwarfing of wheat and rice, hybrid corn, and the adoption of genetically modified crops.

ECON 121G The Great Crash and the Great Depression (2) Lecture, 15 hours per quarter; individual study, 15 hours per quarter. Prerequisite(s): ECON 002, ECON 003; or consent of instructor. What caused the great stock market crash of 1929? Did the market crash cause the Great Depression of the 1930s? What were some of the economic and social consequences? Can it happen again? Explores these and related questions from the most significant economic disruption in American economic history.

ECON 121H The Great Crash and the Great Depression (2) Lecture, 15 hours per quarter; individual study, 15 hours per quarter. Prerequisite(s): ECON 002, ECON 003; or consent of instructor. What caused the great stock market crash of 1929? Did the market crash cause the Great Depression of the 1930s? What were some of the economic and social consequences? Can it happen again? Explores these and related questions from the most significant economic disruption in American economic history.

ECON 123 American Economic History (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 002, ECON 003. Covers the economic history of the United States from colonial times to the present. Cross-listed with HISA 123.

ECON 124 World Economic History (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 002, ECON 003. Covers the economic history of the world from Paleolithic times to the present.

ECON 125 History of Economic Thought (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 002, ECON 003. Study of the development of major economic theories, including those of Adam Smith, Karl Marx, and John Maynard Keynes. Focus is on how alternative theories define and address economic problems differently and the policy implications that follow.

ECON 129 Health Economics (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. An economic analysis of health and medical care, medical technology, and the functioning of insurance markets. Emphasizes the dynamics of insurance companies, physicians, and the pharmaceutical industry. Issues addressed include the rising cost of health care, government involvement, and health care reform.

ECON 130 Introduction to Money, Banking, and Credit (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): ECON 103 or ECON 105A. Covers the basic theories of modern monetary systems. Explores money, credit, and interest rate behavior; financial intermediation and central banking; and methods and objectives of monetary and regulatory policy.

ECON 132 Public Finance (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A; ECON 103 or ECON 105A; BUS 106/ ECON 134 or ECON 130 is recommended. Covers functions of government in a market economy. Includes distributive equity, taxation, spending, borrowing, and debt management. Examines promotion of capital formation, full employment, stability, and efficient resource use. Also addresses intergovernmental relations.

ECON 134 Introduction to Financial Management (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020; ECON 002; ECON 003; ECON 101 or STAT 04B; upper-division standing. An introduction to financial management and financial institutions. Includes time value of money, stock and bond valuation, risk and return, portfolio theory, capital budgeting, capital structure, dividend policy, and financial databases. Cross-listed with BUS 106.

ECON 135 The Stock Market (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ECON 002, ECON 003. ECON 103 or ECON 105A is strongly recommended. An analysis of the history of the stock market and the macroecon- omy. Topics include factors governing stock prices, fundamental and technical analysis, the impact of inflation and interest rates, international investing, and the role of social institutions in the determination of stock prices.

ECON 136 Empirical Financial Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 107 or consent of instructor. Discusses various empirical aspects of financial markets and financial risk management. Addresses both theoretical and applied issues in finance, risk management, and econometrics. Also discusses quantitative analysis, simulation methods, and case studies.

ECON 143A Environmental Economics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 003 or equivalent, MATH 009A or equivalent; or consent of instructor. An introduction to economic analysis of environmental quality. Topics include environment- economy interactions and social choice theory; source control costs, damage valuation, and efficient pollution control; and design of efficient and equitable environmental policy. Cross-listed with ENSC 143A.

ECON 143B Natural Resource Economics (4) Lecture,
ECON 143C Ecological Economics and Environmental Valuation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 102 or ECON 104A or consent of instructor. Survey of environmental valuation and economy-wide, long time-scale issues. Valuation methods covered include hedonic pricing, weak complements, contingent valuation, and ecosystem services. Environmental macroeconomic topics include population growth, biophysical constraints to economic growth, intertemporal welfare and sustainability, and sustainable development. Cross-listed with ENSC 143C.

ECON 146 Urban Economic Problems (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. Applies economic principles to the major problems of the modern urban community, such as poverty, discrimination, deterioration of the environment, and other social problems. Emphasizes programs for alleviation of or solution to these issues. Cross-listed with URST 146.

ECON 148 Land and Resource Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. Explores distinctive qualities of land and its rent, as well as valuation of land as an investment. Addresses assembly, division, and development of land, efficiency of the land market and the effects of taxation. Covers concentrated ownership, separation of ownership and management, rent and taxable surplus, and origins and kinds of tenure.

ECON 151 Economics of Education (4) Lecture, 3 hours; individual study, 6 hours; written work, 3 hours. Prerequisite(s): ECON 103, ECON 107 with grades of "C-" or better. Focuses on the benefits and costs of education, educational inputs, and educational policy. Applies economic theory to the study of education. Evaluates empirical evidence of issues relating to education. Develops communicating reasoned and informed prescription and/or evaluations of education policy.

ECON 153 Labor Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. An analysis of labor demand, labor supply, and the determination of wages. Emphasizes neoclassical, institutional, and radical perspectives. Cross-listed with BUS 153.

ECON 155 Women's Labor and the Economy (4) Lecture, 3 hours; individual study, 8 hours. Prerequisite(s): ECON 103. Focuses on economic analyses of four topics: women's work in and out of the paid labor force; gender differences in occupation, earnings, and income; marriage, divorce, and childbirth; and public policies regarding women's work and standard of living. Explores differences among women by race, ethnicity, class, marital status, and parental responsibilities. Cross-listed with GSST 155 and PBPL 155.

ECON 156 Population Dynamics and Economic Well-being (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102, ECON 103. Examines the causes and consequences of population dynamics. Analyzes economic models of such demographic behavior as fertility, mortality, marriage, and migration. Also explores the consequences of population change for economic growth, the environment, and overall well-being.

ECON 160 Industrial Organization (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 104B. A study of the organization and structure of the American industrial system. Emphasizes production and pricing behavior and policies. Also addresses market structure and public policies regulating or influencing market behavior. Cross-listed with BUS 160.

ECON 162 Managerial Economics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 102 or ECON 104A. Examines applications of economic analysis to problems of management, especially of capital. Emphasis is on production economics and cost analysis. Cross-listed with BUS 162.

ECON 163 Economics and Business Strategy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 101, ECON 104B. Provides an understanding of the basic concepts of game theory, as well as many strategic interactions. Includes price wars, cooperation, commitment, bargaining, and the strategic use of information.

ECON 170 (E-Z) Case Studies in Economic Development (2) for hours and prerequisites, see segment descriptions. A detailed study of the history, problems and prospects of economic development in a selected geographical region.

ECON 170E Economic Development in India (2) Lecture, 15 hours per quarter; written work, 15 hours per quarter. Prerequisite(s): ECON 102 or consent of instructor. A detailed study of the history, problems, and prospects of economic development in India.

ECON 171 International Finance (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 103 or ECON 105A. Covers international monetary theory and its applications. Topics include balance of payments, exchange rates, open-economy macroeconomics, and international monetary institutions. Addresses selected policy issues.

ECON 172 Economic Development in Africa (4) Lecture, 3 hours; extra reading, 1 hour; written work, 1 hour; term paper, 1 hour. Prerequisite(s): ECON 102 or ECON 103 or ECON 104A or ECON 105A; ECON 107; or consent of instructor. Examines major current issues in development economics. Focuses on Sub-Saharan Africa.

ECON 182 Trade, Globalization, and Development (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. Explores the theories of economic development and an analysis of the major problems of the modern urban community. Also explores the consequences of population change for economic growth, the environment, and overall well-being.

ECON 184 Economic Development in Africa (4) Lecture, 3 hours; extra reading, 1 hour; written work, 1 hour; term paper, 1 hour. Prerequisite(s): ECON 102 or ECON 103 or ECON 104A or ECON 105A. A comparative analysis of the major trends in Latin American economies in the twentieth century. Includes historical legacies, primary export economies, the theory and practice of import substitution industrialization, and the debt crisis. Also covers stabilization and structural adjustment, poverty and income distribution, the informal and agricultural sectors, and the environment. Cross-listed with LNST 185.

ECON 185 Economic Development in Latin America (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 105A. A comparative analysis of the major trends in Latin American economies in the twentieth century. Includes historical legacies, primary export economies, the theory and practice of import substitution industrialization, and the debt crisis. Also covers stabilization and structural adjustment, poverty and income distribution, the informal and agricultural sectors, and the environment. Cross-listed with LNST 185.

ECON 187 Contemporary Public Policy Challenges in Latin America (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A or consent of instructor. A survey of the wide-sweeping policy reforms since the 1980s and of contemporary public policy challenges in Latin America. Challenges discussed include extremely high levels of poverty and inequality; inadequate educational and healthcare systems; pressures for land reform; problems of trade competitiveness; and recurring currency crises. Cross-listed with LNST 187.

ECON 189 Economic Development in Brazil (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A; ECON 103 or ECON 105A. An analysis of the successes and failures of economic development in the largest country in Latin America. Reviews current issues facing Brazilian policy makers and their historical legacies, import substitution and industrialization, poverty and inequality, agriculture and land reform, and the environmental impact of development. Cross-listed with LNST 189.

ECON 190 Special Studies (1-5) Activity, 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and program chair. A project to be undertaken under faculty supervision. Course is repeatable to a maximum of 12 units.

ECON 193A Senior Seminar (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 104B, ECON 105B; or consent of instructor. Advanced research in various fields of faculty interest. Includes completion of a research paper and presentation. Topics vary from year to year. Graded In Progress (IP) until ECON 193A and ECON 193B are completed, at which time a final grade is assigned.

ECON 193B Senior Seminar (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): senior standing; ECON 193A. Advanced research in various fields of faculty interest. Students complete a research paper and present their results in the seminar. Topics vary from year to year.
ECON 198-I Individual Internships in Economics (1-12) Prerequisite(s): junior standing with major in Economics and consent of instructor (to be obtained before pre-enrollment). Active participation in the work of a public or quasi-public agency or business concern in matters relating to general or business economics. The student spends approximately 10 hours each week with such an employer. A summary paper is required. One unit for every three hours spent in internship. Open to majors on a Satisfactory (S) or No Credit (NC) basis.

ECON 199H Senior Honors Research (1-4) Outside research, 3-12 hours. Prerequisite(s): upper-division standing in Economics; admission to the University Honors Program or consent of instructor. Offers the opportunity for directed research at an honors level. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

Graduate Courses

ECON 200A Microeconomic Theory (6) Lecture, 4.5 hours; discussion, 1.5 hours. Prerequisite(s): ECON 104B or equivalent. Focuses on consumer and producer theory under conditions of certainty. Covers required mathematics, including real analysis and static optimization theory. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ECON 200B Microeconomic Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 200A or equivalent. Focuses on decision making under uncertainty, economics of information, applications of game theory, and models of imperfect competition.

ECON 200C Microeconomic Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 200B or equivalent. Focuses on general equilibrium theory, including existence and stability, and on welfare economics and social choice.

ECON 201A Macroeconomic Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 200A or equivalent. Covers the theory and methods of environmental economics. Topics include externality theory, bargaining solutions, property rights, and resource allocation mechanisms. Also covers environmental policy under certainty and asymmetric information, as well as dynamic and general equilibrium models of environmental quality. Cross-listed with ENSC 212.

ECON 208 Natural Resource Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 200A or equivalent. Covers dynamic models of nonrenewable resources. Topics include uncertainty, game theory, and the measurement of resource scarcity. Examines empirical models of nonrenewable and renewable resources. Cross-listed with ENSC 212.

ECON 209 Nonmarket Valuation and Environmental Policy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 200A, ECON 205A or equivalent. A study of economic valuation of natural resources and the environment. Includes environmental demand theory, travel cost models, random utility models, contingent valuation technique, and hedonic wage and pricing models. Also covers theory, empirical methods, and applications. Cross-listed with ENSC 209.

ECON 210 E-Z Topics in Environmental Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 207/ENSC 211 or consent of instructor. An in-depth study in selected areas of environmental and natural resource economics. E. Transportation and Environmental Quality. F. Political Economy of Environmental Policy. ECON 210E/ENSC 210E are repeatable to a maximum of 8 units. Cross-listed with ENSC 210 E-Z.

ECON 212 History of Economic Theory and Methodology (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. The origins and contemporary development of alternative economic theories. Methodological and philosophical debates in economics.

ECON 213 Methods and Themes in Economic History (4) Lecture, 4 hours; term paper, 1.5 hours; extra reading, 1.5 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys central themes in world economic history to introduce the subject and methodology of economic history. Topics illustrate a wide variety of historical experiences and illuminate the process of economic growth. Economics graduate students receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

ECON 223 American Economic History (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. AN introduction to the economic history of the American economy. Economics graduate students receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Carter, Sutch

ECON 224 Economic History of the World Economy in the Twentieth Century (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to world economic history as an approach to economics. Surveys major issues pertaining to the historical and institutional bases for the performance of the world economy during the twentieth century. Economics graduate students receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Sutch

ECON 234 International Trade Theory (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 200A, ECON 200C or consent of instructor. Examines the determinants of trade in goods and services, international flow of labor and capital, and the effects of trade policy on welfare and income distribution.

ECON 235 Topics in International Trade Theory (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 234 or consent of instructor. An in-depth study in selected areas of international trade theory. Topics include, but are not limited to, trading blocs, trade agreements and strategic interactions, trade and the environment, and the political economy of international trade. Course is repeatable to a maximum of 8 units.

ECON 236 Economic Policy of International Finance (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Conducts a broad theoretical and historical survey of the politics and economics of international finance and money and finance. Topics include monetary and exchange rate regimes, foreign direct investment, capital flows, sovereign debt, financial regulation and international macroeconomic coordination, the role of finance in economic development, and international financial crises. Cross-listed with POSC 205.

ECON 237 Topics in International Finance (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An in-depth study in selected areas of international finance theory and current research in the field. Topics include the understanding of exchange rate determination, current account, international capital flows, currency crisis, foreign exchange intervention, and sovereign debt-risk.

ECON 240 Labor Demand (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Establishes a theoretical foundation for the study of labor demand. Explores key topics in international finance and open economy macroeconomics using both theoretical and empirical analysis tools. Topics include the understanding of exchange rate determination, current account, international capital flows, currency crisis, foreign exchange intervention, and sovereign debt-risk.

ECON 241 Labor Supply (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the quantity and quality of labor supply. Provides a solid understanding of labor supply and human capital theory; develops econometric skill to evaluate empirical evidence of the predictions that theory affords; and discusses the art of connecting theory to empirical analysis.

ECON 242 Labor Market Equilibrium (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Establishes a theoretical foundation for the study of equilibrium in labor markets and builds a solid foundation for essential and current research in the field. Topics may include crime, migration, market structures, and personnel economics.

ECON 243 Topics in Labor (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. In-depth study in selected areas of labor economics. Topics include, but are not limited to, economic demography, end race and gender issues. Course is repeatable as topics change.
ECON 244 Empirical Research Methods (4) Lecture, 3 hours; tutorial, 1 hour; written work, 2 hours. Prerequisite(s): ECON 205B or equivalent. Introduction to empirical research and causal techniques used in modern applied economics, with a focus on identification strategies. Topics include natural experiments, instrumental variables, regression discontinuity, and panel data. Emphasis is on practical application of techniques and solutions to problems empirical researchers encounter.

ECON 246 Introduction to Public Economics (4) Lecture, 3 hours; written work, 2 hours; extra reading, 1 hour. Prerequisite(s): ECON 200C. Focuses on the use of controlled and natural experiments, analysis of panel data, and the cross-country study of the role of social, cultural, and economic institutions in economic growth. Also covers theory of the second best; auction theory; theory of government contracting, procurement, and regulation; fiscal federalism theory; and the political economy.

ECON 250 Money, Credit, and the Macroeconomy (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced topics and recent developments of theories of money, credit, and financial institutions in influencing growth, distribution, employment, prices, and business cycles in capitalist economies. Fiscal policy, monetary policy, and public investments are addressed from alternative theoretical perspectives.

ECON 251 Business Cycle Theory (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Investigation of the role of money, credit, and financial institutions in influencing growth, distribution, employment, prices, and business cycles in capitalist economies. Fiscal policy, monetary policy, and public investments are addressed from alternative theoretical perspectives.

ECON 254 Topics in Money, Credit, and Business Cycles (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A survey of the major theories of the cycle and empirical data on relations of variables over the cycle.

ECON 260 Theories of Economic Development (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A survey of the major theories of development and underdevelopment beginning with the classical model, theories of surplus, and including the models of Lewis, Nurkse, Hirschman, neoclassical schools, structuralist models, and dependency theory.

ECON 261 Contemporary Development Strategies (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A review of the performance of the major strategies of development implementation in the recent past or currently under implementation.

ECON 263 Health, Labor and Human Capital in Developing Countries (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Topics include but are not limited to: early life health and human development; education and human capital accumulation; labor market returns to health and human capital; labor supply; discrimination; and economic demography.

ECON 264 Topics in Economic Development (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Selected themes for advanced study in economic development. Course is repeatable to a maximum of 8 units.

ECON 265 Agricultural and Rural Development (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. This course is concerned with the economics of agricultural and rural development in developing countries. Topics include technical change, sharecropping and interlinked factor markets, migration, poverty and famine, land reform, environmental aspects of rural development, and structural adjustment within agriculture.

ECON 272A Political Economy: Marxian Economics (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A study of Marxian economic theory, including historical materialism, the role of value, class, exploitation, and accumulation in Marxian economics, and a survey of current debates on these issues.

ECON 272B Political Economy: Efficiency, Justice, and Power (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers the various notions of efficiency used in political economic analysis, as well as their application in historical and comparative institutional contexts. Theories of justice in the distribution of rewards and the extent to which efficiency is separable from justice. Different notions of how power influences economic outcomes.

ECON 282 (E-Z) Advanced Macroeconomic Theory (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): passing grade on the Macroeconomics Cumulative Examination or consent of instructor. Covers advanced topics in macroeconomic theory. Students read state-of-the-art research papers and books. Includes presentations by students and faculty. E. Foundations of Macroeconomics; F. Advanced Monetary Theory; G. Special Topics in Macroeconomic Theory. ECON 282G is repeatable to a maximum of 8 units.

ECON 283 (E-Z) Advanced Microeconomic Theory (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): passing grade on the Microeconomics Cumulative Examination or consent of instructor. Covers advanced topics in microeconomic theory. Involves reading current research papers and books, and presentations by students and faculty. E. Rational Choice Theory; F. Measurement and Aggregation in Economics; G. General Equilibrium; I. Social Choice and Welfare; J. Uncertainty and Information; K. Special Topics in Microeconomic Theory; M. The Microtheoretic Bases of Development Economics; N. Applications of Games and Information Economics; O. Measurement of Productivity and Efficiency; P. Public Economic Theory; Q. Economics of Contract: Theory and Applications; R. Measurement of the Standard of Living, Inequality, and Deprivation. ECON 283K is repeatable to a maximum of 8 units.

ECON 285 (E-Z) Advanced Econometrics (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): ECON 205A, ECON 205B, ECON 205C; or consent of instructor. Advanced topics and recent developments in econometrics. State-of-the-art research papers and books are read, and research papers are written by students as well as faculty. Advanced Econometric Methods: F. Topics in Econometrics; G. Applied Econometrics; I. Macroeconometrics; J. Nonparametric Econometrics; K. Microeconometrics. ECON 285K is repeatable to a maximum of 8 units.

ECON 289A Colloquium in Economics (2) Seminar, 1.5 hours; written work, 1.5 hours. Prerequisite(s): graduate standing. Lectures and discussions by students, faculty, and invited scholars on special selected topics. Course is repeatable as content changes up to a maximum of 8 units.

ECON 289B Colloquium in Economics (2) Seminar, 1.5 hours; written work, 1.5 hours. Prerequisite(s): graduate standing. Lectures and discussions by students, faculty and invited scholars on special selected topics. Course is repeatable as content changes up to a maximum of 8 units.

ECON 290 Directed Studies (1-6) Prerequisite(s): graduate standing and consent of instructor. Directed studies of selected problems of economic analysis. Open to graduate students who desire to do special work in a particular field. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ECON 291 Individual Study in Coordinated Areas (1-12) Outside research, 3-36 hours. A program of study designed to advise and assist candidates who are preparing for examination. Graded Satisfactory (S) or No Credit (NC). Repeatable as follows: (1) a student may take up to 12 units prior to the award of the M.A. (these 12 units do not count toward the required M.A. units); (2) a student may take up to 18 additional units after award of the M.A. but prior to successful completion of the Ph.D. qualifying examination.

ECON 292 Concurrent Analytical Studies (2-4) Lecture, 1-3 hours; outside research, 6-12 hours. Prerequisite(s): consent of instructor. Each 292 course will be taken concurrently with some 100-series course, but on an individual basis. It will be devoted to completion of a graduate paper based on research or criticism related to the 100-series course. Faculty guidance and evaluation will be provided through the quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ECON 297 Directed Research (1-6) Prerequisite(s): graduate standing and consent of instructor. Directed research on selected problems in economics. Designed for graduate students who have not yet passed their qualifying examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ECON 299 Research for Thesis or Dissertation (1-12) Prerequisite(s): graduate standing and consent of instructor. Research in economics under the direction of a staff member to be included as part of the doctoral dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

ECON 302 Teaching Practicum (1-4) Practicum, 3-11 hours; seminar, 1 hour. Prerequisite(s): limited to department TASs; graduate standing. Supervised teaching in upper- and lower-division courses. Required of all economics teaching assistants. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

Education and Credential Programs

Subject abbreviation: EDUC

Graduate School of Education

Thomas M. Smith, Ph.D., Dean, Graduate School of Education
Keith F. Widaman, Ph.D., Associate Dean & Graduate Advisor
Louie Rodriguez, Ed.D., Associate Dean, Undergraduate Education
JerMara Davis-Welch, Ph.D., Assistant Dean, & Graduate Advisor, M.Ed., General Education Teaching Emphasis
Eddie Comeaux, Ph.D., Graduate Advisor

Graduate Programs (951) 827-6362
CREDENTIALS (951) 827-5225
education.ucr.edu

Professors
Janet B. Blacher, Ph.D., Distinguished Professor
William P. Ercul, Ph.D.
Cassandra M. Guarino, Ph.D. (Education/Public Policy)
because they will be exposed to critical theories that investigate how education has been used to create, maintain, and reinforce social stratification. Students will develop a historical and contemporary awareness of different learning settings, and gain a strong foundation in human development, assessment and interventions in the education context. Students who are interested in teaching elementary, middle, or high schools should consult an Education Student Affairs Counselor about combining an appropriate major and minor or completing a double major in order to develop appropriate expertise in the subject they plan to teach. Education, Society, and Human Development majors are also prepared for other types of instructional or administrative positions in programs such as those focused on early childcare, out-of-school learning, or adult learning. Additionally, students who complete the major are prepared to enter other education-related career fields in the private and public sectors including working with special populations, in legal fields, medical environments, and the arts. Students interested in graduate study will be well prepared to pursue advanced degree programs in education or related fields. Undergraduates enrolled in the Education, Society, and Human Development degree are encouraged to complete courses inside and outside of the major to enhance career preparation and pursue personal interests. With advanced planning, students in the major can complete a minor or a second major in another discipline. **University Requirements** See Undergraduate Studies section. **College Requirements** See the Graduate School of Education section. **Major Requirements** The major requirements for the B.A. degree in Education, Society, and Human Development are as follows: **Community Leadership, Policy, and Social Justice Concentration** 1. Lower-division requirements (5 courses [at least 20 units]) (a) EDUC 005 (b) Any 4 of the following lower-division courses (at least 16 units): EDUC 010, EDUC 020 or EDUC 020S, EDUC 022, EDUC 030 or EDUC 030S, EDUC 040 or EDUC 040S, EDUC 041, EDUC 042, EDUC 050, EDUC 051 2. Upper-division requirements (7 courses [at least 28 units]) (a) Concentration courses (5 courses [at least 20 units]) (1) EDUC 109 or EDUC 109S, EDUC 114, EDUC 122, EDUC 123, EDUC 141, EDUC 142, EDUC 143, EDUC 146/ETST 146 (b) Elective courses (2 courses [at least 8 units]) (1) EDUC 109 or EDUC 109S, EDUC 110 or EDUC 110S, EDUC 112 or EDUC 112S, EDUC 114, EDUC 116 or EDUC 116S, EDUC 118, EDUC 122, EDUC 123, EDUC 134, EDUC 141, EDUC 142, EDUC 143, EDUC 146/ETST 146, EDUC 160, EDUC 161, EDUC 181, EDUC 182, EDUC 183, EDUC 190 A maximum of 8 units of EDUC 190 may be taken to satisfy elective degree requirements. 3. Practicum Requirement (40 hours total) (a) A minimum of 40 hours of field experience or research in an education setting, satisfied in one of two ways: (1) Complete 40 hours of field experience or research in conjunction with one or more approved UCR courses that include a practicum. Consult the Education Student Affairs Office or Graduate School of Education Website for Undergraduate Academic Programs for a current list of approved practicum courses. (2) By petition to the Education Student Affairs Office for approval of verifiable hours from courses that are not on the approved practicum course list or hours from educational fieldwork that is not linked to a UCR course (e.g., tutoring experience, instructional experience in a summer program for children, etc.) **Learning and Behavioral Studies Concentration** 1. Lower-division requirements (5 courses [at least 20 units]) (a) EDUC 005 (b) Any 4 of the following lower-division courses (at least 16 units): EDUC 010, EDUC 020 or EDUC 020S, EDUC 022, EDUC 030 or EDUC 030S, EDUC 040 or EDUC 040S, EDUC 041, EDUC 042, EDUC 050, EDUC 051 2. Upper-division requirements (7 courses [at least 28 units]) (a) Developmental courses (2 courses [at least 8 units]) (1) EDUC 160, EDUC 161, EDUC 172 or EDUC 172S (b) Learning courses (2 courses [at least 8 units]) (1) EDUC 110 or EDUC 110S, EDUC 116 or EDUC 116S, EDUC 134, EDUC 181, EDUC 182, EDUC 183 (c) Education Research Methods and Statistics (1 course [at least 4 units]) (1) EDUC 112 or EDUC 112S, EDUC 118 (d) Elective courses (2 courses [at least 8 units]) (2) EDUC 109 or EDUC 109S, EDUC 110 or EDUC 110S, EDUC 112 or EDUC 112S, EDUC 114, EDUC 116 or EDUC 116S, EDUC 118, EDUC 122, EDUC 123, EDUC 134, EDUC 141, EDUC 142, EDUC 143, EDUC 146/ETST 146, EDUC 160, EDUC 161, EDUC 181, EDUC 182, EDUC 183, EDUC 190 A maximum of 8 units of EDUC 190 may be
taken to satisfy elective degree requirements.

3. Practicum Requirement (40 hours total)
   (b) A minimum of 40 hours of field experience or research in an education setting, satisfied in one of two ways:
   (1) Complete 40 hours of field experience or research in conjunction with one or more approved UCR courses that include a practicum. Consult the Education Student Affairs Office or Graduate School of Education Website for Undergraduate Academic Programs for a current list of approved practicum courses.
   (2) By petition to the Education Student Affairs Office for approval of verifiable hours from courses that are not on the approved practicum course list or hours from educational fieldwork that is not linked to a UCR course (e.g., tutoring experience, instructional experience in a summer program for children, etc.)

**Education Minor**

Subject abbreviation: EDUC

**Graduate School of Education**

Program Office, Sproul 1124
(951) 827-5850; education.ucr.edu

The Education minor offers to any undergraduate student an introduction to issues and practices of education and research in public schools. Students from any major are invited to pursue a minor in Education.

Students in the Education minor may select from a variety of courses that may focus on a particular interest or may sample across aspects of the curriculum. Specific areas of interest that are reflected in the course offerings include: Special education, psychology, higher education, policy and leadership, culture and language, issues of classism, racism, sexism, heterosexism, diversity and equity, social justice, curriculum and teaching strategies, qualitative and quantitative methods, and educational research.

The Education minor does not lead to a teaching credential; however, some of the courses will satisfy UCR Teacher Education Program requirements. Students who are interested in pursuing a teaching credential should contact the Teacher Education Program at (951) 827-5225.

**Program Requirements**
The Education minor consists of the satisfactory completion of 24 units in courses identified for the Education Minor Program. At least 16 units must be completed in upper division courses.

Student petitions require the approval of the program advisor in the Education minor. Students may not petition to take more than 8 units of courses outside of the identified courses for the Education minor. College approval from both the Graduate School of Education and the major college is required. Please see education.ucr.edu for the minor petition process. Minor in Education candidates must maintain a minimum cumulative GPA of 2.0

**Course Work**

Students will have the opportunity to select from a menu of electives to complete the course work:

EDUC 001, EDUC 002, EDUC 003, EDUC 004, EDUC 005, EDUC 010, EDUC 020 or EDUC 020S, EDUC 022, EDUC 030 or EDUC 030S, EDUC 040 or EDUC 040S, EDUC 041, EDUC 042, EDUC 044, EDUC 050 or EDUC 050S, EDUC 051, EDUC 100A, EDUC 100B, EDUC 104, EDUC 105, EDUC 109 or EDUC 109S, EDUC 110 or EDUC 110S, EDUC 112 or EDUC 112S, EDUC 114, EDUC 116 or EDUC 116S, EDUC 118, EDUC 122, EDUC 123, EDUC 129, EDUC 130, EDUC 131, EDUC 133, EDUC 134, EDUC 139, EDUC 141, EDUC 142, EDUC 143, EDUC 146/ETST 146, EDUC 160, EDUC 161, EDUC 181, EDUC 182, EDUC 183.

Additional courses may be added to this list by proposals of academic units, or by petitions of students to take a suitable alternative course.

**Graduate Program**

The Graduate School of Education offers three degree programs—Doctor of Philosophy, Master of Arts and Master of Education—as well as a variety of teacher credential programs. Each of these programs is described in detail below.

General university requirements, such as residence and unit requirements, are in the Graduate Studies section of this catalog. Policies and Procedures for Graduate Degree Programs may be obtained from the Graduate Programs Office.

**Admission**

Admission is based upon GPA and letters of recommendation from writers knowledgeable about the candidate’s ability to succeed in graduate study. In addition, M.A. and Ph.D. applicants must submit scores from the GRE General Test (verbal, quantitative, analytical), no more than five years old from the date of their matriculation. Ph.D. applicants must submit a writing sample. The GRE is not required of applicants seeking admission to credential programs or to the M.Ed. program. The Ph.D. program admits students in the Fall quarter only.

Admission for the doctoral degree is based on strong academic preparation at the baccalaureate level. A master’s degree in education such as that offered at UCR or a master’s degree in an ancillary field is desirable but not required. Doctoral students begin their programs in the fall quarter.

**Master of Arts**

Candidates enrolled in this program normally have completed an undergraduate major or its equivalent in a subject field other than education.

**Specialization**

Areas of specialization include Education, Society, and Culture; Educational Psychology; Research, Evaluation, Measurement and Statistics; Special Education and Autism; and School Psychology (for students working toward the Ph.D.). Only students matriculating in a Graduate School of Education Ph.D. program in School Psychology, may earn a M.A. degree in Education with specialization in School Psychology. Before the end of the first quarter, the student’s advisor develops a program plan that specifies the courses the student will take.

The M.A. with specialization in Education, Society, and Culture; Educational Psychology; or Special Education and Autism gives students the option of completing Plan I (Thesis) or Plan II (Comprehensive Examination). The specialization in Research, Evaluation, Measurement and Statistics only allows students to take Plan II (comprehensive examination option). The specialization in
Plan I (Thesis) Students complete a minimum of 36 quarter units in upper-division and graduate courses. At least 24 of these units are in graduate courses. A maximum of 12 units may be in graduate research for the thesis.

At the beginning of the second, and generally not later than the third quarter of full-time work, candidates submit a plan for the thesis to their committee. Candidates also list courses to be taken for developing competence in their area of specialization. The plan is reviewed and approved by a committee of three faculty members. The candidate submits the final thesis to the committee for approval. Upon successful completion and approval of the thesis, the student is recommended to the Graduate Division for the M.A. degree.

Plan II (Comprehensive Examination) Students must complete a minimum of 36 quarter units in upper-division and graduate courses in Education and related fields as defined in existing programs. At least 18 of the 36 units must be in graduate courses, and none in graduate research for the thesis.

A faculty member from the program area specialization is appointed by the graduate advisor to guide the candidate. A program plan must be filed with the graduate advisor by the end of the first quarter of residency. Upon or near completion of course work, the student applies to take a comprehensive written examination. Upon successful completion of the examination, the candidate is recommended to the Graduate Division for the M.A. degree.

Coursework Candidates entering the M.A. program take a series of courses based on their area of specialization.

Education, Society, and Culture

Required Courses: Students take at least five courses (20 units) from: EDUC 201A, EDUC 201B, EDUC 203, EDUC 210, EDUC 223A, EDUC 230A, EDUC 230B, EDUC 233, EDUC 238, EDUC 241B, EDUC 245E, EDUC 257, EDUC 260, EDUC 273, EDUC 275, EDUC 276, EDUC 278, EDUC 279, EDUC 284

Professional Development requirement: EDUC 259

Educational Psychology

Required Courses: EDUC 211A, EDUC 211B, EDUC 212, EDUC 240, EDUC 242A

Elective Course options – students complete at least (2) of the following courses: EDUC 200, EDUC 214B, EDUC 214C, EDUC 242B, EDUC 246I, EDUC 247, EDUC 251, EDUC 252E, EDUC 256, EDUC 262, EDUC 270

Plan I students may take up to 12 units of EDUC 299 to meet the minimum unit requirement for graduation

Professional Development requirement: EDUC 240

Research, Evaluation, Measurement, and Statistics (REMS)

Required Methodology Courses: EDUC 214A, EDUC 214B, EDUC 214C, EDUC 218, EDUC 223A, EDUC 242A

Elective Methodology – A minimum of one course from the following list of quantitative courses or from courses offered in other departments that are approved by the student’s program committee: EDUC 211A, EDUC 211B, EDUC 215A, EDUC 215B, EDUC 241B, EDUC 242B

Internship – Minimum of 5 units of EDUC 298I required.

Professional Development requirement: EDUC 298I

School Psychology

Required Methodology Courses: EDUC 214B, EDUC 214C, EDUC 215A, EDUC 217, EDUC 242B

Psychological Consultation and Intervention – required courses: EDUC 255A, EDUC 255B, EDUC 255C, EDUC 261

Psychological and Behavior Assessment – required courses: EDUC 254A, EDUC 254B, EDUC 254C

Application of Scientific Psychology – required courses: EDUC 265A, EDUC 265B, EDUC 265C

History and Systems of Psychology and Basic Content Areas in Scientific Psychology – required courses: EDUC 211A, EDUC 211B, EDUC 233 or EDUC 245G or EDUC 276, EDUC 239, EDUC 246K or EDUC 246S, EDUC 264,

Professional Development requirement: EDUC 259

Special Education and Autism

Required Course: EDUC 212

Elective Courses – Students must complete one of the following courses: EDUC 200, EDUC 246J, EDUC 246M

Additional Elective Course Options – students take at least one course from the following group according to their individualized program: EDUC 239, EDUC 242A, EDUC 242B, EDUC 246 (E-Z), EDUC 262, EDUC 270

Area elective course options – students must take at least one course from Area I and


Professional Development requirement: EDUC 259

Normative Time to Degree 6 quarters from admission to the M.A. program

Master of Education

A Master of Education (M.Ed.) degree program is offered that allows students to select from six emphases. The GRE is not required for admission to the M.Ed. program. No thesis or comprehensive examination is required. Instead, students complete an analytical project that builds on course work and links educational theory and research with the dynamics of teaching, learning, and leadership.

Applied Behavior Analysis Emphasis

This M.Ed. emphasis provides intensive instruction in the theoretical basis of Applied Behavior Analysis as well as the clinical and pedagogical application of the theory and principles. The courses are aimed at specialist educators, school psychologists, and behavioral health providers, and are designed to specifically prepare students to apply for the certification examination of the Behavior Analyst Certification Board, Inc. (BACB). The emphasis allows students to complete the requirements for the master’s degree and to apply for the certification examination of the BACB in five academic quarters.

Admission

Candidates for this program must meet the Graduate School of Education admission requirements. Detailed admission information is available at education.ucr.edu

Course Work This M.Ed. emphasis requires 68 units. Students must complete the following two undergraduate courses paired with EDUC 292: EDUC 181 and EDUC 182 and

Students must complete all courses below: EDUC 217, EDUC 235, EDUC 236A, EDUC 236B, EDUC 236C, EDUC 236D, EDUC 236E, EDUC 236F, EDUC 254C, EDUC 255A, EDUC 255C, EDUC 261, EDUC 269P

Analytical Report Students will be required to complete a portfolio project. The portfolio will consist of applied projects that have been completed as part of coursework requirements. A final version of the portfolio project will be submitted to the Applied Behavior Analysis faculty committee in the Graduate School of Education for review and approval.

Diversity and Equity Emphasis

This M.Ed. emphasis addresses the diversity in many K-12 student populations and supports teachers in achieving educational equity for all students through the translation of educational theory and empirical research findings into sound educational practice. This program consists of a minimum of 36 units of 200-series courses offered in the Graduate School of Education. The program can also be completed through a collaboration between the Graduate School of Education and University Extension by completing one of four Extension certifi-
cate programs that address issues of student diversity and equity: Reading; Reading with Bilingual Emphasis; CLAD through CTEL; or Education for the Gifted and Talented. Up to 9 units of 400-level Extension certificate courses can be used towards the minimum 36 unit total required for this degree for applicants who have completed one of the four Extension certificate programs prior to admission to this program. 

**Admission** The following are requirements:

1. Teaching credential or equivalent teaching experience
2. Strong academic record
3. Letters of reference from writers knowledgeable about the applicant's ability to succeed in graduate study

**Course Work** This M.Ed. emphasis requires a minimum of 36 units. Applicants who have completed one of four approved Extension certificate programs relevant to equity and diversity prior to admission can receive credit for up to 9 units of 400-level certificate courses. For these applicants the remaining 28 units are in 200-series courses offered in the GSOE.

**Analytical Report** Students will complete a final written project that addresses a specific concern or issue regarding diversity and educational equity in classrooms, schools, districts, or at the state or federal level. A final version of the project will be submitted to the Graduate School of Education and evaluated by faculty in the Education, Society, and Culture area.

**General Education Teaching Emphasis**

M.Ed. and California Preliminary Teaching Credential in Multiple Subjects or Single Subject

This emphasis allows qualified students to complete requirements for a California Preliminary teaching credential and a master's degree in one academic year and one summer. Prospective students must submit an application to the Graduate Division. Concurrent admission into the Multiple Subjects or Single Subject Teaching Credential program is required for this emphasis. Students not admitted to the M.Ed. degree can be considered for credential only program. Those who already possess California teaching credentials are not eligible for this program but may apply for admission to the other graduate degree programs offered by the GSOE.

**Admission** In addition to the Graduate Division admission requirements, candidates for this program must be admitted to the Multiple Subject or Single Subject Teaching Credential program.

**Course Work** This M.Ed. emphasis requires up to 72 units, 36 units are in upper division and graduate level courses; at least 18 of the 36 units must be completed in graduate level courses (Plan II). Students must successfully complete their credential requirements to earn the degree. This program requires courses that are taken during summer sessions.

**Multiple Subject Teaching Credential**

1. Required Courses: EDUC 109 or EDUC 109S, EDUC 116 or EDUC 116S, EDUC 172 or EDUC 172S, EDUC 175 or 175S, EDUC 280L, EDUC 282A, EDUC 282B
2. Three elective courses from the following list: EDUC 176*, EDUC 201B, EDUC 227, EDUC 233, EDUC 238, EDUC 245G, EDUC 246M, EDUC 257, EDUC 260, EDUC 266, EDUC 267, EDUC 269l, EDUC 273, EDUC 275, EDUC 281, EDUC 286, EDUC 288
   *EDUC 176 is for Bilingual candidates only
   Other courses may be used to complete this requirement, if approved by the Graduate Advisor.
3. Teaching Experience Courses: EDUC 332, EDUC 336A or EDUC 338A*, EDUC 336B or EDUC 338B*, EDUC 336C or EDUC 338C*; Student teachers enroll in EDUC 336 A-C series.
   *Approved intern teachers must enroll in assigned EDUC 338 sections assigned by the Teacher Credential program. For information on intern teacher eligibility requirements, visit: [http://education.ucr.edu](http://education.ucr.edu)
4. Seminar Courses: EDUC 344A, EDUC 344B, EDUC 344C
6. Analytical Project Course: EDUC 283

**Single Subject Teaching Credential**

1. Required Courses:
   a. EDUC 109 or EDUC 109S, EDUC 116 or EDUC 116S, EDUC 172 or EDUC 174, EDUC 172 or EDUC 172S, EDUC 175 or 175S, EDUC 280L
   b. One from EDUC 285 (E-Z)
2. Four elective courses from the following list: EDUC 176*, EDUC 201B, EDUC 227, EDUC 233, EDUC 238, EDUC 245G, EDUC 246M, EDUC 257, EDUC 260, EDUC 266, EDUC 267, EDUC 269l, EDUC 273, EDUC 275, EDUC 281, EDUC 286, EDUC 288
   *EDUC 176 is for Bilingual candidates only
   Other courses may be used to complete this requirement, if approved by the Graduate Advisor.
3. Supervised Teaching Experience Courses: EDUC 333, EDUC 376A or EDUC 378A*, EDUC 376B or EDUC 378B*, EDUC 376C or EDUC 378C*; Student teachers enroll in EDUC 376 A-C series.
   *Approved intern teachers must enroll in EDUC 376 section assigned by the Teacher Credential program. For information on intern teacher eligibility requirements, visit: [http://education.ucr.edu](http://education.ucr.edu)
4. Seminar Courses: EDUC 348A, EDUC 348B, EDUC 348C
5. Teaching Performance Assessment Courses: EDUC 377A, EDUC 377B, EDUC 377C
6. Analytical Project Course: EDUC 283

**Analytical Project** The analytical project centers on comprehensive, critical self-analyses of instructional practice in K-12 classrooms. A final version of the analytical project is submitted to the Graduate School of Education in electronic form for faculty committee review.

**Higher Education Administration and Policy Emphasis**

This M.Ed. emphasis examines scholarship and research on institutions, policy, systems, and demographic, historical, political, social, and economic contexts. It emphasizes reflective practice and prepares practitioners for careers in higher education institutions so that they can be knowledgeable scholars and expert professionals.

**Admission** Candidates for this program must meet the Graduate Division and Graduate School of Education admission requirements. Detailed admission information is available at education.ucr.edu

**Course Work** 36 units are required. The majority of courses are offered in the Graduate School of Education (GSOE) and focus on higher education, but program plans may substitute up to 12 units of relevant graduate level courses offered in GSOE and other departments.

**Required Course**: EDUC 248T (4 units)


**Analytical Report** After students complete their course work they will complete a case study report that integrates content from higher education courses with practice. A final version of the report is submitted to the Higher Education faculty committee in the Graduate School of Education for review and approval.

**Special Education Teaching Emphasis**

M.Ed. and California Education Specialist Credential

This degree emphasis is designed to provide a pathway to earn a California Education Specialist Mild/Moderate and Moderate/Severe disabilities teaching credential and Master of Education degree. The program goes beyond best practice by preparing students to critically evaluate the literature on current and future practices and can be completed in five quarters.

**Admission** In addition to the Graduate Division admission requirement, candidates for this program must be admitted to the Education Specialist Dual Credential program in Mild/Moderate and Moderate/Severe disabilities.

**Course Work** The M.Ed. portion of the Special Education emphasis requires 36 units (at least 24 of which must be graduate level courses). Students must successfully complete their
credential requirements to earn the degree.

1. Credential courses applicable to the M.Ed.
   a) The following courses, required for teaching certification and can be applied to the master's degree if the courses were not applied to a previous degree: EDUC 116 or EDUC 116S, EDUC 133, EDUC 175 or EDUC 175S

California Education Specialist Dual Credential

Mild/Moderate and Moderate/Severe: Student Teaching Only


2. Three elective courses from: EDUC 239, EDUC 240, EDUC 245G, EDUC 246 (E-Z), EDUC 255B, EDUC 262, EDUC 269S, EDUC 270

Other courses may be used to complete this requirement, if approved by the Graduate Advisor.

3. Analytical Project
   Analytical Project Students will complete a final written project that integrates the content of theory and teaching methods courses. A final version of the report will be submitted to the Graduate School of Education and evaluated by faculty in the Special Education area.

Teaching English to Speakers of Other Languages (TESOL)

This M.Ed. emphasis is a partnership between the Graduate School of Education and University Extension. Students will enrich their understanding of the linguistics and TESOL methods covered in the University Extension TESOL certificate program with GSOE courses that address theory, research, and best practices related to socio-cultural factors and individual differences that can affect teaching and learning of English as a second language.

Admission In addition to the Graduate Division and Graduate School of Education admission requirements, candidates for this program must be admitted to or have completed the UCR Extension TESOL Certificate program. Applicants who have earned TESOL certification from other recognized university programs may be considered for admission to this M.Ed. program.

International applicants must demonstrate English proficiency by meeting the current Graduate Division and Extension TESOL certificate English proficiency test minimum scores. Writing samples and oral conversations might also be included in the evaluation of English proficiency.

Course Work A total of 36-quarter units, including a minimum of 20 units of approved 200-level coursework in the Graduate School of Education, are required. A maximum of 8 units of approved upper division 100-level courses in the Graduate School of Education can be applied to the M.Ed. requirements. Programs may include other courses in GSOE or other campus departments if approved by the student's faculty advisor and the GSOE Graduate Advisor.

Student programs will include courses from the list of 200-level coursework: EDUC 200, EDUC 201B, EDUC 233, EDUC 238, EDUC 245E, EDUC 245G, EDUC 246M, EDUC 246N, EDUC 247, EDUC 257, EDUC 260, EDUC 262, EDUC 266, EDUC 269I, EDUC 270, EDUC 276, EDUC 277, EDUC 280L, EDUC 281, EDUC 283, EDUC 290

Up to eight units of coursework from a UCR Extension TESOL certificate program, approved by the Graduate Advisor, may be applied to the M.Ed. The UCR TESOL certificate must be completed before the M.Ed. can be awarded.

Analytical Report Students are required to complete a final analytical report involving the analysis and integration of theory, research, and teaching methods content in the TESOL M.Ed. curriculum. The report will be evaluated by faculty in the Graduate School of Education.

Doctoral Degree

The doctoral program in Education is designed to prepare scholars for teaching and research in the area of education. More information about graduate programs in Education is available by contacting the graduate advisor, Graduate School of Education, (951) 827-6362, or visit education.ucr.edu.

Specialization The Graduate School of Education has six areas of specialization: Education, Society, and Culture; Education Policy Analysis and Leadership; Educational Psychology; Higher Education Administration and Policy; School Psychology; and Special Education. The School Psychology Program is accredited by the American Psychological Association (APA) and approved by the National Association of School Psychologists (NASP). School Psychology Ph.D. students can also obtain a Pupil Personnel Services Credential.

Information about each area of specialization is available at education.ucr.edu.

Following admission to the program, students are assigned a preliminary faculty advisor who guides them during the initial phase of their program. Students work closely with a faculty advisor during their doctoral program. In addition, three faculty committees - a program guidance committee, an oral qualifying examination committee, and a dissertation committee - may be formed at various stages of the program.

Course Work Candidates entering the Ph.D. program take a series of courses based on their area of specialization. Number of units vary by specialization. The student and his or her program guidance committee identify and document a program plan. Coursework in each specialization consists of sufficient study to allow the student to master the essential concepts and inquiry methods of that field.

Education, Society, and Culture

Required core and methods courses: EDUC 214A, EDUC 223A, EDUC 223B, EDUC 241B

Theory - complete a minimum of two (2) courses from: EDUC 220A, EDUC 220B, EDUC 230A, EDUC 230B, EDUC 273, EDUC 277, EDUC 278, EDUC 284, EDUC 289

Electives - complete a minimum of five (5) courses from the following list: EDUC 201A, EDUC 201B, EDUC 203, EDUC 210, EDUC 233, EDUC 238, EDUC 245E, EDUC 249, EDUC 257, EDUC 260, EDUC 266, EDUC 274, EDUC 275, EDUC 276, EDUC 277, EDUC 279, EDUC 284

Professional Courses: EDUC 259, EDUC 302

Education Policy Analysis and Leadership

Required Courses

Core Foundation: EDUC 209A, EDUC 210,
Core Methodology: EDUC 214A, EDUC 241B

Research Methodology - A student selects the Quantitative Methods or the Qualitative Methods strand:

Quantitative Methods Strand – two (2) courses: EDUC 214B, EDUC 214C

Qualitative Methods Strand – two (2) courses: EDUC 223A, EDUC 223B

Special Policy Topics - minimum of sixteen (16) units or four (4) courses from: EDUC 205, EDUC 218, EDUC 245G, EDUC 245J, EDUC 269M

Social Science and Methods Electives: Minimum of eight (8) units or two (2) courses in Economics, Sociology, Social Psychology, Political Science, History, or other social science. Students may also substitute in one advanced research methods courses. Courses must be approved by student's advisory committee.

Professional Courses: EDUC 259, EDUC 302

Educational Psychology This area of specialization offers two tracks - Cognition, Motivation and Student Learning; and Quantitative Methods. Students choose one track in consultation with faculty advisor. The required, electives, and research application courses must be taken by students in both tracks. Additional courses are taken based on selected track. Directed research courses culminating in a research article must be taken by both tracks.


Students choose Track 1 or Track 2 coursework in consultation with faculty advisor:
Track 1 - Cognition, Motivation, and Student Learning – minimum of three (3) courses from: EDUC 200, EDUC 232, EDUC 233, EDUC 239, EDUC 247, EDUC 251, EDUC 252E, EDUC 252G, EDUC 252N, EDUC 262, EDUC 270

Track 2 - Quantitative Methods – minimum of three (3) courses from: EDUC 215B, EDUC 215C, EDUC 215D, EDUC 269E

Elective Courses - minimum of five (5) courses completed as electives; three (3) courses required from: EDUC 215B, EDUC 215E, EDUC 215F, EDUC 217, EDUC 218, EDUC 223A, EDUC 223B, EDUC 252E, EDUC 252G, EDUC 252N, EDUC 269E

Two (2) of the five (5) courses may be taken from another campus department in consultation with advisor.

Research Applications - one (1) course required from: EDUC 251, EDUC 252 (E-Z)

Directed Research: EDUC 297 - A student will engage in pre-dissertation research with at least one faculty member. Directed research lasts three quarters, minimum of 3 units each quarter, resulting in a research article submitted for presentation or publication.

Professional Courses: EDUC 259, EDUC 302

Higher Education Administration and Policy

Research Methodology – In consultation with the faculty advisor, a student selects the Quantitative or the Qualitative Methods Strand to complete, plus one course from the strand they did not select.

Quantitative Methods Strand - three (3) courses:
EDUC 214B, EDUC 214C, EDUC 215A
and
One course from:
EDUC 241B, EDUC 223A, EDUC 223B

Qualitative Methods Strand - three (3) courses:
EDUC 241B, EDUC 223A, EDUC 223B
and
One course from:
EDUC 214B, EDUC 214C, EDUC 215A

Higher Education required core courses:

Specialization and Elective Courses - two (2) or more courses: EDUC 248E, EDUC 248G, EDUC 248M, EDUC 248Q, EDUC 248R, EDUC 248S

Professional Courses: EDUC 259, EDUC 302

Psychological and Behavior Assessment – required courses: EDUC 254A, EDUC 254B, EDUC 254C


History and Systems of Psychology and Basic Content Areas in Scientific Psychology – required courses: EDUC 211A, EDUC 211B, EDUC 233 or EDUC 245G or EDUC 276, EDUC 239, EDUC 246K, EDUC 246S, EDUC 256, EDUC 263, EDUC 264, EDUC 269

Professional Courses: EDUC 259, EDUC 302

Special Education

Required Courses: EDUC 211A, EDUC 211B, EDUC 214A, EDUC 214B, EDUC 214C, EDUC 214B, EDUC 246K or EDUC 246L, EDUC 246I or EDUC 256, EDUC 255B

Elective Courses - students must take at least one (1) course in each of the two elective areas:

Area I – Autism Spectrum Disorder and other Cognitive, Behavioral, Emotional Disabilities: EDUC 239, EDUC 246K, EDUC 246L, EDUC 246N, EDUC 254C, EDUC 255A

Area II – Learning Disabilities: EDUC 246I, EDUC 246S, EDUC 256

Specialization Courses: A student will take a minimum of three (3) additional graduate level courses from GSL or other academic departments in consultation with their faculty advisor.

Professional Courses: EDUC 259, EDUC 302

Written Qualifying Examination Near completion of the second year of study or after 60 units of graduate level course work, students take the written qualifying examination. The student’s faculty advisor, in consultation with faculty associated with the student’s area of specialization, coordinates the construction of the written examination. Students must

1. Review critical literature in an assigned field
2. Demonstrate competence in research methodologies, and
3. Demonstrate competence over content in fields of specialization.

The faculty associated with the student’s area of specialization evaluate the written qualifying examination to determine the outcome. In the event students do not pass one or more sections, they will have one more opportunity to pass to continue in the program.

Pre-proposal: Following the successful completion of the written examination and before the oral qualifying examination, the Graduate Dean approves an oral qualifying committee nominated by the program. The committee consists of the student’s faculty advisor, three additional faculty members from the Graduate School of Education, and one faculty member from outside the school. In preparation for the oral qualifying examination, students develop a pre-proposal, setting forth the direction of their dissertation. Once the faculty advisor determines that the pre-proposal is ready for the oral examination, it is distributed to the oral qualifying committee. The committee uses the pre-proposal as a focus for examining the student, but the questioning may go beyond the pre-proposal. Students pass the oral qualifying examination when the committee is satisfied that 1) the pre-proposal, as well as the student's grasp of the theoretical and empirical issues at its core, leads in a productive direction toward a competent dissertation, and 2) the student has demonstrated competence in areas covered by the written examination that are also addressed in the oral examination.

Proposal: Prior to commencing the dissertation research, students must have a dissertation proposal approved by the dissertation committee.

Teaching Requirement: EDUC 302 is taken for a minimum of one quarter. Units are determined by supervising course instructor.

Foreign Language Requirement: None

Dissertation: Following the approval of the dissertation proposal, students will complete a dissertation and schedule an oral defense with the approval of the committee chair. The dissertation must be approved by the dissertation committee and submitted to the Graduate Division before the candidate is recommended for the degree.

Professional Development Requirement: All students must enroll in EDUC 259.

Normative Time to Degree: 15 quarters from admission to the Ph.D. program.

Credentialed Programs: The Graduate School of Education offers teaching credential programs, and a credential for school psychologists. These programs are accredited by the California Teaching Commission.

Admission to GSL: credential programs are based upon GPA and letters of recommendation from individuals knowledgeable about the candidate’s ability to succeed in professional study. Most programs also require an interview. Admission to the teaching credential programs also requires candidates to pass exams in basic skills and subject matter. Course prerequisites depend on the intended program. More information regarding the prerequisites is available on the Prepare to Teach flyer. Admission information and deadlines are available at education.ucr.edu. Contact GSL at (951) 827-5225 or at creded@ucr.edu. Information can also be obtained at the GSL Student Services Office, 1124 Sproul Hall.
Programs for the Preparation of Teachers

Post baccalaureate Teaching Credential Programs

The Graduate School of Education offers credential programs that result in teacher certification and do not require admission to a master degree program. The following programs are offered:

- **Multiple Subjects** Generally for the elementary setting. A bilingual emphasis in Spanish is available to qualified candidates who want to be authorized to deliver instruction in Spanish as well as English.
- **Single Subject** Generally for the middle school or high school setting. GSOE offers the following single subject areas: English, Languages Other than English, Mathematics, Sciences, and Social Science.
- **Education Specialist** For those who want to be special education teachers. GSOE offers the following specializations: Mild/Moderate and/or Moderate/Severe Disabilities.

All credential programs offer the option of student or intern teaching. The intern option requires candidates to have some teaching experience (e.g., substitute teaching or instructional aids) and completion of pre-service requirements prior to admission.

Combined teacher credential programs with a Master of Education degree (M.Ed.) are described in the Master of Education section.

**Lower-Division Courses**

**EDUC 001 Imagining Teaching** (2) Lecture, 2 hours. Prerequisite(s): none. Considers images of teaching produced in popular culture, professional writing, and personal recollections, and how the images impact and reflect teaching in schools. Designed for lower-division students considering teaching as a career. Credit is awarded for only one of EDUC 001 or EDUC 003.

**EDUC 002 Looking in Classrooms** (3) Lecture, 2 hours; field, 3 hours. Prerequisite(s): EDUC 001 or EDUC 003. Involves observation in classrooms in local schools identified as having exemplary programs. Students record and interpret their observations and compare them to published studies of classrooms. Designed for lower-division students who plan to teach mathematics or science in the public schools. Credit is awarded for only one of EDUC 002 or EDUC 004.

**EDUC 005S Introduction to Education Studies** (4) Lecture, 3 hours; discussion, 1 hour. An overview of the field of education and learning inside and outside of the classroom. Ideology and policy and a critical perspective on the ideological and social construction of schools in the U.S. Interprets of learning conditions through student observations and experiences in varied educational and learning contexts.

**EDUC 010 Principles of Learning Strategies** (4) Lecture, 3 hours; discussion, 1 hour. Introduces attitudes and behaviors associated with successful learning and achievement. Compares research-based learning strategies in school, home, and multimedia with regard to different types of learners and topic areas.

**EDUC 020 Introduction to Education Policy** (4) Lecture, 3 hours; term paper, 3 hours. An overview of federal and state policy frameworks governing public education. Explores the political dynamics of policy making. Focuses on centralized policy making authority and on efforts to reform and improve public schools. Explores competing values guiding policy debates and dilemmas of centralized policy control. Credit is awarded for only one of EDUC 020 or EDUC 020S.

**EDUC 020S Introduction to Education Policy** (4) Lecture, 3 hours; discussion, 1 hour. An overview of federal and state policy frameworks governing public education. Explores the political dynamics of policy making. Focuses on centralized policy making authority and on efforts to reform and improve public schools. Explores competing values guiding policy debates and dilemmas of centralized policy control. Credit is awarded for only one of EDUC 020 or EDUC 020S.

**EDUC 022 Sports, Youth, and Learning** (4) Lecture, 3 hours; discussion, 1 hour. Introduces how sport plays a crucial role in educating people about society, social norms, values, and culture. We will examine the structure and operation of sports in communities and schools for youth K-12. Particular attention to the processes of stratification, socialization, legitimation, and social organization.

**EDUC 030R Racial Gaps in Educational Opportunity and Achievement** (4) Lecture, 3 hours; outside research, 3 hours. Examines existing theories, research, and policies addressing disparities in educational opportunities and achievement among racial/ethnic, social class, and language groups—a problem now contentiously designated as the "achievement gap." Explores the incidence, consequences, and causes of these gaps and society's interest in eliminating the gaps. Credit is only awarded for EDUC 030 or EDUC 030S.

**EDUC 030S Racial Gaps in Educational Opportunity and Achievement** (4) Lecture, 3 hours; discussion, 1 hour. Examines existing theories, research, and policies addressing disparities in educational opportunities and achievement among racial/ethnic, social class, and language groups—a problem now contentiously designated as the "achievement gap." Explores the incidence, consequences, and causes of these gaps and society's interest in eliminating the gaps. Credit is awarded for only one of EDUC 030 or EDUC 030S.

**EDUC 040 Education, Society and Culture** (4) Lecture, 3 hours; individual study, 3 hours. Introduces the history and philosophy of public education in the United States. Focuses on the political economy, dominant ideologies, and existing educational practices that have preceded in various historical eras. Explores the history of education of girls and women, people of color, minority groups, and people of varying socioeconomic classes. Credit is awarded for only one of EDUC 040 or EDUC 040S.

**EDUC 040S Education, Society and Culture** (4) Lecture, 3 hours; discussion, 1 hour. Introduces the history and philosophy of public education in the United States. Focuses on the political economy, dominant ideologies, and existing educational practices that have precedents in various historical eras. Explores the history of education of girls and women, people of color, minority groups, and people of varying socioeconomic classes. Credit is awarded for only one of EDUC 040 or EDUC 040S.

**EDUC 041 Culture, Power, and School Knowledge** (4) Lecture, 3 hours; discussion, 1 hour. Explores school knowledge as the product of struggles over cultural power and social legitimacy. Provides conceptual tools for developing critical understandings of school knowledge, reviews research addressing the representation, inclusion, and exclusion of diverse groups in school curriculum, and examines public controversies over school curriculum.

**EDUC 042 Education for Critical Consciousness** (4) Lecture, 3 hours; discussion, 1 hour. Introduces critical consciousness from an interdisciplinary perspective as it relates to the role of education in schools and society. Critiques various conventional approaches in education while exploring various transformative approaches, particularly for the purposes of developing critically conscious educators who work for educational equity and transformation in education.

**EDUC 044 Principles of Healthful Living** (4) Lecture, 3 hours; outside research, 3 hours. Introduction to personal, family, and community health. Discusses the attitudes and behaviors associated with healthful living and the use of health-related scientific information. Explores the effects of alcohol, dangerous drugs, narcotics, degenerative and infectious diseases, and tobacco on the human body and the community resources available to assist in their treatment.

**EDUC 050 Intercollegiate Athletics and American Higher Education** (4) Lecture, 3 hours; discussion, 1 hour. Introduces intercollegiate athletics as an organization including its structure and function. Explores the role of intercollegiate athletics in higher education from historical, sociological, economic, and administrative perspectives. Focuses on contemporary issues including student-athlete experience as well as the roles of faculty, students, coaches, and administrators and the various emerging challenges.

**EDUC 051 Introduction to Higher Education: Current Issues and Debates** (4) Lecture, 3 hours; discussion, 1 hour. Introduces students to critical issues confronting contemporary United States higher education. It focuses on three major themes: debates over the purpose of higher education; the context and main challenges institutions and students currently face; and how the current environment is likely to shape the future of higher education.

**EDUC 060 Development of Performance Excellence** (4) Lecture, 3 hours; discussion, 1 hour. An overview of current issues in the field of performance psychology. Focuses on theoretical issues in the field of excellence and applied information gathered from interviews with performance experts that explore the mental strategies used by elite performers that contributes to the attainment of performance excellence across a variety of domains.

**Upper-Division Courses**

**EDUC 100A Tutorial Teaching: Community Outreach** (2) Lecture, 5 hours per quarter; field, 3 hours. Prerequisite(s): admission to the California Teach program; consent of instructor. Considers images of teaching produced in popular culture, professional writing, and personal recollections, and how the images impact and reflect teaching in schools. Addresses topics related to teaching mathematics and science in the K-12 classroom. Includes 3 hours per week of participation and observation in public school classrooms. Designed for lower-division students who plan to teach mathematics or science in the public schools. Credit is awarded for only one of EDUC 001 or EDUC 003.

**EDUC 100B Tutorial Teaching: Professional Development** (2) Lecture, 5 hours per quarter; field, 3 hours; outside research, 15 hours per quarter. Prerequisite(s): upper-division standing. Motivation and teaching of children and adolescents in a tutorial setting in a school or other appropriate community educational center. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

**EDUC 100A Tutorial Teaching: Community Outreach** (2) Lecture, 5 hours per quarter; field, 3 hours. Prerequisite(s): admission to the California Teach program; consent of instructor. Considers images of teaching produced in popular culture, professional writing, and personal recollections, and how the images impact and reflect teaching in schools. Addresses topics related to teaching mathematics and science in the K-12 classroom. Includes 3 hours per week of participation and observation in public school classrooms. Designed for lower-division students who plan to teach mathematics or science in the public schools. Credit is awarded for only one of EDUC 001 or EDUC 003.
outside research, 15 hours per quarter. Prerequisite(s): upper-division standing, consent of instructor. Guided and sequenced tutorial experiences with children and adolescents enrolled in local schools having cooperative agreements with the University. Provides experience in one-on-one teaching and supports the professional development of students planning to teach. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

EDUC 101 Academic Disciplines and Professional Education (1) Lecture, 1 hour. Prerequisite(s): upper-division standing. An introductory study of how academic disciplines relate to pedagogy. Includes developing a personal educational philosophy, discovering ways to communicate knowledge, and reflecting on how a scholar becomes a teacher. Designed for undergraduates considering education as a professional career. Graded Satisfactory (S) or No Credit (NC).

EDUC 102 Democratic Pedagogy: Developing R/Courses (1) Workshop, 1 hour. Prerequisite(s): sophomore, junior or senior standing. Designed to support the R/Course process of student-facilitated, shared, active learning by providing a space for student facilitators to discuss pedagogical theory and prepare meaningful resources to put into practice. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units as topics change.

EDUC 104 Mathematics Education (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): sophomore, junior, or senior standing. Designed to support the R/Course process of student-facilitated, shared, active learning by providing a space for student facilitators to discuss pedagogical theory and prepare meaningful resources to put into practice. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units as topics change.

EDUC 105 Introduction to Science Pedagogy (4) Lecture, 3 hours; field, 3 hours. Prerequisite(s): sophomore, junior, or senior standing. Introduces current instructional strategies relating to mathematics education. Includes thinking skills and problem solving strategies applicable to number theory, logic patterns and functions, statistics, probability, and geometry and algebra.

EDUC 109 Education in a Diverse Society (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): professional or upper-division standing. An analysis of the classroom as a microcosm of society. Focuses on issues related to the educational needs of students with diverse backgrounds and characteristics including gender, religion, ability, ethnicity, culture, socioeconomic status, class, exceptionality and language. Credit is awarded for only one of EDUC 109 or EDUC 109S.

EDUC 109S Education in a Diverse Society (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): professional or upper-division standing. An analysis of the classroom as a microcosm of society. Focuses on issues related to the educational needs of students with diverse backgrounds and characteristics including gender, religion, ability, ethnicity, culture, socioeconomic status, class, exceptionality and language. Credit is awarded for only one of EDUC 109 or EDUC 109S.

EDUC 110 Learning Theory and Psychology in Education (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): professional or upper-division standing. Covers the study of stages of intellectual development; principles of learning; the dynamics of human behavior; learner and cultural differences as they relate to modern curricula and instruction; and the role of motivation and self-concept in the learning process. Credit is awarded for only one of EDUC 110 or EDUC 110S.

EDUC 112S Understanding Assessment in Education (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces principles of educational assessment including reliability and validity to help interpret test-based information in educational settings. Credit is awarded for only one of EDUC 112 or EDUC 112S.

EDUC 114 Comparative International Education (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces principles of educational assessment including reliability and validity to help interpret test-based information in educational settings. Credit is awarded for only one of EDUC 112 or EDUC 112S.

EDUC 116 The Exceptional Child (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): professional or upper-division standing. Explores characteristics of individuals with physical and mental disabilities. Includes emotional disturbance, visual or hearing impairments, gifted and talented students, and children with characteristics of autism. Emphasizes educational programs and considers the effect of gender, socioeconomic, ethnic, and linguistic factors. Credit is awarded for only one of EDUC 116 or EDUC 116S.

EDUC 116S The Exceptional Child (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): professional or upper-division standing. Explores characteristics of individuals with physical and mental disabilities. Includes emotional disturbance, visual or hearing impairments, gifted and talented students, and children with characteristics of autism. Emphasizes educational programs and considers the effect of gender, socioeconomic, ethnic, and linguistic factors. Credit is awarded for only one of EDUC 116 or EDUC 116S.

EDUC 117 Educational Statistics (4) Lecture, 3 hours; laboratory, 2 hours; term paper, 1 hour. Prerequisite(s): MATH 004 or MATH 005 or MATH 006A with a grade of C- or better. Covers descriptive and inferential statistics; component measures; central tendency, variation, and correlation. Discusses sampling distributions, statistical hypothesis testing, and experimental design. Special consideration of unique features of educational studies, including nested designs and random assignment at the individual and group level.

EDUC 118 Educational Research Methods (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the basics of research methods as applied to inquiry in the field of education. Explores methods of data collection and analysis of student assessment data.

EDUC 120 Guidance in Special Education (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): EDUC 116 or EDUC 116S or consent of instructor. Application of principles and techniques of counseling children with disabilities and their families or guardians. Emphasizes the role of the teacher in educational, personal, and vocational (transition) guidance for exceptional children. Includes materials for working with families from diverse cultural and linguistic backgrounds.

EDUC 122 Education, Digital Media, and Democratic Engagement (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines studies of youth civic and political engagement and how such engagement is changing in the digital age. Learns about and evaluates varied ways educators can support more, more equitable, and effective democratic engagement in the digital age.

EDUC 123 Teacher and School Effects on Achievement (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or successful completion of one or more introductory course(s) of EDUC 001, EDUC 002, EDUC 003, EDUC 030S, EDUC 030, EDUC 040, EDUC 040S, or EDUC 050. Introduction to the research literature on teacher and school factors that impact student achievement and educational equity. Dozens of factors are covered and an effort is made to gauge the relative effect of each.

EDUC 129 Educational Assessment of Individuals with Disabilities (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 116 or EDUC 116S or consent of instructor. This course teaches the principles and techniques of assessment and educational planning for children with disabilities. Examines the value and usefulness of a broad range of assessment and record-keeping tools in general and special education.

EDUC 130 Mild and Moderate Disabilities (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): EDUC 116 or EDUC 116S or consent of instructor. Explores characteristics, etiology, and identification of individuals with mild and moderate disabilities, history and laws influencing their treatment and education, and current education and transition issues. Includes mild and moderate retardation, learning disabilities, and emotional and behavioral disorders.

EDUC 131 Moderate and Severe Disabilities (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): EDUC 116 or EDUC 116S or consent of instructor. Explores characteristics, etiology, and identification of individuals with moderate and severe disabilities, history and laws influencing their treatment and education, and current education and transition issues. Includes mental retardation, serious emotional disturbance, and autism.

EDUC 133 Issues and Trends in Special Education (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): EDUC 116 or EDUC 116S. Covers characteristics, etiology, and identification of students with disabilities. Includes history and laws influencing treatment, education, and transition to adulthood; issues related to labeling, eligibility, and program placement; changes in educational interventions based on research and law; services to pre-school age children and their families; and trends in instructional approaches. Satisfactory (S) or No Credit (NC) grading is not available.

EDUC 134 Abnormal Psychology for Educators (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A study of abnormal psychology for educators. Topics include: how psychologists diagnose a variety of disorders in school-aged children, how to support these students in the classroom, and potential difficulties that may be faced in the classroom or educational setting.

EDUC 139 Curriculum and Instruction (4) Lecture, 3 hours; laboratory, 2 hours; outside research, 1 hour. Prerequisite(s): upper-division standing. The study of modern curricula in the elementary and secondary schools, including the effects of performance objectives, diagnostic-prescriptive teaching, individualized instruction, lesson planning, and performance assessment. Content analysis of curriculum areas will be emphasized.

EDUC 141 Historical and Contemporary Perspectives on Lesbian, Gay, Bisexual, Transgender, and Queer
Students and Faculty (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor or successful completion of one or more introductory course(s) of EDUC 001, EDUC 002, EDUC 020, EDUC 020S, EDUC 030, EDUC 030S, EDUC 040, EDUC 040S, or EDUC 044, or EDUC 050. Examines historical and cultural meanings of homosexuality, heterosexuality, sex, and gender. Explores the historical experiences of LGBTQ students, teachers, and faculty from the late 20th century to the present. Explores current issues regarding LGBTQ students and teachers, including the California requirement to incorporate LGBTQs into the K-12 curriculum.

EDUC 142 Language and Society (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): sophomore standing or better or consent of instructor or instructor or successful completion of one or more introductory course(s) of EDUC 001, EDUC 002, EDUC 020, EDUC 020S, EDUC 030, EDUC 030S, EDUC 040, EDUC 040S, or EDUC 044, or EDUC 050. Discusses the relationships between language and cultural values; the intersection between language and social structure; the ways in which power relationships are reflected, reinforced and resists by language practices; and how language is used to construct social identities.

EDUC 143 Ethnic Studies in K-12 Contexts (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): sophomore (junior or senior) standing. Examines a brief historical genealogy of Ethnic Studies as a field of study, provides options to the broad content and pedagogical knowledge of Ethnic Studies approaches in K-12 school settings and reviews the existing empirical research of the inclusion of Ethnic Studies literacies and pedagogies in U.S. public schools.

EDUC 146 Educational Perspectives on the Chicanos (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): consent of instructor. An examination of educational policy issues concerning Chicano students, such as testing and testing procedures, learning styles, socialization, and language acquisition. Other topics will deal with the impact of significant legislative acts related to the education of Chicanos. Cross-listed with ETST 146.

EDUC 160 Cognitive Development and Education (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or successful completion of one or more introductory course(s) of EDUC 001, EDUC 002, EDUC 020, EDUC 020S, EDUC 030, EDUC 030S, EDUC 040, EDUC 040S, or EDUC 050. Provides an overview of the major themes of cognitive development within the educational context. Major topics include the development of memory, abilities, motivation, language, and math skills. Explores the use of cognitive developmental changes within a variety of educational contexts.

EDUC 161 Social Development in Education (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or successful completion of one or more introductory course(s) of EDUC 001, EDUC 002, EDUC 020, EDUC 020S, EDUC 030, EDUC 030S, EDUC 040, EDUC 040S, or EDUC 050. Discusses the processes involved in the development of social behaviors from birth to young adulthood. Discussion of issues concerning attachment, family systems, peer relationships, aggression, prosocial behavior and self-concept within the educational context. Theories and scientific research are presented in a context of practical application.

EDUC 172 Reading and Language Development (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): professional or upper-division standing. An introduction to reading and language development. Addresses theoretical models of reading; linguistics and language development; methods and materials; children’s and adolescents’ literature; reading in the content areas; individual differences; and measurement and evaluation in reading. Includes observation and participation in assigned schools. Credit is awarded for only one of EDUC 172 or EDUC 172S.

EDUC 172S Reading and Language Development (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): professional or upper-division standing. An introduction to reading and language development. Addresses theoretical models of reading; linguistics and language development; methods and materials; children’s and adolescents’ literature; reading in the content area; individual differences; and measurement and evaluation in reading. Includes observation and participation in assigned schools. Credit is awarded for only one of EDUC 172 or EDUC 172S.

EDUC 173 Teaching Literature to Children and Adolescents (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing. Explores developmental methods appropriate for teaching literature to children and adolescents. Topics include story telling, story reading, pictorialization, dramatizations and body movement, and narrative, poetic, and dramatic writing. Examines literature written for children and adolescents and adult fiction appropriate for children and adolescents.

EDUC 174 Reading and Writing in the Content Areas (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): professional or upper-division standing. An examination of reading, writing, academic language, and English language development strategies for teaching at the middle and high school levels. Covers all areas of the curriculum. Includes observation and participation in public schools. Credit is awarded for only one of EDUC 174 or EDUC 174S.

EDUC 174S Reading and Writing in the Content Areas (4) Lecture, 3 hours; discussion, 1-1.5 hours. Prerequisite(s): professional or upper-division standing. An examination of reading, writing, academic language, and English language development strategies for teaching at the middle and high school levels. Covers all areas of the curriculum. Includes observation and participation in public schools. Credit is awarded for only one of EDUC 174 or EDUC 174S.

EDUC 175 Language Development in Content Areas (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): professional or upper-division standing. Examines materials, teaching strategies and remedial approaches designed to enhance reading skills and promote English language development of students experiencing differences in memory, language, reading, and language skills. Content area literacy and academic language for special needs population. Focuses on assessments and interventions used in both specialized and general education settings. Credit is awarded for only one of EDUC 175 or EDUC 175S.

EDUC 175S Language Development in Content Areas (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): professional or upper-division standing. Examines materials, teaching strategies and remedial approaches designed to enhance reading skills and promote English language development of students experiencing differences in memory, language, reading, and language skills. Content area literacy and academic language for special needs population. Focuses on assessments and interventions used in both specialized and general education settings. Credit is awarded for only one of EDUC 175 or EDUC 175S.

EDUC 176 Language Development in Content Areas (3) Lecture, 2 hours, field, 2 hours; outside research, 1 hour. Prerequisite(s): EDUC 175 or EDUC 175S. Analysis, planning, execution, and evaluation of empirical and theoretical foundations of programs and strategies for English as a second language instruction and English language development in content area instruction. Includes observation and participation in assigned schools. Satisfactory (S) or No Credit (NC) grading is not available.

EDUC 181 Introduction to Applied Behavior Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the foundational knowledge and skills in Applied Behavior Analysis. Topics will include philosophical assumptions to behavior analysis and the key concepts of behavioral theory as defined as how an organism interacts with the environment and how this applies to academic, social and emotion- al development will be discussed.

EDUC 182 Behavioral Interventions in the Schools (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to applying behavioral theory to interventions for K-12 populations. Topics will include operant and classical condition and best practices in selecting and implementing behavioral interventions. Students will learn to implement the strategies learned through a personal behavior modification assignment.

EDUC 183 Psychology in the Schools (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines psychological phenomena in schools including the interplay between students, teachers, and schools; the work of school psychologists and other school-based professionals; and special topics such as exceptional children, bullying, crisis intervention, and school violence prevention.

EDUC 190 Special Studies (1-5) Outside research, 3-15 hours. Prerequisite(s): upper-division standing; consent of the Dean of the Graduate School of Education. Independent study and research in education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

EDUC 198 R’Course: Variable Topics (1) Activity, 3 hours. Prerequisite(s): permission needed from department, sophomore standing or better. An opportunity for UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 8 units.

Graduate Courses

EDUC 200 Human Differences (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): EDUC 112 or equivalent. Covers dimensions of individual differences, varieties of group differences, and factors producing differences in development.

EDUC 201A Research in Reading and Writing (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A critical evaluation of linguistic, cognitive, social, and cultural aspects of reading and writing, as gleaned from research, and reading and writing research methods.

EDUC 202 Theories of Education (4) Lecture, 3 hours. Prerequisite(s): consent of instructor. An analysis of the principal contemporary theories affecting the development of educational policy.

EDUC 203 History of American Education (4) Lecture, 3 hours. Prerequisite(s): consent of instructor. A study of American educational history from 1830 to the present.
EDUC 204 The School as a Social System (4) Lecture, 3 hours. A study of intra-school relationships; administra-
tion, professional bureaucracy, faculty and student relations. The classroom itself will be examined as a social-psychological system.

EDUC 205 Economics of Education (4) Seminar, 3 hours; activity, 3 hours. Prerequisite(s): EDUC 214B or equivalent; consent of instructor. Examines the insights economists have brought to the education policy debate. Covers basic microeconomic theory and its application to private and social returns to education, education production, costs, and financing of education, teachers and teacher labor markets, and education markets, school choice, and incentives.

EDUC 206A Politics of Education: Local School District (4) Lecture, 3 hours. Examination of political power, representation, influence, decision-making and inter-governmental relations in the public schools.

EDUC 206B Advanced Seminar on Federal and State Policy (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 207 or EDUC 209A or EDUC 209B or consent of instructor. Examines state and federal roles in education policy in K-12 education. Focuses on the role of federal and state policy in defining governance and teaching and learning in schools.

EDUC 207 Educational Policy (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines twentieth-century debates on policy reform and related issues underlying school reform and the social, political, and economic forces that shape these issues. Also examines state and local strategies to enhance school performance.

EDUC 208 Legislative Action and Educational Policy (4) Lecture, 4 hours. Examination of the legal processes governing educational policy, including significant laws, legal principles, recent litigation, controlling relationships of schools to student and teacher rights and duties, administrative behavior, etc. Focuses on connections between legislative and judicial action and the social, political and economic forces affecting education.

EDUC 209A Education Policy Analysis (4) Lecture, 3 hours. Prerequisite(s): consent of instructor. Theoretical and methodological foundations for education policy analysis. Focuses on theory building—utilizing frameworks from political science, sociology, social psychology, and history.

EDUC 209B Education Policy Analysis (4) Lecture, 3 hours. Prerequisite(s): consent of instructor. Theoretical and methodological foundations for education policy analysis. Examines conceptualization of variables and the formulation and testing of hypotheses regarding policy formation and effects.

EDUC 210 Sociology of Education (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. Introduces students to key sociological theories and empirical research on schooling and social inequality. Special emphasis on the socialization into the educational system, the process of schooling, and the socialization of students to the schools.

EDUC 211A Cognitive Development (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Survey of research on cognitive development. Special emphasis on the acquisition of concepts, language, and learning in early childhood.

EDUC 211B Social Development (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys social development during childhood and adolescence. Topics include individuality and self, peer relations, adult-child relations, self-system beliefs and attitudes, and achievement motivation. Special attention is paid to issues as they relate to socialization at school.

EDUC 212 Research Methods (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 214A Introduction to Quantitative Methods (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 241A; first-year standing in the Ph.D. program in Education. Introduces quantitative re-

EDUC 214B Educational Research: Statistical Inference and Hypothesis Testing (5) Lecture, 3 hours; laboratory, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 214B or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 214C Educational Research: Experimental Design (5) Lecture, 3 hours; laboratory, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 214B or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 215A Educational Research: Advanced Statistics (5) Lecture, 3 hours; laboratory, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 214C or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 215B Factor Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 242A or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 215C Structural Equation Modeling (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): EDUC 215A or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 215D Multilevel Modeling (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 214C or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 215E Advanced Applications of Multilevel Model-
ing (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): EDUC 215C or consent of instructor. Covers principles of scientific research including historical, survey, descriptive, correlational, experimental, and quasi-experimental methods as well as internal and external threats to validity. Credit is awarded for only one of EDUC 212 or EDUC 248T.

EDUC 217 Single-Case Experimental Design (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): admissi-
on to the A.M. or Ph.D. program in Education. Examines the logic, applications, and analytic techniques for single-case experimental designs in naturalistic settings. Specific designs include withdrawal, multiple baseline, alternating treatments, changing criterion, and multiple-case experimental designs. Emphasizes principles of design and changing single-case experimental designs in applied settings.

EDUC 218 Problems in Evaluation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. A study of policy formulation and effects. Overviews of methods for estimating causal effects in social research. Topics include randomized experiments, regression discontinuity, interrupted time series, difference-in-differences, instrumental variables, matching, and fixed effects. Focuses on statistical theory, data require-
ments, and appropriate applications. Students gain experience applying methods through assignments analyzing real data.

EDUC 220A Sociocultural Theory and Education (4) Seminar, 3 hours; term paper, 1 hour; extra reading, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Explores sociocultural perspectives in relation to teaching, learning, students, teachers, and others in schools and other learning environments. Considers the socialization of students, the role of knowledge, skills, values, power, and privilege as seen through sociocultural theory and research.

EDUC 220B Sociocultural Theory and Education (4) Seminar, 3 hours; term paper, 1 hour; extra reading, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Explores sociocultural perspectives in relation to teaching, learning, students, teachers, and others in schools and other learning environments. Considers the socialization of students, the role of knowledge, skills, values, power, and privilege as seen through sociocultural theory and research.

EDUC 222 Role Formation in Educational Organizations (4) Lecture, 3 hours. Prerequisite(s): consent of in-
structor. An analysis of adult roles and their formation in schools, e.g., teacher, counselor, principal and central office administrators. Emphasis will be placed on the individual’s early socialization to the school’s professional work and related professional ideologies.

EDUC 223A Qualitative Research Methodologies in Edu-
cation (5) Seminar, 3 hours; outside research, 6 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the theoretical underpinnings of qualitative research methodologies and their use in designing, conducting, and representing research.

EDUC 223B Qualitative Research Methodologies in Edu-
cation (5) Seminar, 3 hours; outside research, 6 hours. Prerequisite(s): consent of instructor. Focuses on the theoretical underpinnings of qualitative research methodologies and their use in designing, conducting, and representing research.
EDUC 224 Organization and Administration of the School (4) Lecture, 3 hours. The study of school systems and administrative roles in the light of organizational and administrative theory.

EDUC 225 School Finance (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): consent of instructor. Explores methods of financing public education. Identifies budgeting and accounting techniques used by school districts in support of the instructional process and considers legal requirements and public reactions to the financing of education.

EDUC 227 Educational Change and Innovation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. The study of change and innovation in the public school. Emphasis is placed on (a) the organizational environment of the school which must accommodate the innovation, (b) specific strategies of change, and (c) contemporary educational innovations.

EDUC 228 Human Resources Administration in Education (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): consent of instructor. Examines theory, research, and practices associated with the human resources function in schools. Topics include goals, policies, and outcomes related to planning, recruitment, selection, appraisal, compensation, collective bargaining, and the use of management information systems as tools for informed decision making.

EDUC 229 Leadership in School Organizations (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Examines theories of leadership in school organizations. Emphasis given to rational and institutional perspectives and their implications for management in educational settings.

EDUC 230A Curriculum Theory and Praxis in Education (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): consent of instructor. Covers analysis of curriculum theories, trends, innovations, and instructional strategies.

EDUC 230B Curriculum Theory and Praxis in Education (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 230A recommended. Covers analysis of curriculum organization, design, and implementation.

EDUC 232 Teaching Strategies (4) Lecture, 3 hours. Prerequisite(s): teaching credential, teaching experience. Development of varied instructional strategies and skills, such as inquiry and questioning, that are compatible with new and evolving curricula. Emphasis will be on classroom applications.

EDUC 233 Differential Achievement and the School Learning Environment (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing. Explores how racial, ethnic, linguistic, cultural, and socioeconomic differences in educational achievement are a product of the learning environments experienced in schools and classrooms.

EDUC 235 Ethics for Applied Behavior Analysis (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing. Focuses on the ethical considerations from the field of applied behavior analysis and using behavioral approaches to treat individuals demonstrating problem behaviors. Covers the Behavior Analyst Certification Board's Professional Disciplinary and Ethical Standards and the Guidelines for Responsible Conduct for Behavior Analysts.

EDUC 236A Practicum in Applied Behavior Analysis: Behavioral Ethics (5) Seminar, 2 hours; practicum, 6 hours; activity, 3 hours. Prerequisite(s): graduate standing. A study of the behavioral ethics associated with applied behavior analysis and an introduction to the applied tenets of applied behavior analysis. Topics include applying the philosophical assumptions of behavior analysis and antecedents, behavior and consequences.

EDUC 237 Research on Teaching (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Examines research on teaching theories that are related to teaching. Considers the process-product, classroom ecolo-

gy, ethnographic, and teacher cognition paradigms.

EDUC 238 Education and Gender (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the multiple and complex relationships of gender and education in U.S. society. Analyzes theoretical perspectives on gender and schooling. Topics include cultural constructions of male and female experiences of schooling, and concepts of gender neutrality in the curriculum.

EDUC 239 Developmental Psychopathology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing in Education or Psychology or consent of instructor. Examines the origins of psychopathology from multiple theoretical perspectives with a specific focus on childhood disorders. Topics include biological and environmental contributions to disorder development and treatment paradigms.

EDUC 240 Educational Psychology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 110 (or EDUC 110S) or equivalent or consent of instructor. Overview of the major empirical and theoretical bases of educational psychology, followed by detailed analysis of the following topics: (a) cognition and metacognition as they relate to school learning and instruction; (b) motivation, student perceptions, teacher perceptions, classroom processes; (c) effective teaching; and (d) evaluation.

EDUC 241A Inquiry and Research Methods (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): first-year standing in the Ph.D. program in Education. Examines the nature of inquiry and research in educational studies, including the formation of questions.

EDUC 241B Introduction to Qualitative Methods (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 241A; first-year standing in the Ph.D. program in Education. Introduces qualitative research studies. Covers the design, collection, analysis, and interpretation of qualitative data in educational research.

EDUC 242A Educational and Psychological Measurement and Evaluation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 214B; consent of instructor. Examines topics in measurement and evaluation including classical test theory and program evaluation design. Focus is on application in educational and psychological settings and critical examination of norm-referenced and criterion-referenced testing.

EDUC 242B Advanced Educational and Psychological Measurement and Evaluation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 242A or equivalent or consent of instructor. Examines advanced topics in measurement and evaluation including generalizability theory and item response theory. Emphasis is on the statistical basis of these theories and their application in educational and psychological settings.

EDUC 242C Applied Measurement in Education (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 242B or equivalent or consent of instructor. Examines applications of advanced topics in measurement and evaluation including generalizability theory and item response theory. Emphasizes qualitative and quantitative approaches to examine measurement properties that should be considered when designing instruments for use in educational and psychological settings.

EDUC 243 Student Metacognition and Self-Regulated Learning (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines theoretical perspectives and research approaches for studying students' metacognition and self-regulation and instructional interventions that can foster self-regulation and self-regulation in children and adults in the areas of mathematics, reading and writing, and science.

EDUC 245E (E-Z) Review of Research Literature in Education (4) for hours and prerequisites, see segment descriptions. Critical analyses of research in the various areas of education.

EDUC 245E History of Church, State, and Schooling (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Overview of the historical roles of religion in the origins and development of public schooling in the United States and the establishment of private religious schooling. Examines the historical roots of contemporary issues of schooling, church, and state, including school prayer, creationism and evolution debates, and censorship.

EDUC 245G The Opportunity/Achievement Gap (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines theoretical and empirical research on the "achievement gap" from the perspectives of social science disciplines. Explores causes and consequences of racial or ethnic, linguistic, cultural, and socioeconomic differences in educational achievement.

EDUC 245J School Effects (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing. A review of the research literature on effective schools. Covers historical background, practices, resources, structures, student body characteristics, sources of socioeconomic and racial inequality, and assessing school performance.

EDUC 246E (E-Z) Research on Education of Exceptional Children (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the current research on the education of exceptional children. E. Autism Spectrum Disorders in the Classroom; F. Emotional and Behavior Disorders; I. Learning Disabilities; II. Social Issues and Trends; K. Autism Spectrum Disorders; L. Behavioral Phenotypes; M. Multicultural Special Education; N. Early Intervention; O. Family Influences on Development; R. History of Special Education; S. Sources and Treatments of the Reading Difficulties of Students with Disabilities.

EDUC 247 Theoretical Perspectives on Learning (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on how learning occurs according to various theories and what factors may facilitate or impede learning. Theories include behaviorism, social learning theory, constructivism, information processing, social constructivism, sociocultural perspectives, and cultural and linguistic theories.

EDUC 248E (E-Z) Higher Education (4) For hours and prerequisites, see segment descriptions. A selection of courses for studies on higher education.

EDUC 248E Demographics and Diversity in Higher Education (4) Seminar, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): graduate standing or consent of instructor. An introduction to the theoretical perspectives of diversity in U.S. higher education. Explores the implications of demographic shifts on U.S. postsecondary educational practice and policy. Reviews the research literature on the impact of diversity on educational outcomes for college students, faculty, and administrators.
EDUC 248F Financing Higher Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides an overview of finance and economics of higher education in the United States. Examines economic theories as they apply to higher education finance and the distributive implications of various financing strategies. Covers main trends and current debates and how to identify political-economic rationales behind financing policy choices in higher education.

EDUC 248G Higher Education Governance (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines institutional behaviors and actions (including policy) related to student development.

EDUC 248R College Student Development (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): standing or consent of instructor. Addresses student development in higher education institutions. Focuses on developmental theories applicable to college students. Examines institutional behaviors and actions (including policy) related to student development.

EDUC 248S College Student (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): standing or consent of instructor. Examines students to the organization and governance of higher education. Covers diverse forms of organization and governance in contemporary public and private higher education in the United States. Also addresses alternative theoretical frameworks. Focuses on postsecondary governance structures (both internal and external to institutions).

EDUC 248-I Critical Issues in Higher Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines internal and external issues that face higher education institutions.

EDUC 248L Higher Education Policy (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces a range of contemporary higher education policy issues and the conceptual and theoretical frameworks used to understand and develop fluency in using public policy language in the higher education setting. Addresses critical understanding of policy analysis, economics, and political science papers in higher education.

EDUC 248K The Dissertation and the Proposal in Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces and critiques research through written and oral communication. Includes completion of dissertation proposal in the field of education. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable up to a maximum of 12 units.

EDUC 248L Community College (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines historical perspectives on community colleges.

EDUC 248N Higher Education Scholarship and Literature Review (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines higher education and research literature on specific topics in the field, as well as develop these topics for research.

EDUC 248O Organization and Administration in Higher Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines theory, research, and literature on higher education organizations and their management.

EDUC 248P Historical Perspectives on Campus Life (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines historical perspectives on campus life in the United States from the viewpoint of the students, faculty, administrators, and employees. May address the general environment, curriculum, student activities and clubs, athletics, town-gown relationships, or other aspects.

EDUC 248Q Foundations of Student Services (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the field of student services and student affairs in higher education institutions. Focuses on the historical and philosophical foundations of the field, as well as guiding theories and models of practice. Address- es contemporary challenges for student services practitioners.

EDUC 248R College Student Development (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): standing or consent of instructor. Addresses student development in higher education institutions. Focuses on developmental theories applicable to college students. Examines institutional behaviors and actions (including policy) related to student development.

EDUC 248S College Student (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): standing or consent of instructor. Examines students to the organization and governance of higher education. Covers diverse forms of organization and governance in contemporary public and private higher education in the United States. Also addresses alternative theoretical frameworks. Focuses on postsecondary governance structures (both internal and external to institutions).

EDUC 248-I Critical Issues in Higher Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines internal and external issues that face higher education institutions.

EDUC 248L Higher Education Policy (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces a range of contemporary higher education policy issues and the conceptual and theoretical frameworks used to understand and develop fluency in using public policy language in the higher education setting. Addresses critical understanding of policy analysis, economics, and political science papers in higher education.

EDUC 248K The Dissertation and the Proposal in Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces and critiques research through written and oral communication. Includes completion of dissertation proposal in the field of education. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable up to a maximum of 12 units.

EDUC 248L Community College (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines historical perspectives on community colleges.

EDUC 248N Higher Education Scholarship and Literature Review (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines higher education and research literature on specific topics in the field, as well as develop these topics for research.
EDUC 258B Practicum in School Psychology: Basic (1) Seminar, 10 hours per quarter; practicum, 8 hours. Prerequisite(s): EDUC 265A. An application of basic principles in school psychology. Includes special education (SPED) law, California Education Code, and American Psychological Association diagnoses. Covers SPED eligibility, cultural sensitivity, diversity, and applied skills in cognitive and academic assessment. Addresses consultation, observation, and interviewing. Offers supervised experience in school-based settings. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 2 units.

EDUC 265C Practicum in School Psychology: Advanced (1-2) Seminar, 10 hours per quarter; practicum, 8-16 hours. Prerequisite(s): 2 units of EDUC 265B; consent of instructor is required for students enrolling in 2 units. An application of advanced principles in school psychology. Topics include behavioral, social, and emotional assessment, psychopharmacological intervention, group/crisis intervention, and psycho-educational evaluations. Addresses teacher/parent consultation, systems change, legal issues related to services, and National Credential in School Psychology licensure procedures. Includes supervised experience in supervised, school-based settings. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

EDUC 265D Practicum in School Psychology: Clinical (1-2) Seminar, 10 hours per quarter; practicum, 8-16 hours. Prerequisite(s): consent of instructor. An application of school psychology skills in clinical settings. Topics include alternative professional settings, current research, and best practice assessment and treatment of psychopathologic, neurologic, and genetic disorders. Addresses wrap-around services, residential and nonresidential treatment, and cultural sensitivity with families of children with disorders. Includes placement in supervised clinical settings. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

EDUC 265E Practicum in School Psychology: Supervision (1) Seminar, 20 hours per quarter. Prerequisite(s): admission to the Ph.D. program in School Psychology. Development of knowledge and skills in supervision of school psychologists. Topics include the historical evolution of theoretical orientations of supervision, as well as best practice in supervision in diverse settings. Also covers process of applying and interviewing for internship and preparation for the National Credential in School Psychology (NCSP) exam. Graded Satisfactory (S) or No Credit (NC).

EDUC 266 Language, Schooling, and Identity (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the M.A. or Ph.D. program or consent of instructor. Examines how cultural and linguistic representations of classroom and administrative settings are related to differences in educational participation reviewed. Cultural background, educational narratives, and language attitudes, cultural mismatch, and language socialization.

EDUC 270 Reading Development and Intervention (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the findings from national panels on reading development, instruction, and intervention. Topics include practical application of these findings to the development of reading intervention programs for students across grades.

EDUC 271 The School Principal: Tools for Managerial Problems (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): consent of instructor. Review of the literature on the principal's role as leader and manager of the school community. Examines how these principles are used in an indirect service-delivery model to facilitate changes in students' behavior.

EDUC 272 Sociolinguistics and Educational Processes (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): admission to Ph.D. program in Education or consent of instructor. Introduces sociolinguistic concepts (language maintenance and shift, diglossia, code-switching, standard versus dialect) as they relate to schooling. Examines issues such as diversity (linguistics, ethnic, class) and educational inequality, gender and language, minority languages, language attitudes, cultural mismatch, and language socialization.

EDUC 273 Theories of Critical Pedagogy (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces students to a multicultural perspective about race, racism and its impact on the United States K-12 education system. Situates today's educational inequity in a historical perspective, while encouraging a connection between theory, practice and students' personal educational narratives.

EDUC 274 Text Analysis (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Analysis of written texts to study social and cognitive aspects of literacy. Topics include the writer-reader relationship, social construction of genre, text readability, teaching and learning, and textual indicators of student development.

EDUC 275 Race and K-12 Educational Inequality (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces a multicultural perspective about race and racism and its impact on the United States K-12 education system. Situates today's educational inequity in a historical perspective while encouraging a connection between theory, practice, and students' personal educational narratives.

EDUC 276 Diversity and Curriculum (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate or professional standing. Describes and analyzes the controversy surrounding efforts to develop curriculum that addresses diversity in U.S. society. Examines changing theoretical perspectives.
on multicultural education and key concepts such as race, identity, and culture. Reviews research on multicultural education.

EDUC 277 Theoretical Perspectives on the Practice of Teaching (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): admission to the Ph.D. program in Education or consent of instructor. Examines a range of theoretical perspectives used in studying the practice of teaching. Covers psychological, historical, anthropological, sociological, and philosophical perspectives.

EDUC 278 Critical Race Theory in Education (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces students to a multicultural perspective about race, racism and its impact on the United States. K-12 education system. It situates today's educational inequity in a historical perspective, while encouraging a connection between theory, practice and students' personal educational narratives.

EDUC 279 Politics of School Knowledge (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines how existing power relations and conflicts among social and cultural groups shape the content of curriculum and the practice of teaching. Topics include the ideological aspects of curriculum, textbook controversies and battles over school curriculum, and representational issues in curriculum and knowledge production.

EDUC 280 (E-Z) Foundations in Education (4) For hours and prerequisites, see segment descriptions. Foundation core courses that introduce students to theory and research in education. Offered in summer only.

EDUC 280L The Learner (4) Lecture, 6 hours; outside research, 6 hours. Prerequisite(s): admission to the M.Ed. General Education Teaching Emphasis. Considers learning from psychological, cognitive, and social perspectives. Focuses on research on the learning process in schools and other contexts. Emphasizes the relationship between teaching and learning. Offered in summer only.

EDUC 280P The Politics of Educational Decision Making (4) Lecture, 6 hours; outside research, 6 hours. Prerequisite(s): admission to the M.Ed. General Education Teaching Emphasis. Analyzes how the political climate affects American schools. Topics include influences on educational policy, programs, and practice. Offered in summer only.

EDUC 280R The Classroom (4) Lecture, 6 hours; outside research, 6 hours. Prerequisite(s): admission to the M.Ed. General Education Teaching Emphasis. Examines anthropological and sociological theory and research on the structure of and practices used in K-12 classrooms. Offered in summer only.

EDUC 280S The School (4) Lecture, 6 hours; outside research, 6 hours. Prerequisite(s): admission to the M.Ed. General Education Teaching Emphasis. An analysis of the school as a formal organization, as well as a place of work and a place of learning for students. Examines the internal and external context of schools. Offered in summer only.

EDUC 281 History of Educational Policy and Reform (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate or professional standing. Introduces a historical context for understanding education policy and reform in the United States. Topics include the ideological forces that shaped the institutional context and character of American education at different periods in the nation's history and how ideas shaped the educational system by institutionalizing certain norms and values.

EDUC 282A Curriculum Theory and Instructional Processes: Mathematics and Science (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 172 (or EDUC 172S); concurrent enrollment in EDUC 336A or EDUC 338A. Introduces curriculum theory and instructional processes as they relate to mathematics and science in the multiple subjects classroom.

EDUC 282B Curriculum Theory and Instructional Processes: Social Studies, Visual and Performing Arts, and Physical Education (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 172 (or EDUC 172S); concurrent enrollment in EDUC 336B or EDUC 338B. Introduces curriculum theory and instructional processes as they relate to social studies, visual and performing arts, and physical education in the multiple subjects classroom.

EDUC 283 Analyzing the Practice of Teaching (4) Lecture, 2 hours; discussion, 1 hour; outside research, 3 hours. Prerequisite(s): admission to the M.Ed. program. Focuses on analysis of classroom teaching and examines how curriculum and instruction influence student understanding. Prepares students to conduct comprehensive analyses of K-12 instructional practice.

EDUC 284 Theory and Research on Schooling and Social Inequality (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): admission to the Ph.D. program in Education or consent of instructor. Analyzes the social and cultural organization of schools and the relationship between schooling and social inequality. Draws upon research in sociology, anthropology, and education to examine historical and social perspectives on the relationship between schooling and social stratification, with special attention to the influence of class, race, and ethnicity on academic achievement.

EDUC 285 (E-Z) Curriculum Theory and Instructional Processes (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): EDUC 109 (or EDUC 109S); EDUC 110 (or EDUC 110S); EDUC 116 (or EDUC 116S); EDUC 139; EDUC 172 (or EDUC 172S) or EDUC 174A (or EDUC 174S); or consent of instructor. Introduces curriculum theory and instructional processes as they relate to the single subject classroom: E. Secondary Social Studies; I. Secondary English; L. Secondary Foreign Language; M. Secondary Mathematics; N. Secondary Mathematics and Science; R. Secondary Visual and Performing Arts; S. Secondary Science; T. Portraits of Teaching.

EDUC 286 American Education and the Civil Rights Movement (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the impact of the Civil Rights Movement on U.S. education, focusing primarily on the period from 1954 to the present.

EDUC 288 History of Urban Education in the United States (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the historical development of public and private elementary, secondary, and higher education in United States urban areas. Also explores the formal and informal educational programs offered by various social and cultural groups in urban communities from the late eighteenth century to the present. Course is repeatable as topics change.

EDUC 289 Theory and Research Methods in History of Education (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the central methods and theories of modern historical research. Includes the meaning of historical work and the methodological approaches historians use, as well as the range of approaches that can be utilized.

EDUC 290 Directed Studies (1-8) Prerequisite(s): graduate status and consent of instructor. Research and special studies in education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EDUC 291 Individual Studies in Coordinated Areas (1-12) Individual study, 3-36 hours. Prerequisite(s): graduate standing. A program of studies designed to assist students who are preparing for graduate degree examinations that includes dissertation pre-proposal preparation and capstone projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EDUC 292 Concurrent Studies in Education (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor and department. Each EDUC 292 course will be taken concurrently with some 100-series course in Education on an individual basis. It will be devoted to written work or work on a written report subject of instruction, research, criticism, and/ or written work of graduate order commensurate with the number of units elected. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

EDUC 295A Instruction of Students with Reading and Language Disabilities (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): admission to the Education Specialist Credential program. Examines the rationale, design and instructional programs for individuals with moderate to severe disabilities. Discusses the impact of general curriculum frameworks and teaching skills in the context of meaningful activities. Analyzes the benefits and limitations of community-based instruction.

EDUC 295B Adapting Core Curriculum and Standards-Based Instruction (Moderate-Mild Disabilities) (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): admission to the Education Specialist Credential program. Explores the rationale and design of instructional programs for individuals with moderate to severe disabilities. Discusses access to the general curriculum frameworks and teaching skills in the context of meaningful activities. Analyzes the benefits and limitations of community-based instruction.

EDUC 295C Curriculum and Instruction for Students with Moderate Disabilities (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): admission to the Education Specialist Credential program. Explores the rationale and design of instructional programs for individuals with moderate to severe disabilities. Discusses access to the general curriculum frameworks and teaching skills in the context of meaningful activities. Analyzes the benefits and limitations of community-based instruction.

EDUC 295D Functional Communication and Self-Advocacy (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): admission to Education Specialist Credential program. Analyzes instructional methods used with students with moderate to severe disabilities to enhance their communication skills. Explores access to assistive technology, alternative communication systems, vocational training, and the transition to adult environments. Covers the role of public and private agencies and other structural supports.

EDUC 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): advanced graduate standing and consent of instructor. Directed research on selected issues in education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 36 units.

EDUC 298 Individual Internship (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): graduate student standing; consent of instructor and graduate advisor. Supervised internship with an approved professional individual or organization based on a written plan approved by the field supervisor and internship coordinator and/or faculty member. Includes two hours per week of direct supervision by the field supervisor. Graded Satisfactory (S) or No Credit
(NC). Course is repeatable to a maximum of 16 units.

EDUC 299 Research for Thesis or Dissertation (1-12) directed independent studies, 1-6 hours. Prerequisite(s): advancement to candidacy for the master’s or doctoral degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

EDUC 302 College Teaching Practicum I (1-6) practicum, 3-18 hours. Prerequisite(s): advanced Ph.D. standing and consent of instructor. A minimum of one quarter supervised teaching in college level classes under the supervision of the course instructor. Required of all doctoral candidates in the Graduate School of Education. Fulfils teaching portion of Ph.D. requirements. Graded Satisfactory (S) or No Credit (NC). May be taken for a maximum of three quarters.

EDUC 320A Integrating Technology into Classroom Practice (1) Lecture, 8 hours per quarter; laboratory, 3 hours per quarter; field, 3 hours per quarter. Prerequisite(s): admission to a teaching credential program. Introduction to technology in education. Prepares future teachers to effectively utilize computers and related technology for information management, presentations, and classroom instruction. Topics include software, the Internet, and basic operations of educational technology. Includes field observations in schools. Graded Satisfactory (S) or No Credit (NC).

EDUC 320B Integrating Technology into Classroom Practice (1) Lecture, 8 hours per quarter; laboratory, 3 hours per quarter; field, 3 hours per quarter. Prerequisite(s): EDUC 320A. Focuses on the application of computer technology in schools. Using presentation software, the Internet, and other computer-based technology, students develop and teach a curriculum unit appropriate to their teaching subject area and grade level. Emphasis is on integrating the use of computer applications with instruction. Graded Satisfactory (S) or No Credit (NC).

EDUC 320C Integrating Technology into Classroom Practice (1) Lecture, 4 hours per quarter, laboratory, 15 hours per quarter; field, 3 hours per quarter. Prerequisite(s): EDUC 320A, EDUC 320B. Addresses issues related to teaching technology in schools. The use of web-based resources is an integral part of the course. Graded Satisfactory (S) or No Credit (NC).

EDUC 331 Early Supervised Fieldwork and Seminar for Education Specialist (3) Seminar, 20 hours per quarter; field, 2 hours. Prerequisite(s): admission to the Education Specialist Credential program; graduate standing. Analyzes instructional strategies for working with students with disabilities. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC).

EDUC 332 Early Supervised Fieldwork and Seminar for Multiple Subjects (3) Seminar, 20 hours per quarter; field, 2 hours. Prerequisite(s): admission to the Multiple Subject Credential program; graduate standing. Analyzes instructional strategies used in multiple subject classrooms. Topics include curriculum planning, classroom instruction, instructional strategies, and written communication skills, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC).

EDUC 333 Early Supervised Fieldwork and Seminar for Single Subjects (3) Seminar, 20 hours per quarter; field, 2 hours. Prerequisite(s): admission to the Single Subject Credential program; graduate standing. Analyzes instructional strategies for the single subject classroom. Topics include curriculum planning, classroom management, and oral and written communication skills, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC).

EDUC 333A Supervised Teaching in Special Education (4) Seminar, 2 hours; field, 9 hours. Prerequisite(s): admission to the Education Specialist Credential program; concurrent enrollment in or completion of EDUC 110 (or EDUC 110S), EDUC 116S, EDUC 172 (or EDUC 172S). Supervised teaching in special education. Consists of supervised field experience and seminar for special education candidates. Graded Satisfactory (S) or No Credit (NC).

EDUC 333B Supervised Teaching in Special Education (7) Seminar, 2 hours; field, 18 hours. Prerequisite(s): EDUC 335A. Supervised in special education. Consists of supervised observation, field experience, and seminar for special education candidates. Graded Satisfactory (S) or No Credit (NC).

EDUC 333C Seminar in Special Education (2) Seminar, 2 hours. Prerequisite(s): EDUC 335B; concurrent enrollment in EDUC 345A or EDUC 345B. Analyzes the instructional processes used in special education settings. Includes assessing students, developing an individualized educationalized plan (IEP), and collaborating with parents, teachers, and special services personnel. Course is repeatable as content changes to a maximum of 4 units.

EDUC 336A Supervised Teaching in the Elementary School (2) Field, 9 hours. Prerequisite(s): admission to a teaching credential program; concurrent enrollment in EDUC 282A and EDUC 344A; concurrent enrollment in or completion of EDUC 347B. Supervised teaching in the multiple subjects classroom. Required of all candidates for the Multiple Subjects Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 336A or EDUC 338A.

EDUC 336B Supervised Teaching in the Elementary School (5) Field, 18 hours. Prerequisite(s): EDUC 110 (or EDUC 110S), EDUC 336A; concurrent enrollment in EDUC 282B and EDUC 344B; concurrent enrollment in or completion of EDUC 347B. Supervised teaching in the multiple subjects classroom. Required of all candidates for the Multiple Subjects Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 336B or EDUC 338B.

EDUC 336C Supervised Teaching in the Elementary School (9) Field, 30 hours. Prerequisite(s): EDUC 336C; concurrent enrollment in EDUC 282B and EDUC 344B; concurrent enrollment in or completion of EDUC 347B. Intern teaching in the multiple subject classroom. Required for the Multiple Subjects Internship Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 336C or EDUC 338C.

EDUC 337A Teaching Performance Assessment for Multiple Subjects Candidates (1) Field, 2 hours; written work, 2 hours. Prerequisite(s): admission to a teaching credential program or an internship teaching program; concurrent enrollment in or completion of EDUC 336A or concurrent enrollment in or completion of EDUC 338A. Performance assessment for California teachers. Topics include lesson design, classroom instruction in public schools, and assessment design. Fieldwork hours completed in regular placement as assigned for EDUC 336B or EDUC 338B. Required of all candidates for the Multiple Subjects Credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 337C Teaching Performance Assessment for Multiple Subjects Candidates (1) Field, 2 hours; written work, 2 hours. Prerequisite(s): admission to a teaching credential program or an internship teaching program; concurrent enrollment in or completion of EDUC 336C or concurrent enrollment in or completion of EDUC 338C. Performance assessment for California teachers. Topics include lesson design, classroom instruction in public schools, and assessment design. Fieldwork hours completed in regular placement as assigned for EDUC 336C or EDUC 338C. Required of all candidates for the Multiple Subjects Credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 338A Intern Teaching in the Elementary School (9) Field, 30 hours. Prerequisite(s): admission to intern teaching program; concurrent enrollment in EDUC 110 (or EDUC 110S), EDUC 172 (or EDUC 172S), EDUC 175 (or EDUC 175S); concurrent enrollment in EDUC 282A and EDUC 344A; concurrent enrollment in or completion of EDUC 337A. Intern teaching in the multiple subjects classroom. Required for the Multiple Subjects Internship Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 336A or EDUC 338A.

EDUC 338B Intern Teaching in the Elementary School (9) Field, 30 hours. Prerequisite(s): EDUC 338B; concurrent enrollment in EDUC 282B and EDUC 344B; concurrent enrollment in or completion of EDUC 337B. Intern teaching in the multiple subject classroom. Required for the Multiple Subjects Internship Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 336C or EDUC 338C.

EDUC 342 Coordination and Service Delivery in Special Education (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): admission to teaching credential program. Examines the design and implementation of the service delivery model for students with disabilities. Explores the collaborative processes, constraints, and legal requirements that impact services that schools provide. Analyzes the role of the special education teacher as an IEP team member, expert on disabilities, case manager, and parent educator.

EDUC 344A Multiple Subjects Credential Seminar (2) Seminar, 2 hours. Prerequisite(s): concurrent enrollment in EDUC 336A or EDUC 338A or consent of instructor. Analyzes instructional processes used in multiple subject classrooms. Topics include classroom management, curriculum planning, instructional strategies, and oral and written communication skills.

EDUC 344B Multiple Subjects Credential Seminar (2) Seminar, 2 hours. Prerequisite(s): EDUC 139, EDUC 172 (or EDUC 172S), EDUC 344A; concurrent enrollment in EDUC 336B or EDUC 338B. Analyzes instructional processes used in multiple subjects classrooms. Topics include classroom management, curriculum planning and instructional strategies, K-12 academic standards in mathematics related to classroom curriculum and activities, and teaching language arts in the content areas.

EDUC 344C Multiple Subjects Credential Seminar (2) Seminar, 2 hours. Prerequisite(s): EDUC 344B; concurrent enrollment in EDUC 336C or EDUC 338C. Analyzes instructional processes used in multiple subject classrooms. Topics include classroom management, curriculum planning, instructional strat-
EDUC 345A Supervised Intern Teaching in a Special Class for Individuals with Mild/Moderate Disabilities (9) Seminar, 2 hours; field, 30 hours. Prerequisite(s): admission to a internship program in mild/moderate disabilities. Intern teaching in a special education day class for individuals with mild/moderate disabilities. Required for the Education Specialist Internship Credential in Mild/Moderate Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 346A Supervised Intern Teaching in a Special Class for Individuals with Mild/Moderate Disabilities (9) Seminar, 2 hours; field, 30 hours. Prerequisite(s): admission to an internship program in mild/moderate disabilities; EDUC 346A. Intern teaching in a special education day class for individuals with mild/moderate disabilities. Required for the Education Specialist Internship Credential in Mild/Moderate Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 346B Supervised Intern Teaching in a Special Class for Individuals with Mild/Moderate Disabilities (9) Seminar, 2 hours; field, 30 hours. Prerequisite(s): admission to an internship program in mild/moderate disabilities; EDUC 346A. Intern teaching in a special education day class for individuals with mild/moderate disabilities. Required for the Education Specialist Internship Credential in Mild/Moderate Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 347A Supervised Intern Teaching in a Special Class for Individuals with Moderate/Severe Disabilities (9) Seminar, 2 hours; field, 30 hours. Prerequisite(s): admission to an internship program in moderate/severe disabilities. Intern teaching in a special education day class for individuals with moderate/severe disabilities. Required for the Education Specialist Internship Credential in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 347B Supervised Intern Teaching in a Special Class for Individuals with Moderate/Severe Disabilities (9) Seminar, 2 hours; field, 30 hours. Prerequisite(s): admission to an internship program in moderate/severe disabilities; EDUC 347A. Intern teaching in a special education day class for individuals with moderate/severe disabilities. Required for the Education Specialist Internship Credential in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 348A Single Subject Credential Seminar (2) Seminar, 2 hours. Prerequisite(s): concurrent enrollment in or completion of EDUC 110 (or EDUC 110S); EDUC 174 (or EDUC 174S); concurrent enrollment in EDUC 378A. Analyzes instructional problems encountered by candidates in the single subject classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies.

EDUC 348B Single Subject Credential Seminar (2) Seminar, 2 hours. Prerequisite(s): EDUC 348A; concurrent enrollment in EDUC 378B. Analyzes instructional problems encountered by candidates in the single subject classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies.

EDUC 349C Single Subject Credential Seminar (2) Seminar, 2 hours. Prerequisite(s): EDUC 349B; concurrent enrollment in EDUC 378C. Analyzes instructional problems encountered by candidates in the single subject classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies.

EDUC 354A Orientation to Educational Administration and Policy (4) Seminar, 15 hours per quarter; field, 7.5 hours. Prerequisite(s): admission to the Preliminary Administrative Services Credential program. Orientation to the field of educational administration and policy formation. Focuses on analysis, management skills, and mentoring.

EDUC 354B Competence in Educational Administration and Policy (4) Seminar, 15 hours per quarter; field, 7.5 hours. Prerequisite(s): EDUC 354A; admission to the Preliminary Administrative Services Credential program. Evaluation of the students' skills in educational administration and policy formation. Students present professional growth portfolios demonstrating their competence in inquiry, reflection, and problem solving.

EDUC 355 Field Experience in School Administration (4) Lecture, 3 hours; field, 15 hours. Prerequisite(s): consent of instructor. Supervised field experience. The planning, execution and evaluation of administrative tasks under the supervision of local school administrators and university personnel. May be repeated for credit.

EDUC 356A Advanced Study of Educational Administration and Policy Formation (4) Seminar, 2 hours; field, 6 hours. Prerequisite(s): admission to the Professional Administrative Services Credential program. Advanced study of educational administration and policy formation. Emphasis is on analysis and problem solving. Topics include interpersonal relationships, mentoring, policy development, and policy administration.

EDUC 356B Advanced Study of Educational Administration and Policy Formation (4) Seminar, 2 hours; field, 6 hours. Prerequisite(s): admission to the Professional Administrative Services Credential program. Advanced study of educational administration and policy development. Students present professional growth portfolios demonstrating their competence in inquiry, reflection, and problem solving.

EDUC 366 Specialized Field Experience in School Administration (4) Seminar, 3 hours; fieldwork, 15 hours. Prerequisite(s): EDUC 365A-EDUC 365B; possession of California Preliminary Administrative Services Credential or equivalent; an administrative job in education or consent of instructor. Advanced level field experience covering special topics in educational administration. Individually planned and guided by the field of specialization in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 376A Supervised Teaching in the Secondary School (2) Field, 9 hours. Prerequisite(s): admission to a teaching credential program; concurrent enrollment in or completion of EDUC 110 (or EDUC 110S); EDUC 174 (or EDUC 174S); concurrent enrollment in EDUC 378A. Supervised teaching in the single subject classroom. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 376A or EDUC 378A.

EDUC 376B Supervised Teaching in the Secondary School (2) Field, 18 hours. Prerequisite(s): EDUC 376A; concurrent enrollment in or completion of EDUC 377B; concurrent enrollment in EDUC 378B. Supervised teaching in the single subject classroom. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 376B or EDUC 378B.

EDUC 376C Supervised Teaching in the Secondary School (2) Field, 30 hours. Prerequisite(s): EDUC 376B; concurrent enrollment in or completion of EDUC 377C; concurrent enrollment in EDUC 378C. Supervised teaching in the single subject classroom. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 376C or EDUC 378C.

EDUC 377A Teaching Performance Assessment for Single Subject Candidates (1) Field, 2 hours; written work, 2 hours. Prerequisite(s): admission to a teaching credential program or an internship teaching program; concurrent enrollment in or completion of EDUC 376A or concurrent enrollment in or completion of EDUC 378A. Performance assessment for California teachers. Topics include lesson design, classroom instruction in public schools, and assessment design. Fieldwork hours completed in regular placement as assigned for EDUC 376A or EDUC 378A. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 377B Teaching Performance Assessment for Single Subject Candidates (1) Field, 2 hours; written work, 2 hours. Prerequisite(s): admission to a teaching credential program or an internship teaching program; concurrent enrollment in or completion of EDUC 376B or concurrent enrollment in or completion of EDUC 378B. Performance assessment for California teachers. Topics include lesson design, classroom instruction in public schools, and assessment design. Fieldwork hours completed in regular placement as assigned for EDUC 376B or EDUC 378B. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 377C Teaching Performance Assessment for Single Subject Candidates (1) Field, 2 hours; written work, 2 hours. Prerequisite(s): admission to a teaching credential program or an internship teaching program; concurrent enrollment in or completion of EDUC 376C or concurrent enrollment in or completion of EDUC 378C. Performance assessment for California teachers. Topics include lesson design, classroom instruction in public schools, and assessment design. Fieldwork hours completed in regular placement as assigned for EDUC 376C or EDUC 378C. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 378A Intern Teaching in the Secondary School (9) Field, 30 hours. Prerequisite(s): admission to an internship program in Moderate/Severe Disabilities; EDUC 378A. Intern teaching in the single subject classroom. Required of all candidates for the Single Subject Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 378A or EDUC 378B.
EDUC 378B Intern Teaching in the Secondary School
(9) Field, 30 hours. Prerequisite(s): EDUC 378A; concurrent enrollment in or completion of EDUC 377B; concurrent enrollment in EDUC 348B. Intern teaching in the single subject classroom. Required for the Single Subject Internship Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 376B or EDUC 378B.

EDUC 378C Intern Teaching in the Secondary School
(9) Field, 30 hours. Prerequisite(s): EDUC 378B; concurrent enrollment in or completion of EDUC 377C; concurrent enrollment in EDUC 348C. Intern teaching in the single subject classroom. Required for the Single Subject Internship Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 376C or EDUC 378C.

Education Abroad Program
Vivian-Lee Nyitray, Ph.D., Associate Vice Provost and Executive Director, UCEAP Systemwide Office, Goleta, CA

UCR Contact Office
Education Abroad
Surge Bldg., Room 321
(951) 827-4113
ea.ucr.edu

Search for programs by specific areas at uc.eap.ucop.edu

Purpose
Since 1962, the Education Abroad Program (EAP) has served as the University of California's systemwide international exchange program. EAP offers undergraduate and graduate students opportunities to integrate into the academic and social life of prestigious international universities while earning UC credit. Available programs complement courses taken at UC campuses and help students acquire the knowledge, understanding, and skills for work and life in a globally interdependent and culturally diverse world.

The program stimulates the intellectual development of the participants, broadening their general education, and giving a new depth to their particular academic interests. Many gain fluency in a language other than their own, and all grow in their ability to engage in independent study. Perhaps most valuable of all are increased self-understanding and confidence, clarified life and professional purpose, and a broadening and deepening of personal values.

Academic Program
See uc.eap.ucop.edu for partner universities and study options. Participants may fulfill lower-division, degree, major, or elective requirements and often enhance their UC education by taking courses not available at UCR. The study center director facilitates the academic work of the students through liaison with faculty at the host university. The study center director or EAP liaison facilitates the academic work of the students with faculty at the host university.

Spanning all continents, EAP offers traditional academic year, short-term, and summer programs. Students who want to gain basic foreign language skills have Language and Culture options. Thematic options include Engineering in Hong Kong and Japan, Tropical Biology in Costa Rica, and Health Sciences. Students anticipating a business career have a broad range of locations to enhance their preparation, including in-depth study on NAFTA, the European Union, and Central Europe. Internship opportunities are growing in nearly all fields of study. Future teachers, in particular, have benefited from teaching opportunities in China, Japan, and Mexico. Undergraduates have several possibilities to conduct field research in Costa Rica, Ghana, Mexico, and South Africa.

Depending on the program, EAP also provides a 5- to 10-week Intensive Language Program, which prepares students for the new country and academic system by augmenting the prerequisite language background.

Academic Planning
Interested students should consult well in advance with their academic advisor and college counselor to determine how participation in the program would affect their degree progress. Students with a double major or minor must pay particular attention to pre-departure planning.

Search for programs by specific areas of study at uc.eap.ucop.edu.

Seniors and transfer students must receive clearance of the university's graduation requirements from their college dean. Refer to the Residence Requirement section under Academic Regulations.

To record units and grade points earned through EAP on the participant's UCR transcript, students are concurrently enrolled at UCR and at the host university. Subsequent fulfillment of major and degree requirements depends upon UC departmental and campus criteria.

Eligibility and Selection
Requirements vary widely by program option. For most programs, students must meet the cumulative grade point average requirements of partner universities at the time of selection and maintain the support of the UCR Selection Committee throughout the pre-departure period.

In addition to academic criteria, selection is also based on the student's seriousness of purpose, maturity, clear goals, and the capacity to adapt to the experience of study abroad.

Prior to departure, selected students must participate in a series of seminars and pre-departure orientations facilitated by the International Student Resource Center. They must also obtain clearance from UCR's Campus Health Center.

Graduate students who have completed at least one year of graduate work and have the approval of their department and the Graduate Division are eligible for some EAP programs.

Foreign language proficiency, if required, must be demonstrated. Graduate students remain under the academic direction of their UCR graduate advisor. An EAP experience may prove especially valuable to doctoral candidates who have been advanced to candidacy and are engaged in independent study and research directed toward their dissertation.

Financial Matters
Depending on the program, EAP can cost more than, equal to, or less than studying at UCR. Additional costs directly related to the program are round-trip transportation, health clearance, on-site orientation, and, if required, intensive language instruction. The university shares the cost of comprehensive medical and hospitalization coverage for all participants.

Many forms of financial assistance are available to EAP participants. Students who do not currently receive UC financial aid may qualify for aid while on EAP. Students receiving state and federal financial aid may use their scholarships, grants, loans, and veteran's benefits to finance their program abroad. In addition to campus-awarded financial aid, EAP provides support through various scholarships and grants. Prospective participants should consult early with EAP counselors for national scholarship opportunities.

Student Conduct
Students selected for the EAP program have made a serious commitment to benefit from all aspects of their international experience. As guests in another country and another university, their conduct reflects on both the UC and the United States. Students are responsible to the study center director, to the director of EAP, and to the faculty of the UC and the host university related to the program. The director of EAP reserves the right to terminate the participation in the program of any student whose conduct (in either academic or nonacademic matters), after careful consideration and full review, is judged to be contrary to the standards and regulations of the UC and the host university.

Study center directors and/or EAP staff on location are available to students and are responsible for all aspects of student welfare and conduct.

Application
Applications for 2018-2019 will be available beginning September 2017. Students are encouraged to consult EAP advisors early in the EAP planning process to avoid missing application deadlines. The office is located in Surge Bldg., Room 321, or call (951) 827-4113. Program details are available at ea.ucr.edu.

See the following page (251)
For a complete list of EAP Opportunities and Countries
### EAP Opportunities and Countries

*(visit ea.ucr.edu for program details and all the latest updates)*

<table>
<thead>
<tr>
<th>Argentina</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td>National University of Tres De Febrero</td>
<td>Lincoln University</td>
</tr>
<tr>
<td>Torcuato Di Tella University</td>
<td>Massey University</td>
</tr>
<tr>
<td></td>
<td>University of Auckland</td>
</tr>
<tr>
<td></td>
<td>University of Canterbury</td>
</tr>
<tr>
<td></td>
<td>University of Otago</td>
</tr>
<tr>
<td></td>
<td>University of Waikato</td>
</tr>
<tr>
<td></td>
<td>Victoria University of Wellington</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Norway</td>
</tr>
<tr>
<td></td>
<td>University of Oslo</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Belgium</td>
</tr>
<tr>
<td></td>
<td>Russia</td>
</tr>
<tr>
<td></td>
<td>St. Petersburg State University</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Senegal</td>
</tr>
<tr>
<td></td>
<td>African &amp; Development Studies, Dakar</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>National University of Singapore</td>
</tr>
<tr>
<td></td>
<td>Singapore Agency for Science, Technology &amp; Research</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>South Africa</td>
</tr>
<tr>
<td></td>
<td>University of Cape Town</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spain</td>
</tr>
<tr>
<td></td>
<td>Autonomous University of Barcelona</td>
</tr>
<tr>
<td></td>
<td>Complutense University of Madrid</td>
</tr>
<tr>
<td></td>
<td>Carlos III University</td>
</tr>
<tr>
<td></td>
<td>Pompeu Fabra University, Barcelona</td>
</tr>
<tr>
<td></td>
<td>UC Center, Madrid</td>
</tr>
<tr>
<td></td>
<td>University of Barcelona</td>
</tr>
<tr>
<td></td>
<td>University of Córdoba</td>
</tr>
<tr>
<td></td>
<td>University of Granada</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
</tr>
<tr>
<td></td>
<td>Folkuniversitet</td>
</tr>
<tr>
<td></td>
<td>University of Lund</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Switzerland</td>
</tr>
<tr>
<td></td>
<td>University of Geneva</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taiwan</td>
</tr>
<tr>
<td></td>
<td>National Taiwan University</td>
</tr>
<tr>
<td></td>
<td>National Taiwan Normal University</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tanzania</td>
</tr>
<tr>
<td></td>
<td>Ruaha Catholic University</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thailand</td>
</tr>
<tr>
<td></td>
<td>Thammasat University</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>United Kingdom</td>
</tr>
<tr>
<td></td>
<td>Imperial College, London</td>
</tr>
<tr>
<td></td>
<td>King's College London</td>
</tr>
<tr>
<td></td>
<td>London School of Economics</td>
</tr>
<tr>
<td></td>
<td>Sotherby's Institute of Art</td>
</tr>
<tr>
<td></td>
<td>UC Center, Edinburgh</td>
</tr>
<tr>
<td></td>
<td>UC Center, London</td>
</tr>
<tr>
<td></td>
<td>University College London</td>
</tr>
<tr>
<td></td>
<td>University of Bristol</td>
</tr>
<tr>
<td></td>
<td>University of Cambridge, Pembroke</td>
</tr>
<tr>
<td></td>
<td>King's College</td>
</tr>
<tr>
<td></td>
<td>University of East Anglia</td>
</tr>
<tr>
<td></td>
<td>University of Edinburgh</td>
</tr>
<tr>
<td></td>
<td>University of Glasgow</td>
</tr>
<tr>
<td></td>
<td>University of Kent</td>
</tr>
<tr>
<td></td>
<td>University of Leeds</td>
</tr>
<tr>
<td></td>
<td>University of London, King's College</td>
</tr>
<tr>
<td></td>
<td>University of London, Queen Mary</td>
</tr>
<tr>
<td></td>
<td>University of London, Royal Holloway</td>
</tr>
<tr>
<td></td>
<td>University of Oxford, Exeter College</td>
</tr>
<tr>
<td></td>
<td>University of Manchester</td>
</tr>
<tr>
<td></td>
<td>University of St. Andrews</td>
</tr>
<tr>
<td></td>
<td>University of Sussex</td>
</tr>
<tr>
<td></td>
<td>University of Warwick</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Brazil</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Catholic University of Salvador</td>
<td></td>
</tr>
<tr>
<td>Pontifical Catholic University of</td>
<td></td>
</tr>
<tr>
<td>Rio de Janeiro</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
</tr>
<tr>
<td>Field Research &amp; Internship</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Botswana</td>
<td></td>
</tr>
<tr>
<td>University of Botswana</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
</tr>
<tr>
<td>Pontifical Catholic University of</td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Beijing Normal University</td>
<td></td>
</tr>
<tr>
<td>East China Normal University</td>
<td></td>
</tr>
<tr>
<td>Fudan University</td>
<td></td>
</tr>
<tr>
<td>Peking University, Beijing</td>
<td></td>
</tr>
<tr>
<td>Tsinghua University, Beijing</td>
<td></td>
</tr>
<tr>
<td>University of Michigan-Shanghai</td>
<td></td>
</tr>
<tr>
<td>Jiao Tong Joint Institute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td></td>
</tr>
<tr>
<td>Monteverde Institute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyprus</td>
<td></td>
</tr>
<tr>
<td>University of Nicosia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Czech Republic</td>
<td></td>
</tr>
<tr>
<td>Charles University</td>
<td></td>
</tr>
<tr>
<td>Prague Film and Television School</td>
<td></td>
</tr>
<tr>
<td>at the Academy of the Performing</td>
<td></td>
</tr>
<tr>
<td>Arts</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
</tr>
<tr>
<td>University of Copenhagen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominican Republic</td>
<td></td>
</tr>
<tr>
<td>Pontificia Universidad Católica</td>
<td></td>
</tr>
<tr>
<td>Madre y Maestra</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td></td>
</tr>
<tr>
<td>École Normale Supérieure, Paris</td>
<td></td>
</tr>
<tr>
<td>Institut d’Etudes Politiques</td>
<td></td>
</tr>
<tr>
<td>(Sciences Po)</td>
<td></td>
</tr>
<tr>
<td>UC Center, Paris</td>
<td></td>
</tr>
<tr>
<td>University of Bordeaux</td>
<td></td>
</tr>
<tr>
<td>University of Lyon</td>
<td></td>
</tr>
<tr>
<td>University of Lyon III</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Free University of Berlin</td>
<td></td>
</tr>
<tr>
<td>Free University of Berlin (BEST)</td>
<td></td>
</tr>
<tr>
<td>Humboldt University, Berlin</td>
<td></td>
</tr>
<tr>
<td>Munich University of Applied</td>
<td></td>
</tr>
<tr>
<td>Sciences Technical University,</td>
<td></td>
</tr>
<tr>
<td>Berlin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td></td>
</tr>
<tr>
<td>University of Ghana, Legon</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong</td>
<td></td>
</tr>
<tr>
<td>Chinese University of Hong Kong</td>
<td></td>
</tr>
<tr>
<td>Hong Kong University of Science</td>
<td></td>
</tr>
<tr>
<td>and Technology</td>
<td></td>
</tr>
<tr>
<td>University of Hong Kong</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Fergusson College, Pune</td>
<td></td>
</tr>
<tr>
<td>Jamia Millia Islamia University</td>
<td></td>
</tr>
<tr>
<td>Semester in Mumbai with Internship</td>
<td></td>
</tr>
<tr>
<td>University of Hyderabad</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
</tr>
<tr>
<td>Institute of Public Administration</td>
<td></td>
</tr>
<tr>
<td>National University of Ireland,</td>
<td></td>
</tr>
<tr>
<td>Galway</td>
<td></td>
</tr>
<tr>
<td>Trinity College Dublin</td>
<td></td>
</tr>
<tr>
<td>University College Cork</td>
<td></td>
</tr>
<tr>
<td>University College Dublin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td></td>
</tr>
<tr>
<td>Ben-Gurion University of the Negev</td>
<td></td>
</tr>
<tr>
<td>Hebrew University of Jerusalem</td>
<td></td>
</tr>
<tr>
<td>Israel Institute of Technology,</td>
<td></td>
</tr>
<tr>
<td>Technion/Neubauer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
</tr>
<tr>
<td>UC Center, Florence</td>
<td></td>
</tr>
<tr>
<td>UC Center, Rome</td>
<td></td>
</tr>
<tr>
<td>University of Bologna</td>
<td></td>
</tr>
<tr>
<td>University of Commerce Luigi</td>
<td></td>
</tr>
<tr>
<td>Bocconi</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
</tr>
<tr>
<td>International Christian University</td>
<td></td>
</tr>
<tr>
<td>Doshisha University</td>
<td></td>
</tr>
<tr>
<td>Hitotsubashi University</td>
<td></td>
</tr>
<tr>
<td>Keio University</td>
<td></td>
</tr>
<tr>
<td>Meiji Gaku University</td>
<td></td>
</tr>
<tr>
<td>Osaka University</td>
<td></td>
</tr>
<tr>
<td>Tohoku University</td>
<td></td>
</tr>
<tr>
<td>Tsuru University</td>
<td></td>
</tr>
<tr>
<td>University of Tokyo</td>
<td></td>
</tr>
<tr>
<td>Waseda University</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Jordan</td>
<td></td>
</tr>
<tr>
<td>Advanced Arabic Language, Amman</td>
<td></td>
</tr>
<tr>
<td>Arabic Language &amp; Culture, Amman</td>
<td></td>
</tr>
<tr>
<td>Diplomacy &amp; Policy Studies, Amman</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Korea</td>
<td></td>
</tr>
<tr>
<td>Yonsei University</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
</tr>
<tr>
<td>UC Center, Mexico City</td>
<td></td>
</tr>
<tr>
<td>National Autonomous University of Mexico</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td></td>
</tr>
<tr>
<td>Arabic Language &amp; Culture, Rabat</td>
<td></td>
</tr>
<tr>
<td>Intensive Arabic Summer, Rabat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-Country</td>
<td></td>
</tr>
<tr>
<td>Environmental &amp; Community Health</td>
<td></td>
</tr>
<tr>
<td>- Queensland, Solomon Islands</td>
<td></td>
</tr>
<tr>
<td>European Transformations - Madrid, Romeo</td>
<td></td>
</tr>
<tr>
<td>Global Business in Asia - Hong Kong, Shanghai</td>
<td></td>
</tr>
<tr>
<td>Global Cities Urban Realities - London, Paris</td>
<td></td>
</tr>
<tr>
<td>Global Leadership - Mexico City, Sacramento</td>
<td></td>
</tr>
<tr>
<td>Human Rights and Cultural Memory - Buenos Aires, Santiago</td>
<td></td>
</tr>
<tr>
<td>Mediterranean Food &amp; Culture - Istanbul, Florence, Barcelona</td>
<td></td>
</tr>
<tr>
<td>Landscapes of Empire, Religion &amp; Culture - Rome, Istanbul</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>The Netherlands</td>
<td></td>
</tr>
<tr>
<td>Leiden University College</td>
<td></td>
</tr>
<tr>
<td>Maastricht University</td>
<td></td>
</tr>
<tr>
<td>University College Maastricht</td>
<td></td>
</tr>
<tr>
<td>University College Utrecht</td>
<td></td>
</tr>
<tr>
<td>Utrecht University</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Electrical and Computer Engineering

Subject abbreviation: EE

The Marlan and Rosemary Bourns College of Engineering

Illya Dumir Ph.D., Chair
Jay A. Farrell Ph.D., Associate Dean, Academic Personnel, Bourns College of Engineering

Department Office, Winston Chung Hall, Suite 343 (951) 827-2484; www.ece.ucr.edu

Professors
Alexander Balandin, Ph.D., Distinguished Professor
Matthew J. Barth, Ph.D.
Bir Bhanu, Ph.D., Distinguished Professor
Amit Roy Chowdhury, Ph.D.
Ilya Dumir, Ph.D.
Jay A. Farrell, Ph.D.
Susan Hackwood, Ph.D.
Yingbo Hua, Ph.D.
Alexander Korotkov, Ph.D.
Roger Lake, Ph.D.
Jianlin Liu, Ph.D.
Mihri Ozkan, Ph.D.
Wei Ren, Ph.D.
Sheldon Tan, Ph.D.
Ettem Tuncel, Ph.D.
Albert Wang, Ph.D.

Professor Emeritus
Gerardo Beni, Ph.D.

Associate Professors
Elaine D. Haberer, Ph.D.
Ping Liang, Ph.D.
Anastasios I. Mourtakis, Ph.D.
Hamed Mohtesnian-Rad, Ph.D.
Qi Zhou, Ph.D.

Assistant Professors
Zak Kassas, Ph.D.
Ming Liu, Ph.D.
Shaolei Ren, Ph.D.
Daniel Wong, Ph.D.
Nanpeng "Eric" Yu, Ph.D.

Adjunct Professors
Hossny El-Sherefy, Ph.D.
Sadik Khizroev, Ph.D.
Bahram Parvin, Ph.D.

Associate Adjunct Professors
Gang Chen, Ph.D.
Aleksander Khitun, Ph.D.

Cooperating Faculty
Guillermo Aguilar, Ph.D (Mechanical Engineering)
Ludwig Bartels, Ph.D (Chemistry)
Laxmi Bhuyan, Ph.D. (Computer Science and Engineering)
Wald Najjar, Ph.D (Computer Science and Engineering)
Cengiz Ozkan, Ph.D. (Mechanical Engineering)
Hye Park, Ph.D. (Bioengineering)
Frank Vahid, Ph.D. (Computer Science and Engineering)

Affiliated Emeritus
J. Keith Oddson, Ph.D. (Mathematics)

Lecturers
Nissim Amos, Ph.D.
Roman Chomko, Ph.D.
Tolfig Heidarzadeh, Ph.D.

Major
The Department of Electrical and Computer Engineering offers B.S., M.S., and Ph.D. degrees in Electrical Engineering and with the Department of Computer Science and Engineering jointly offers B.S. and M.S. degrees in Computer Engineering. For more information on the Computer Engineering degree programs, see Computer Engineering in this catalog.

Graduates of UCR’s B.S. program in Electrical Engineering will meet high professional, ethical, and societal goals as demonstrated by:

success in post-graduation studies as evidenced by:
- satisfaction with the decision to further their education
- advanced degrees earned
- professional visibility (e.g., publications, presentations, patents, inventions, award)
- professional responsibilities (e.g., professional mentoring, professional society membership and offices, reviewing and editorial work for professional journals)

All undergraduates in the College of Engineering must see an advisor at least annually. For details, visit student.engr.ucr.edu.

Electrical and Computer Engineering / 252

applications include speech processing and recognition, mobile communication using smartphones, fiber optical communication, image enhancement and compression.

2. Control, Robotics and Machine Intelligence:
Theory and design of control of systems and robots, and systems capable of intelligent decisions. Example applications include control systems in automotive, satellite, aircraft, computer hard drive, robotic manufacturing, autonomous robots, cell phone signal tracking, computer vision and intelligent transportation systems.

3. Embedded Systems and VLSI:
Theory, design and methodologies of embedded system using microcontrollers, very large scale, nanometer integrated circuits. Example applications include smart home appliances, Internet of Things, microprocessors, analog and mixed signal circuits, RF circuits for cell phones and wireless networks, system-on-chip and wireless networks, system-on-chip.

4. Nanotechnology, Advanced Materials and Devices:
Synthesis and characterization of advanced materials at nanometer scale, theory, design and fabrication of electronic and optoelectronic devices. Example applications include creation of ultra-fast low-power transistors, efficient solar cells for energy generation, high-density memory for smart phones and mobile services, and tiny devices for medical applications.

5. Power Engineering:
Power electronics, AC and DC power and their conversion, electro-mechanical energy conversion, electric motors, large-scale power generation and transmission systems, long-distance transmission and distribution of electric power, design of motion control drive circuits for robotic and industrial automation systems, and other related topics.

All undergraduates in the College of Engineering must see an advisor at least annually. For details, visit student.engr.ucr.edu.

Electrical and Computer Engineering / 252

University Requirements
See Undergraduate Studies section.

College Requirements
See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The Electrical Engineering major uses the following major requirements to satisfy the college’s Natural Sciences and Mathematics breadth requirement.

1. One course in the biological sciences chosen from an approved list
2. CHEM 001A, CHEM 01LA
3. MATH 008B or MATH 009A
4. PHYS 040A, PHYS 040B

Major Requirements
1. Lower-division requirements (73 units)
   a) One course in the biological sciences chosen from an approved list
   b) CHEM 001A, CHEM 01LA

Undergraduate Program Focus Areas
The electrical engineering undergraduate program offers the following focus areas:

1. Communications, Signal Processing and Networking: Fundamental and state-of-the-art theory and applications of acquisition, processing, and transmission of digital signals and images over wire, wireless (radio frequency), fiber optics, etc. Example
Graduate Program

The Department of Electrical and Computer Engineering offers programs leading to M.S. and Ph.D. degrees.

University requirements for the M.S. and Ph.D. degrees in Electrical Engineering are given in the Graduate Studies section of this catalog.

Research focus areas currently include communications, computer vision, control, detection and estimation, distributed systems, electronic materials, error-correcting codes, image processing, information theory, intelligent sensors, intelligent systems, machine learning, modeling and simulation, multimedia, nanotechnologies and nanodevices, navigation, neural networks, pattern recognition, robotics and automation, signal processing, solid-state devices and circuits, system identification, and transportation systems.

Combined B.S. + M.S. Five-Year Program

The college offers a combined B.S. + M.S.S. program in Electrical Engineering designed to lead to a Bachelor of Science degree as well as a Master of Science degree in five years. Applicants for this program must have a high school GPA above 3.6, a combined SAT Reasoning score above 1950 (or ACT plus Writing equivalent), complete the Entry Level Writing Requirement before matriculation, and have sufficient mathematics preparation to enroll in calculus in their first quarter as freshmen.

Students in the B.S. + M.S. program are allowed to count up to 12 units of undergraduate technical electives taken as UCR undergraduates towards the 48-unit requirements of the M.S. degree.

Interested students who are entering their junior year should check with their academic advisor for information on eligibility and other details.

Admission

All applicants for the M.S. and Ph.D. programs must submit official scores for the GRE General Test. All applicants whose native language is not English and who do not have a degree from an institution where English is the exclusive language of instruction must complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 (paper-based), 220 (computer-based), or 90 (Internet-based).

Applicants must meet the general admission requirements of the Riverside Division of the Academic Senate and the UCR Graduate Council as set forth in the UC Riverside Graduate Student Application. In addition, Master’s Degree Applicants should have completed a program equivalent to UCR’s B.S. in Electrical Engineering or demonstrate the required knowledge and proficiency in the following subjects:

1. Mathematics, including calculus, differential equations, and complex variables
2. Circuits and electronics (equivalent of EE 100)
3. Signals and systems (equivalent of EE 110)
4. Communication and signal processing (equivalent of EE 115, EE 141)
5. Logic design, digital systems, and microcomputers (equivalent of EE 120)
6. Control systems (equivalent of EE 132)
7. At least one major high-level programming language and associated programming techniques (equivalent of CS 010)

Students with background in other scientific fields are encouraged to apply. Applicants lacking minimum undergraduate preparation in the above areas may be admitted but must take the appropriate undergraduate courses. Under special circumstances, students who have not completed all undergraduate requirements may be admitted provided that the deficiencies are corrected within the first year of graduate study. Courses taken for this purpose do not count towards an advanced degree.

Master of Science

The Department of Electrical and Computer Engineering offers the M.S. degree in Electrical Engineering.

General university requirements are listed in the Graduate Studies section of this catalog. Students may obtain an M.S. degree in Electrical Engineering through either Plan I (Thesis) or Plan II (Comprehensive Examination). The normative time for a student to complete the M.S. degree under both Plan I or Plan II is six quarters (two years). Students who are admitted with deficiencies may require up to three additional quarters.

Plan I (Thesis)

Students must complete 48 units of approved graduate or upper-division undergraduate work in Electrical Engineering and related areas such as Computer Science, Materials Science and Engineering, or other approved subject areas. At least 36 of these units must be graduate-level courses numbered between 200 and 279 taken at a campus of the UC. Colloquium units cannot be counted towards the unit requirements. No more than 12 units may be in graduate research (courses numbered 297 or 299). Upper-division undergraduate courses numbered 125 and above may be counted towards the unit requirements upon approval.

A thesis on a research topic must be submitted and approved by the faculty. The thesis must demonstrate the student’s in-depth knowledge of the chosen research topic. Publishable results are encouraged. The thesis defense is a two-hour examination session open to the public and begins with a brief presentation of the thesis by the candidate, followed by a question-and-answer session.

Plan II (Comprehensive Examination)

Students must complete 48 units of approved graduate or upper-division undergraduate work in Electrical Engineering and related areas such as Computer Science, Materials Science and Engineering, or other approved subject areas. At least 36 of these units must be graduate-level courses numbered between 200 and 279 taken at a campus of the UC. Units from courses numbered 291 or higher and colloquium units may not be counted towards the unit requirements. A maximum of 6 units in Directed studies (290) may be counted. Upper-division undergraduate courses numbered 125 and above may be counted towards the unit requirements upon approval.

Students must pass the comprehensive examination. This written exam consists of problems from five courses in one of the three Exam Areas:

- signals, systems, and machine intelligence
- nano materials and devices, or
- computer engineering
Students must pass the exam in no more than two attempts. In the second attempt, they will be required to solve problems only from courses they did not pass in their first attempt.

Normative Time to Degree Six quarters (two years)

Doctoral Degree

The Department of Electrical and Computer Engineering offers the Ph.D. degree in Electrical Engineering.

Admission Students with backgrounds in Electrical Engineering or other related areas are encouraged to apply. An M.S. degree is not required for admission to the Ph.D. program. Under special circumstances, applicants lacking undergraduate preparation in core Electrical Engineering areas related to their field of research may be admitted, but must take the appropriate undergraduate courses to correct the deficiencies within the first year of graduate study. Courses taken for this purpose do not count towards an advanced degree.

Course Work Students must complete at least 36 units of approved graduate coursework in Electrical Engineering and related areas such as Computer Science, Materials Science and Engineering, or other approved subject areas. Only courses numbered between 200 and 279, excluding Colloquium courses, may be counted towards this requirement. Students who have already taken 36 units of graduate coursework at UCR as part of the M.S. program in Electrical Engineering are deemed to have met the minimum-unit requirement for the Ph.D. Students who are admitted with an M.S. degree from a different institution may use up to 16 units of equivalent courses taken during their M.S. study to count towards the requirement. Students must complete a minimum of six quarters (two years) in residence in the UC with a GPA of 3.00 or better. Students must establish a course plan in coordination with their research advisor or the program Graduate Advisor. The course plan should lend support to the students’ research area, while adding breadth to their overall program. Students may need to take considerably more than 36 units to establish breadth and depth of knowledge in their area of research.

Advancement to Candidacy A student advances to candidacy after he/she has passed the preliminary examination and the oral qualifying examination, as described below.

Preliminary Examination The purpose of the preliminary examination is to screen candidates for continuation in the doctoral program. The examination is administered by the graduate program committee. Students must solve problems from five courses in one of the three Exam Areas:
- signals, systems, and machine intelligence
- nano materials and devices, or
- computer engineering

Three of these problems must be from the “basic” courses and two must be from the “advanced” courses designated for each Exam Area. Students who did not pass at the Ph.D. level in their first trial will be given a second chance. In the second attempt, they will be required to solve problems only from courses they did not pass at the Ph.D. level in their first attempt.

Plan II M.S. candidates who took the M.S. comprehensive examination and successfully passed at the Ph.D. level are given credit for having passed the Ph.D. preliminary examination.

Oral Qualifying Examination Students are expected to demonstrate that they have a thorough understanding of their research field, and are capable of doing cutting-edge research. For that purpose, students must choose a research topic under the guidance of their faculty major professor and orally present to a Qualifying Committee, which is appointed by the Graduate Division based on nominations from the department.

The presentation must be accompanied by an Oral Exam Report, written in proper technical English and in the style of a typical Electrical Engineering conference or journal publication. This report should clearly describe the proposed problem under study, demonstrate substantial knowledge of the topic and related issues, present the research results the student has obtained, and indicate the plans for future work. Students must demonstrate ability to carry out a program of independent advanced research and to report the results in accordance with standards observed in recognized technical journals.

The Oral Qualifying examination is closed to the public.

The student must complete this requirement in no more than two attempts. The normative time for taking the Oral Qualifying Exam is by the end of the second year.

Dissertation Examination and Defense After advancement to candidacy, the student must form a Doctoral Dissertation Committee chaired by his or her major professor. The committee will consist of at least three senate faculty members with at least two members from the Electrical and Computer Engineering department.

When the Doctoral Dissertation Committee determines that a suitable draft of the dissertation has been presented, a dissertation examination and defense for the student is scheduled. The defense consists of a public seminar followed by questions from the committee members and the audience.

Normative Time to Degree 12 quarters (15 quarters for students without an M.S. in Electrical Engineering)

Preparation for Careers in Teaching

All doctoral students are recommended to be employed as teaching assistants for at least three quarters during their graduate career. The department is developing special courses to aid in the learning of effective teaching methods, such as handling discussion/lab sessions and preparing and grading examinations.

Contact the Graduate Student Affairs Officer at the Department of Electrical and Computer Engineering, (951) 827-2484, or visit ece.ucr.edu for information on graduate courses.

Professional Development Requirement

All incoming M.S. and Ph.D. students must enroll in the Fall, Winter, and Spring offerings of EE 259, Colloquium in Electrical Engineering.

Additionally, students in the Ph.D. program must submit a Professional Development Report that details the students’ efforts in developing their technical writing and presentation skills. This report should be submitted to and approved by the Graduate Committee, as a prerequisite for filing the Oral Qualifying Committee nomination form. Specific requirements for the Professional Development Report are determined by the Graduate Committee.

Lower-Division Courses

EE 001A Engineering Circuit Analysis I (3) Lecture, 3 hours. Prerequisite(s): MATH 046, PHYS 040C (both may be taken concurrently); concurrent enrollment in EE 010A. Ohm’s law and Kirchoff’s laws; nodal and loop analysis; analysis of linear circuits; network theorems; transients in RLC circuits. Application of SPICE to circuit analysis.

EE 001B Engineering Circuit Analysis II (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 001A and EE 010A. Sinusoidal steady state analysis, polyphase circuits, magnetically coupled networks, frequency characteristics, Laplace and Fourier transforms, Laplace and Fourier analysis. Application of SPICE to complicated circuit analysis.

EE 3 Electronics, Smartphones and Mobile Internet (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces basic concepts and understanding of electronic products, wireless communications, industrial control, and robotics that are important for citizens and leaders in the information age. Highlights examples including smartphones, mobile Internet, robots etc. as examples. Does not confer credit towards a degree in the Bourns College of Engineering.

EE 004 Nanotechnology: Science, Applications and Future (4) Lecture, 3 hours; discussion, 1 hour. Introduces concepts and understanding of nanotechnologies in electronics, energy, medicine, and environment that are important for citizens and leaders in the technology economy. Discusses applications in cancer treatments, cosmetics, nanorobots, solar energy, and environmental protection. Does not confer credit towards a degree in the Bourns College of Engineering.

EE 010 Introduction to Electrical Engineering (1) Lecture, 1 hour. Prerequisite(s): none. Introduces electrical engineering applications, career options, and the electrical engineering curriculum. Provides motivation and context for the mathematics and science courses that are prerequisites to most electrical engineering courses. Discusses contemporary engineering issues, social and environmental impact of engineering solutions, professional ethics, and need for life-long learning.

EE 011A Engineering Circuit Analysis I Laboratory (1) Laboratory, 3 hours. Prerequisite(s): EE 001A (may be taken concurrently). Laboratory experiments closely tied to the lecture material of EE 001A. Resistive circuits, attenuation and amplification, network theorems and superposition, operational amplifiers, transient response, application of SPICE to circuit analysis.
255 / Programs and Courses

EE 020 Linear Methods for Engineering Analysis and Design Using MATLAB (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 010, MATH 008B or MATH 009A or MATH 00HA. Introduces MATLAB programming and linear methods for engineering analysis and design. Topics include formulating engineering problems as linear systems of equations; methods for finding their solutions; vector and matrix representations of signals and systems; matrices computations; and linear programming for system analysis and design.

Upper-Division Courses

EE 100A Electronic Circuits (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 001B. Electronic systems, linear circuits, operational amplifiers, diodes, nonlinear circuit applications, junction and metal-oxide-semiconductor field-effect transistors, bipolar junction transistors, MOS and bipolar digital circuits. Laboratory experiments are performed in the subject areas and SPICE simulation is used.

EE 100B Electronic Circuits (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 100A. Differential and multistage amplifiers, output stages and power amplifiers, frequency response, feedback, analog integrated circuits, filters, tuned amplifiers, and oscillators. Laboratory experiments are performed in the subject areas and SPICE simulation is used.

EE 105 Modeling and Simulation of Dynamic Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 001B, MATH 046. Introduces the mathematical modeling of dynamical systems and their methods of solution. Explores advanced techniques and concepts for analytical modeling and study of various electrical, electronic, and electromechanical systems based upon physical laws. Emphasizes formulation of problems via differential equations. Addresses numerical methods for integration and matrix analysis problems.

EE 110A Signals and Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 001B (may be taken concurrently); EE 020; MATH 046. Covers basic signals and types of systems, linear time-invariant (LTI) systems, Fourier analysis, frequency response, and Laplace transforms for LTI systems. Includes laboratory experiments with signals, transforms, harmonic generation, linear digital filtering, and sampling/aliasing.

EE 110B Signals and Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 110A. Fourier analysis for discrete-time signals and systems, filtering, modulation, sampling and interpolation, z-transforms. Laboratory experiments with signals, transforms, harmonic generation, linear digital filtering, and sampling/aliasing.

EE 111 Digital and Analog Signals and Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 003B, EE 100A, MATH 046; or consent of instructor. Covers continuous- and discrete-time signals and systems; linear time-invariant (LTI) systems; impulse response; Fourier analysis; frequency response; Laplace and Z-transformations; and Nyquist rates. Includes laboratory experiments with signals, transforms, linear digital filtering, and sampling/aliasing.

EE 114 Probability, Random Variables, and Random Processes in Electrical Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 110A or EE 111. Covers fundamentals of probability theory, random variables, and random processes with applications to electrical and computer engineering. Includes probability theory, random variables, densities, functions of random variables, expectations and moments, and multivariate distributions. Also addresses random processes, autocorrelation function, spectral analysis of random signals, and linear systems with random inputs.

EE 115 Introduction to Communication Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 110B. Covers spectral density and correlation, modulation theory, amplitude, frequency, phase and analog pulse modulation and demodulation techniques, signal-to-noise ratio, and system performance calculations. Laboratory experiments involve techniques of modulation and demodulation.

EE 116 Engineering Electromagnetics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 001B (may be taken concurrently). Transmission lines, fields and field operators, electrostatic and magnetostatic fields, time-varying fields, electromodynamics, electromagnetic waves, plane waves, guided waves, and applications to engineering problems.

EE 117 Electromagnetics II (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 116. Covers applications of Macquod includes skin effect, boundary-value problems, plane waves in lossy media, transverse EM waves, hollow metal waveguides, cavity resonators, microstrip, propagation in dielectrics and optical fibers, optical fibers applications, radiation, and antennas. Covers theoretical and computer modeling exercises in basic electromagnetic technology.

EE 120A Logic Design (5) Lecture, 3 hours; laboratory, 3 hours; individual study, 3 hours. Prerequisite(s): CS 061 with a grade of C- or better. Covers design of digital systems. Includes Boolean algebra; combinational and sequential logic design; and design and use of arithmetic logic units, carry-lookaheadadders, multipliers, decoders, comparators, multipliers, flip-flops, registers, counters, and simple design strategies. Also covers basic register-transfer level design. Uses hardware description languages, synthesis tools, programmable logic, and significant hardware prototyping. Cross-listed with CS 120A.

EE 120B Introduction to Embedded Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 120A/EE 120A. Introduction to hardware and software design of digital computing systems embedded in electronic devices (e.g., digital cameras or portable video games). Includes embedded processor programming, custom processor design, standard peripherals, memories, interfacing, and hardware/software tradeoffs. Involves use of synthesis tools, programmable logic, microcontrollers, and developing working embedded systems. Cross-listed with CS 120B. Credit is awarded for only one of CS 121 or CS 120B/EE 120B.

EE 123 Power Electronics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 100A with a grade of "C-" or better. EE 123 online section; enrollment in this program is mandatory. Covers study of power semiconductor devices. Includes diodes and thyristors devices; switch mode converters and power supplies; and single, three-phase, pulse width modulation, and resonant pulse inverters. Addresses voltage controllers; direct current and induction motor drives; and design of motor control drive circuits for robotic and industrial automation systems.

EE 128 Data Acquisition, Instrumentation, and Process Control (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 128/EECS 120B (EE 100B and EE 120B/CS 120B may be taken concurrently); or consent of instructor. Covers analog signal transducers, conditioning, and processing; step motors, DC servo motors, and other actuation devices. Explores analog to digital and digital to analog converters; data acquisition systems; microcomputer interfaces to commonly used sensors and actuators; and design principles for electronic instruments, real time process control, and instrumentation.

EE 132 Automatic Control (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 105 or ME 103 or equivalent; EE 110A or ENGR 118, or consent of instructor. Covers modeling of linear systems for time and frequency domain analysis. Topics include transfer function and state variable representations for analyzing stability, controllability, and observability; and closed-loop control design techniques by Bode, Nyquist, and root-locus methods. Laboratories involve both simulation and hardware exercises.

EE 133 Solid-State Electronics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 100A. Presents the fundamentals of solid-state electronics. Topics include electronic band structure of Fermi and quasi-Fermi levels; doping; contacts; junctions; field-effect, bipolar, and metal-oxide-semiconductor (MOS) transistors; and charge-coupled devices. Also reviews device fabrication concepts.

EE 135 Analog Integrated Circuit Layout and Design (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 133, EE 100B or consent of instructor. Covers analog circuit design, layout, and verification of complementary metal oxide semiconductor (CMOS) with use of computer-aided design tools. Topics covered include analog metal oxide semiconductor field effect transistor (MOSFET) models, current sources, references, amplified design, nonlinear analog circuits, dynamic analog circuits, analog-to-digital converters (ADCs), and digital-to-analog converters (DACs).

EE 136 Semiconductor Device Processing (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 120A. Introduction to semiconductor device processing. Topics include basic optical processes in semiconductors, semiconductor light-emitting diode, semiconductor heterojunction lasers, photodetectors, solar cells, optoelectronic modulation, and switching devices.

EE 138 Electrical Properties of Materials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing; PHYS 040C or equivalent. Introduces the electrical properties of materials. Includes the electron as a particle and a wave; hydrogen atom and the periodic table; chemical bonds, free-electron theory of metals, band theory of solids, semiconductors and dielectrics; measurements of material properties; and growth and preparation of semiconductors.

EE 139 Magnetic Materials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing; PHYS 040C or equivalent. Introduces fundamentals of magnetic materials for the next-generation magnetic, nanomagnetic, and spintronics-related technologies. Includes basics of magnetism, models of the equivalent magnetic charge and current, paramagnetic and diamagnetic materials, soft and hard magnetic materials, equivalent magnetic circuits, and magnetic system design foundations.

EE 141 Digital Signal Processing (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 110B. Transform analysis of Linear Time-Invariant (LTI) systems, discrete Fourier Transform (DFT) and its computation, Fourier analysis of signals using the DFT, finite impulse response (FIR) digital filters and filter systems. Laboratory experiments on DFT, fast Fourier transforms (FFT), infinite impulse response (IIR), and finite impulse response (FIR) filter design, and quantization effects.

EE 144 Introduction to Robotics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 132. Covers basic robot components from encoders to microprocessors. Kinematic and dynamic analysis of manipulators, PID controller design, trajectory planning, feedback control strategies, task planning, contact and noncontact
Electrical and Computer Engineering / 256

sensors, robotic image understanding, and robotic programming languages. Experiments and projects include robot arm programming, robot vision, and mobile robots. Cross-listed with ME 144.

EE 145 Robotic Planning and Kinematics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): senior standing in Computer Science or Electrical Engineering, or consent of instructor. Motion planning and kinematics topics with an emphasis in geometric reasoning, programming, and simulation computations. Motion planning includes configuration spaces, sensor-based planning, decomposition and sampling methods, and advanced planning algorithms. Kinematics includes reference frames, rotations and displacements, and kinematic motion models. Cross-listed with ME 145.

EE 146 Computer Vision (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): senior standing in Computer Science or Electrical Engineering, or consent of instructor. Imaging formation, early vision processing, boundary detection, region growing, two-dimensional and three-dimensional object representation and recognition techniques. Experiments for each topic are carried out.

EE 150 Digital Communications (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 114, EE 115. Topics include modulation, probability and random variables, correlation and power spectra, information theory, errors of transmission, equalization and coding methods, shift and phase keying, and a comparison of digital communication systems.

EE 151 Introduction to Digital Control (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 132, EE 141. Review of continuous-time control systems; review of Z-transform and properties, sampled-data systems; stability analysis and criteria; frequency domain analysis and design; transient and steady-state response; state-space techniques; controllability and observability; pole placement; observer design; Lyapunov stability analysis. Laboratory experiments complementary to these topics include simulations and hardware design.

EE 152 Image Processing (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 110B. Digital image acquisition, image enhancement and restoration, image compression, computer implementation and testing of image processing techniques. Students gain hands-on experience of complete image processing systems, including image acquisition, processing, and display through laboratory experiments.

EE 153 Electric Drives (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 123 with a grade of “D-” or better, EE 116 or consent of instructor. EE 153 online section; enrollment in the Online-Master-in-Science in Engineering program. Covers the study of electro-mechanical energy conversion; magnetic circuits and components; electric motors; and direct current, induction, and reluctance motor drives. Also addresses servomechanism analysis and design of feedback controllers; energy efficiency; and drive-by-wire, robotic, and industrial automation systems.

EE 155 Power System Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 001B, EE 116; or consent of instructor. EE 155 online section; enrollment in the Online Master-in-Science in Engineering program. Covers long-distance transmission of electric power. Emphasizes stability and impedance modeling of components and systems; optimal power flow calculations and applications; symmetrical and asymmetrical fault calculations; economic operation of large-scale generation and transmission systems; and analysis of transmission and distribution networks.

EE 162 Introduction to Nanoelectronics (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): EE 133 or consent of instructor; familiarity with MATLAB or equivalent and with basic matrix algebra is recommended. Presents the basic concepts of nanoelectronics with a focus on current flow through nanostructured devices. Topics include new paradigms of nanoelectronics, an atomic view of electrical resistance, Schrödinger’s equation, Coulomb blockade, basis functions, bandstructure, quantum capacitance, level broadening, and coherent transport.

EE 165 Design for Reliability of Integrated Circuits and Systems (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 120A/EE 120A or consent of instructor. Discusses integrated circuit design, fabrication, device characterization, and circuit simulation. Introduces basic device physics and physical design rules, MOS logic design, and timing and clock schemes. Covers layout generation, subsystem designs, and circuits for alternative logic styles. Also covers design and simulation of reliability and fault-tolerant techniques such as ESD protection designs at IC, module, and system levels. Enhances learning with computer aided design (CAD) laboratories.

EE 168 Introduction to Very Large Scale Integration (VLSI) Design (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 120A/EE 120A or consent of instructor. Studies integrated circuit fabrication, device characterization, and circuit simulation. Introduces basic device physics and physical design rules, MOS logic design, and timing and clock schemes. Covers layout generation, subsystem designs, and circuits for alternative logic styles. Also covers design and simulation of reliability and fault-tolerant techniques such as ESD protection designs at IC, module, and system levels. Enhances learning with computer aided design (CAD) laboratories.

EE 175A Senior Design Project (4) Lecture, 1 hour; laboratory, 3 hours; practicum, 6 hours. Prerequisite(s): EE 120B/CS 120B; senior standing in Electrical Engineering or consent of instructor. Proposal of design of electrical engineering devices or systems under the direction of the instructor. Develops technical specification, considers design constraints and industry standards; emphasizes ethical responsibilities; and promotes staying current on technology and its socioeconomic and environmental impact. Satisfactory (S) or No Credit (NC) grading is not available.

EE 175B Senior Design Project (4) Lecture, 1 hour; laboratory, 3 hours; practicum, 6 hours. Prerequisite(s): EE 175A; senior standing in Electrical Engineering. Builds, tests, and redesigns electrical engineering devices or systems. Develops and carries out test plan according to design specification. Presents a demo of the design. Completes project testing and technical documentation. <V> <V>Presents a demo of the design. Satisfactory (S) or No Credit (NC) grading is not available.

EE 190 Special Studies (1-5) Individual study. 3-15 hours. Prerequisite(s): consent of instructor and department chair. Individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

EE 191 (E-Z) Seminar in Electrical Engineering (1-4) Seminar, 2-8 hours. Prerequisite(s): upper-division standing or consent of instructor. Additional prerequisites may be required for some segments of this course; see department. Consideration of current topics in electrical engineering. Offered in summer only.

EE 194 Independent Reading (1-2) Extra reading, 3-6 hours. Prerequisite(s): upper division standing or consent of instructor. Independent reading in material not covered in course work. Normally taken in senior year. Course is repeatable to a maximum of 4 units.

EE 197 Research for Undergraduates (1-4) Outside research, 3-12 hours. Prerequisite(s): consent of instructor and Electrical Engineering undergraduate program advisor. Directed research on a topic relevant to electrical engineering. Course must be a final written report. Course is repeatable to a maximum of 8 units.

EE 198-I Individual Internship in Electrical Engineering (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): upper-division standing; at least 12 units in Electrical Engineering. Provides the undergraduate student with career experience as an electrical engineer in an industry or a research unit under the joint supervision of an off-campus sponsor and a faculty member in Electrical Engineering. Each individual program must have the prior approval of both supervisors. Requires a final report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Graduate Courses

EE 201 Applied Quantum Mechanics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 046, PHYS 040A; or consent of instructor. Covers topics in quantum mechanics including Schrödinger equation; operator formalism; harmonic oscillator; quantum wells; spin, bosons, and fermions; solids; perturbation theory; Wentzel-Kramers-Brillouin approximation; tunneling; tight-binding model; quantum measurements; quantum cryptography; and quantum computing. Cross-listed with MSE 207.

EE 202 Fundamentals of Semiconductors and Nanostructures (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 133, EE 201/MSE 207; or consent of instructor. Emphasizes properties of semiconductor materials and nanostructures. Topics include periodic structures, electron and phonon transport, defects, optical properties, and radiative recombination. Also covers absorption and emission of radiation in nanostructures and nonlinear optics effects. Emphasizes properties of semiconductor superlattices, quantum wells, wires, and dots. Cross-listed with MSE 217.

EE 203 Solid-State Devices (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 133 or consent of instructor. Covers electronic devices including p-n junctions, field-effect transistors, heterojunction bipolar transistors, and nanostructure devices. Explores electronic and optical properties of semiconductor heterostructures, superlattices, quantum wires, and dots, as well as devices based on these structures. Cross-listed with MSE 237C.

EE 204 Advanced Electromagnetics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 117 or consent of instructor. Presents selected topics in electromagnetic theory and antenna design. Topics include power transmission and attenuation in microstrip transmission lines (TL) and waveguides (WG); transient analysis and applications of TL and WG; radiation of electromagnetic waves; antenna design; electromagnetic interference and compatibility; and numerical methods in electromagnetic theory.

EE 205 Optoelectronics and Photonic Devices (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 203/MSE 237C, EE 204; or consent of instructor. A study of the physical and optical properties of photonic and optical devices and their use in an optical communication system. Covers silica fibers, light-emitting diodes (LEDs), heterojunction lasers, p-n photodiodes, and avalanche photodiodes.

EE 206 Nanoscale Characterization Techniques (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 201/MSE 207 or consent of instructor. An in-depth study of nanoscale materials and device characterization techniques. Emphasizes atomic force microscopy (AFM) and scanning tunneling microscopy (STM). Includes semiconductor fabrication fundamentals; metrology requirements; in situ monitoring; and failure analysis principles; principles of AFM, STM, and scanning electron microscopy and x-ray methods; optical and infrared techniques; and electrical characterization. Cross-listed with MSE 227.

EE 208 Semiconductor Electron, Phonon, and Optical Properties (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 202/MSE 217. Topics include semiconductor electronic band structure theory and methods; phonon dispersion theory and methods; defects in semiconductors; and optical properties of...
seminconductors. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 209 Semicausal Electrical Transport (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 201/ MSE 207, EE 203/MSE 237C, EE 208. Covers the Boltzmann transport equation as applied to semicausal device modeling. Topics include the physics of carrier scattering in common semiconductors, theoretical treatments of low and high field transport, balance equations, and Monte Carlo solutions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 210 Advanced Digital Signal Processing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 110B, EE 141. Provides in-depth coverage of advanced techniques for digital filter and power spectral estimation. Topics include digital filter design, discrete random signals, finite-wordlength effects, nonparametric and parametric power spectrum estimation, multirate digital signal processing, least square methods of digital filter design, and digital filter applications.

EE 211 Adaptive Signal Processing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 215. Provides an in-depth understanding of adaptive signal processing techniques. Techniques include Wold decomposition, Yule-Walker equations; spectrum estimation; Weiner filters; prediction; Kalman filtering; time-varying system tracking; nonlinear adaptive filtering; and performance analysis of adaptive algorithms and their variations including stochastic gradient, least mean square, least squares, and recursive least squares.

EE 212 Quantum Electron Transport (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 208. Covers theoretical aspects of quantum transport, quantum confinement, quantum wells, quantum dots, and novel electronic material systems (such as carbon nanotubes and molecular wires.) May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 213 Computer-Aided Electronic Circuit Simulation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 001A, EE 001B, EE 133. Introduces numerical algorithms and computer-aided techniques for the simulation of electronic circuits. Covers theory and practical aspects of important analytical techniques. Topics include circuit formulation methods; large-signal nonlinear direct current, small-signal alternating current, and moment-matching transient; sensitivity; and noise. Also discusses recent advances in timing analysis, symbolic analysis, and radio frequency circuit analysis.

EE 214 Quantum Computing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 211/MSE 207 or equivalent; graduate standing or consent of instructor. An introduction to quantum computing. Topics include qubits, entanglement, quantum gates, quantum circuit diagrams, simple quantum algorithms, quantum teleportation, quantum cryptography, Shor’s factorization algorithm, Grover’s algorithm, and quantum error correction. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with PHYS 220.

EE 215 Stochastic Processes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. A study of probability and stochastic processes. Topics include discrete and continuous random variables; probability densities; characteristics functions; independence; convergence of random sequences; central limit theorem; autocorrelation functions and spectral densities; wide-sense and strict-sense stationarity; Markov chains and processes; and response of linear time-invariant systems to random signals.

EE 216 Nanoscale Phonon Engineering (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 202/MSE 217. Studies acoustic and optical phonons that affect electrical, thermal, and optical properties of nanostructures. Focuses on the confinement-induced changes of phonon properties in nanomaterials and their implications for performance of electronic, thermoelectric, and optoelectronic devices. Explores phonon theory, Raman spectroscopy and other phonon characterization techniques, thermal conductivity, and related measurements. Cross-listed with MSE 237B.

EE 217 GPU Architecture and Parallel Programming (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 160 with a grade of “C-” or better or consent of instructor. Introduces the popular CUDA based parallel programming environments based on Nvidia GPUs. Covers the basic CUDA memory modeling techniques. Also covers the common data-parallel programming patterns needed to develop a high-performance parallel computing applications. Examines computational thinking; a broader range of parallel execution models, and parallel programming principles. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D. Cross-listed with CS 217.

EE 218 Power System Steady State and Market Analysis (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): EE 155; EE 132; ENGR 160 or EE 231. EE 218 online section; enrollment in the Online Master-in-Science in Engineering program. Introduces power system steady state and market analysis. Topics include system security criteria and security assessment; state estimation; automatic generation control; contingency screening and security constrained optimal power flow; the electricity market structure; security constraints, market clearing, and price formation; financial transmission rights; forward markets; and market power. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 219 Advanced Complementary Metal Oxide Semicon-duc- tor (CMOS) Technology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 203/MSE 237C. Introduces advanced complementary metal oxide semiconductor (CMOS) technology. Topics include MOS field effect transistor (MOSFET) scaling; short and narrow channel effects; high field effects; vertical MOSFET transistors; single electron transistors; MEMS; nanoelectrical and electronic devices, and large- and small-MOSFET models. Covers CMOS process integration. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 220 Applied Ferromagnetism (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 116; consent of instructor. Introduces fundamentals of ferromagnetism necessary to develop next-generation nanomagnetic and spintronics-related devices. Includes basics of magnetism, magnetic circuits, ferromagnetic resonance (FMR), nuclear magnetic resonance (NMR), spintronics, and applications of analysis. Cross-listed with MSE 237A.

EE 221 Radio-Frequency Integrated Circuit Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 100B; senior or graduate standing. Covers the essentials of contemporary radio frequency (RF) complimentary metal oxide semiconductor (CMOS) integrated circuit and system design. Addresses topics such as RF building blocks in CMOS and bipolar/ CMOS (BiCMOS) technologies, including passive IC components, transistors, distributed networks, voltage reference and biasing circuits, power amplifiers, and feedback networks. Also covers RF device modeling, bandwidth estimation, and stability analysis techniques.

EE 222 Advanced Radio-Frequency (RF) Integrated Circuit Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 100B; senior or graduate standing. Covers analysis techniques for nonlinear effects and noise in RF integrated circuit design. Addresses non-linear, and distortion behavior, including inter-modulation, cross-modulation, harmonics, gain compression, and <B>desensitization. Also explores noise effects, including thermal, short, flicker, and burst noises. Includes single-stage and multiple-stage networks.

EE 223 Numerical Analysis of Electromagnetic Devices (4) Lecture, 4 hours. Prerequisite(s): EE 117, MATH 151C. Covers in depth the numerical and mathematical foundations of the contemporary computer modeling techniques used in the design and analysis of electromagnetic devices and systems. Provides hands-on experience in modeling systems such as radio frequency devices, magnetic systems, and electromagnetic motors.

EE 224 Digital Communication Theory and Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 115, MATH 149A, MATH 149B; or equivalents. Provides an overview of basic communication techniques and an introduction to optimum signal detection and correction. Topics include sampling and bandwidth; pulse code modulation; line coding and pulse shaping; delta modulation; stochastic approach to bandwidth and noise corruption; white Gaussian noise; matched filter, optimal detection, Shannon theorems; and error correction. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 225 Error-Correcting Codes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 215 or consent of instructor. Provides an overview of basic error-correcting techniques used in data transmission and storage. Topics include groups and Galois fields, error-correction capability and code design of Hamming codes, cyclic codes, Bose-Chaudhuri-Hocquenghem (BCH) codes, and Reed-Solomon codes. Also considers concatenated design and decoding techniques.

EE 226 Wireless Communications (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 215, EE 224. Presentation of fundamental cellular concepts and new techniques in wireless communications. Topics include cellular systems and standards, frequency reuse, system capacity, channel allocation, cellular radio propagation, fading channel modeling and equalization, spread spectrum communications and other multiple access techniques, and wireless networking.

EE 227 Spread Spectrum Communications (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 115, EE 215; or consent of instructor. Provides an overview of spread spectrum communication techniques. Topics include direct sequence hopping and hybrid spread spectrum, pseudorandom sequence generation, modulation and spreading, code tracking, carrier synchronization, coherent and noncoherent data demodulation over fading channels, direct sequence multiple access, and performance evaluation of various mulituser detectors. Xu

EE 229 Video Processing and Communication (4) Lecture, 3 hours; laboratory; 1 hour, extra reading. 2 hours. Prerequisite(s): EE 115, EE 127, EE 129. Covers the fundamental principles and technologies in the compression and transmission of coded video streams over wired and wireless networks, including wireless network protocols, compression standards, digital signal processors, network traffic management, quality of service, rate control schemes, and error resilience.

EE 230 Mathematical Methods for Electrical Engineers (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers fundamental theoretical concepts and computational tools for Electrical Engineering graduate students. Presents material relevant to electrical engineering applications. Topics include vector spaces, partitioned, unitary, and positive definite matrices;
differential calculus with matrices; matrix decompositions; linear system solution; convex optimization; the Lagrangian method; KKT conditions; and nonlinear optimization methods. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 231 Convex Optimization in Engineering Applications (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): EE 235/ME 235. Explores convex optimization, Lagrange's equation; linear-quadratic-Gaussian control; certainty-equiv- alence; the minimum principle; the Hamilton-Jac- obi-Bellman equation; and the algebraic Ricatti equation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with ME 239.

EE 234 Advanced Computer Vision (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 141 or consent of instructor. Topics include the circle criterion, input-output stability, small gain theorem, stability, and market issues. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 234 Optimal Control and Estimation (4) Lecture, 4 hours; term paper, 1 hour. Prerequisite(s): EE 215, EE 235/ME 235. Presents the theory of stochastic optimal control systems and methods for their design and analysis. Content includes the Kalman filter; Extended Kalman Filter; and Unscented Kalman Filter. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CS 161 or consent of instructor.

EE 236 State and Parameter Estimation Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 132. Provides a review of linear algebra. Topics include the mathematical description of linear systems; the solution of state-space equations; controllability and observability; canonical and minimal realization; and state feedback, pole placement, observer design, and compensator design. Cross-listed with ME 215.

EE 243 Advanced Computer Vision (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 146 or consent of instructor. EE 243 online section; enrollment in the Online Master-in-Science in Engineering program. A study of three-dimensional computer vision. Topics include projective geometry, modeling and calibrating cameras, representing geometric primitives and their uncertainty, stereo vision, motion analysis and tracking, interpolating and approximating three-dimensional data, and cognition of two-dimensional and three-dimensional objects.

EE 244 Computational Learning (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores fundamental computational learning techniques. Topics include elements of learning systems, inductive learning, an-alytic learning, case-based learning, genetic learning, connectionist learning, reinforcement learning and integrated learning techniques, and comparison of learning paradigms and applications.

EE 245 Advanced Robotics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 236/ME 236; ME 120 or equivalent. Topics include robot navigation; description of robot sensors and their characteristics; sensor data processing; feature extraction; and matching. Also covers representations of space for mapping; map-based localization; simultaneous localization and mapping; image-based motion estimation; and motion planning. Cross-listed with ME 222.

EE 246 Intelligent Transportation Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. EE 115 and EE 132 are recommended. Focuses on the control, communications, and computer aspects of intelligent transportation systems. Topics include traffic flow theory fundamentals, intelligent transportation system user services, travel and traffic management, advanced vehi- cule safety systems, intelligent transportation system applications, architectures, standards, strategic needs assessment, deployment, and evaluation.

EE 247 Current Topics in Computer Vision and Pattern Recognition (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 240 or EE 243 or consent of instructor. Topics include advanced methods in computer vision and pattern recognition that are evolving and of current interest. May cover novel mathematical tools; analysis of large video databases; machine learning approaches in video computing; camera net- works; and biological applications of computer vision. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 250 Information Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): EE 215. An overview of fundamental limitations imposed on communica- tion systems. Topics include Shannon's information measures, weak and strong typically, lossless data compression, source and channel models and Shannon's coding theorems, channel capacity and the rate-distortion function, Gaussian sources and chan- nels, and limits of communication between multiple terminals.

EE 252 Data Center Architecture (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prereq- uisite(s): EE 141 or consent of instructor. Introduces recent trends and challenges of warehouse-scale computing and data center design. Topics include virtualization, resource management, data market, power management, sustainable computing, and demand response.

EE 253 Electric Power Distribution Systems (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): EE 156, graduate standing; or consent of instructor. Covers fundamentals of the operation and planning of electric power distribution systems. Topics include electric power modeling, overhead and underground lines, three-phase transformers, voltage regulation, three-phase unbalanced power flow, three-phase optimal power flow, and system protection. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 257 Global Navigation Satellite System Signal Processing and Receiver Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 155. Covers the design of a comprehensive understand- ing of Global Navigation Satellite System (GNSS) signal structure, GNSS communication channel, received power, radio frequency (RF) front-end receiver design, sampling, correlation, antennas, tracking loop theory, noise and bandwidth concepts, generation of GNSS observables, and software-defined radio (SDR) implementation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

EE 258 Modeling and Synthesis of Cyber-Physical Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 141 or consent of instructor. Develops a comprehensive understand- ing of Global Navigation Satellite System (GNSS) signal structure, GNSS communication channel, received power, radio frequency (RF) front-end receiver design, sampling, correlation, antennas, tracking loop theory, noise and bandwidth concepts, generation of GNSS observables, and software-defined radio (SDR) implementation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 256.

EE 259 Colloquium in Electrical Engineering (1) Col- loquium, 1 hour. Prerequisite(s): graduate standing. Lectures on current research topics in electrical engineering relating to professional development presented by faculty members and visiting scientists. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
EE 260 Seminar in Electrical Engineering (1-4) Seminar, 1-4 hours. Prerequisite(s): consent of instructor. Seminar on current research topics in electrical engineering, including areas such as signal processing, image processing, robotics, intelligent systems, computer vision, and pattern recognition. Course is repeatable to a maximum of 16 units.

EE 270 Introduction to Video Bioinformatics (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to video bioinformatics. Includes microscopic techniques, live imaging, video computing, structure and function of cells, spatiotemporal analysis, disk and data storage, indexing and queries, image and video databases, and medical imaging and analysis techniques. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with GEN 270.

EE 271 Video Bioinformatics: Multi-scale Analysis of Biological Systems (2) Lecture, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the significant range for both the time and spatial scales of biological systems. Includes video imaging techniques, as well as how these spatial and time scales are analyzed for a better understanding of biological function. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BIEN 271 and GEN 271.

EE 272 Introduction to Imaging Bioinstrumentation and Analysis (2) Lecture, 1 hour; laboratory, 3 hours; extra reading, 2 hours. Prerequisite(s): EE 272/GEN 272 or consent of instructor. An introduction to the instrumentation used to collect video images of cells and the methods used to analyze video data. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with GEN 272.

EE 273 Live Imaging and Analysis of Cellular and Molecular Behaviors (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): EE 272/GEN 272 or consent of instructor. Provides the Electrical Engineering graduate student with career experience as an electrical engineer in an industry or a research unit. Includes fieldwork with an approved professional individual or organization and academic work under the direction of a faculty member. Requires a final report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

EE 279 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor. Research in electrical engineering for the M.S. thesis or Ph.D. dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EE 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor. Research conducted under the supervision of a faculty member on selected problems in electrical engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EE 298-I Individual Internship in Electrical Engineering (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): graduate standing; consent of instructor. Provides the Electrical Engineering graduate student with career experience as an electrical engineer in an industry or a research unit. Includes fieldwork with an approved professional individual or organization and academic work under the direction of a faculty member. Requires a final report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

EE 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor. Research in electrical engineering for the M.S. thesis or Ph.D. dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Engineering

Subject abbreviation: ENGR

The Marlan and Rosemary Bourns College of Engineering

Advising Office, A159 Bourns Hall
(951) 827-ENGR (3647);
student.engr.ucr.edu

Courses in Engineering are a multidisciplinary approach to providing students with training in concepts common to multiple engineering fields. The courses support the undergraduate programs in all disciplines in the Marlan and Rosemary Bourns College of Engineering. Refer to these programs in this section of the catalog for information on course application.

Lower-Division Courses

ENGR 001 (E-Z) Professional Development and Mentoring (1) Activity, 30 hours per quarter. Prerequisite(s): freshman standing in the Bourns College of Engineering. Provides freshmen with an early positive engineering experience and interaction with College of Engineering faculty. Course is repeatable.

ENGR 002 (E-Z) Professional Development and Mentoring (1) Activity, 30 hours per quarter. Prerequisite(s): sophomore standing in the Bourns College of Engineering. Provides sophomores with involvement in professional development activities. Activities to be performed are program-specific, and may include projects, industry overviews and interactions, involvement with professional societies and clubs, team building, career guidance, and coverage of ethics and lifelong learning issues. E. Bioengineering; F. Chemical Engineering; G. Computer Engineering; I. Computer Science; J. Electrical Engineering; K. Environmental Engineering; M. Information Systems.

ENGR 003 (E-Z) Professional Development and Mentoring (1) Activity, 30 hours per quarter. Prerequisite(s): junior standing in the Bourns College of Engineering. Provides juniors with involvement in professional development activities. Activities to be performed are program-specific, and may include projects, industry overviews and interactions, involvement with professional societies and clubs, team building, career guidance, and coverage of ethics and lifelong learning issues. E. Bioengineering; F. Chemical Engineering; G. Computer Engineering; I. Computer Science; J. Electrical Engineering; K. Environmental Engineering; M. Information Systems.

ENGR 004 (E-Z) Professional Development and Mentoring (1) Activity, 30 hours per quarter. Prerequisite(s): senior standing in the Bourns College of Engineering. Provides seniors with involvement in professional development activities. Activities to be performed are program-specific, and may include projects, industry overviews and interactions, involvement with professional societies and clubs, team building, career guidance, and coverage of ethics and lifelong learning issues. E. Bioengineering; F. Chemical Engineering; G. Computer Engineering; I. Computer Science; J. Electrical Engineering; K. Environmental Engineering; M. Information Systems.

ENGR 010 Technology in Premodern Civilizations (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines relations between society, machine, and state in ancient China, Greece, Rome, and medieval Europe. Focuses on key mechanical and civil technologies and the role of the state in differentiating their development between the four historic civilizations. Cross-listed with HIST 108.

ENGR 092 First-Year Seminar in Engineering (1) Seminar, 10-15 hours per quarter. Prerequisite(s): graduate standing; consent of instructor. Introduces the significant range for both the time and spatial scales of biological systems. Includes video imaging techniques, as well as how these spatial and time scales are analyzed for a better understanding of biological function. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BIEN 271 and GEN 271.

EE 274 Introduction to Medical Imaging and Analysis (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): EE 272/GEN 272 or consent of instructor. An introduction to video imaging methodologies used to capture the cellular and molecular dynamics and interactions in living cells. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with GEN 273.

EE 275 Project in Video Bioinformatics (2) Lecture, 1 hour; laboratory, 3 hours, Prerequisite(s): graduate standing or consent of instructor. An introduction to medical imaging. Includes associated computational techniques for x-ray imaging, computed tomography, magnetic resonance imaging, positron emission tomography, ultrasound, radiotherapy, and molecular imaging. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with GEN 274.

EE 276 Colloquium in Video Bioinformatics (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers current research topics in video bioinformatics. Includes presentations by faculty members and visiting researchers. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EE 290 Directed Studies (1-6) Individual study, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and Graduate Advisor. Individual study, directed by a faculty member, of selected topics in electrical engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Upper-Division Courses

ENGR 101 (E-Z) Professional Development and Mentoring (1) Activity, 30 hours per quarter. Prerequisite(s): junior standing in the Bourns College of Engineering. Provides juniors with involvement in professional development activities. Activities to be performed are program-specific, and may include projects, industry overviews and interactions, involvement with professional societies and clubs, team building, career guidance, and coverage of ethics and lifelong learning issues. E. Bioengineering; F. Chemical Engineering; G. Computer Engineering; I. Computer Science; J. Electrical Engineering; K. Environmental Engineering; M. Information Systems.

ENGR 102 (E-Z) Professional Development and Mentoring (1) Activity, 30 hours per quarter. Prerequisite(s): senior standing in the Bourns College of Engineering. Provides seniors with involvement in professional development activities. Activities to be performed are program-specific, and may include projects, industry overviews and interactions, involvement with professional societies and clubs, team building, career guidance, and coverage of ethics and lifelong learning issues. E. Bioengineering; F. Chemical Engineering; G. Computer Engineering; I. Computer Science; J. Electrical Engineering; K. Environmental Engineering; M. Information Systems.

ENGR 108 Technology in Premodern Civilizations (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines relations between society, machine, and state in ancient China, Greece, Rome, and medieval Europe. Focuses on key mechanical and civil technologies and the role of the state in differentiating their development between the four historic civilizations. Cross-listed with HIST 108.

ENGR 109 Technology in Modern Europe and America, 1700-Present (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s):
3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the emergence of modern Europe through the first and second industrial revolutions in Europe and America. Explores the development of device commodities as the typical form of consumer technology in the nineteenth and twentieth centuries, as well as addresses philosophical issues in understanding technology. Cross-listed with HIST 109.

ENGR 118 Engineering Modeling and Analysis (5) Lecture, 4 hours; discussion, 1 hour. Prerequisite(s): CHEM 001A or CHEM 01A; CS 010 or 030; MATH 046; PHYH 040B; or consent of instructor. Covers the formulation of mathematical models for engineering systems. Includes applying mass, momentum, and energy balances to derive governing differential equations; solving equations with the use of spreadsheets and other software packages; and fitting linear and nonlinear models to experimental data. Credit is awarded for only one of ENGR 118 or ME 118.

ENGR 160 Introduction to Engineering Optimization Techniques (4) Lecture, 4 hours; discussion, 1 hour. Prerequisite(s): MATH 010A; CS 010 or EE 020 or ME 01B. ENGR 160 online section; enrollment in the Master-in-Science in Engineering program. Introduction to formulating and solving optimization problems in engineering. Includes single-variable and multi-variable calculus optimization, linear programming - simplex method; nonlinear unconstrained optimization - gradient, steepest descent, and Newton methods; and nonlinear constrained optimization - gradient projection methods. Addresses applications of optimization in engineering design problems. Solves various engineering optimization examples using MATLAB.

ENGR 170 Technology, Policy, and Ethics (4) Lecture, 4 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Technology and society. Explores the cultural aspects of globalization, including barriers and drivers for economic and cultural interdependence and integration, as well as virtual global organizations. Cross-listed with PBPL 170. Norbeck

ENGR 171 Globalization (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): junior standing. Covers technological drivers of globalization. Includes social, economic, and political consequences. Explores the technological aspects of globalization, including barriers and drivers for economic and cultural interdependence and integration, as well as virtual global organizations. Cross-listed with PBPL 171. Norbeck

ENGR 180W Technical Communications (4) Lecture, 3 hours; workshop, 3 hours. Prerequisite(s): ENGL 001B with a grade of "C" or better, upper-division standing in the Bourns College of Engineering or consent of instructor. Develops oral, written, and graphical communication skills. Includes preparing and critiquing reports, proposals, instructions, and business correspondence. Emphasizes personal and professional responsibilities and the need to stay current on technology and its impact in the workplace. Students are given the opportunity to work in a professional setting outside the classroom. Credit is awarded for only one of ENGR 180W or ENGR 180.

ENGR 181W Technical Communication and Documentation (4) Lecture, 3 hours; workshop, 3 hours. Prerequisite(s): ENGL 001B with a grade of "C" or better; senior standing and completion of one quarter of a senior design project in an engineering discipline. Develops technical communication and documentation skills. Includes writing and critiquing design documentation and technical reports. Uses the capstone design project in an engineering discipline as a case study. Considers professional and ethical responsibilities, contemporary issues in engineering and global impact on economics, society, and the environment. Fulfills the third-quarter writing requirement for students who earn a grade of "C" or better for courses that the Academic Senate designates, and that the student's college permits, as alternatives to English 001C.

ENGR 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing or consent of instructor; admission to the UCR Center at Sacramento Program. Examinations of the Sacramento area, including cultural, political, and governmental institutions and the sciences, arts, and media. Requires a substantial research paper or project, the result of guided independent work drawing on the unique aspects of Sacramento. Required of participants in the UCR Center at Sacramento Program. Cross-listed with HASS 191S and NASC 191S.

ENGR 191S Seminar in Sacramento (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor; admission to the UCR Center at Sacramento Program. Examines aspects of the Sacramento area, including cultural, political, and governmental institutions and the sciences, arts, and media. Requires a substantial research paper or project, the result of guided independent work drawing on the unique aspects of Sacramento. Required of participants in the UCR Center at Sacramento Program. Cross-listed with HASS 191S and NASC 191S.

ENGR 198-I Individual Internship (1-12) Internship, 3-36 hours. Prerequisite(s): upper-division standing or consent of instructor; consent of off-campus supervisors and appropriate Engineering Program chair. Designed to provide experience as a practicing engineer in a governmental, industrial, or research unit. Jointly supervised by an off-campus sponsor and an Engineering faculty member. Requires a written final report. Units may not be used to satisfy major requirements. Course is repeatable to a maximum of 16 units.

Graduate Program

Online Master of Science Program in Engineering
Kambiz Vafai, Ph.D., Program Director

Online M.S. Committee
- David Cocker, Ph.D. (Chemical and Environmental Engineering)
- Heejung Jung, Ph.D. (Mechanical Engineering)
- Bahram Mobasher (Physics and Astronomy)
- Hamed Mohsenian-Rad, Ph.D. (Electrical and Computer Engineering)
- Victor Rogers, Ph.D. (Biomedical Engineering)
- Frank Wahid, Ph.D. (Computer Science and Engineering)

Online M.S. Graduate Program Assistant (951) 827-5196, MSE 313

The Bourns College of Engineering (BCOE) offers an online Master of Science (M.S.) degree in Engineering.

Online Master's Degree

The online (M.S.) degree program is designed for working professional engineers who wish to advance their knowledge in a field and enhance their value in the workplace. Students in the program receive course materials including lectures, notes, assignments, and announcements over the internet. Exams are given by proctors at regional locations.

The BCOE online master's program combines engineering and professional development classes. Another key component is a significant design experience, incorporating additional readings and knowledge of the courses taken.

Admission
The following criteria are considered during the admission process for the MSOL program:

1. A bachelor's degree in engineering or related field from an accredited institution
2. Official transcripts
3. Grade Point Average (GPA)
4. Graduate Record Examination (GRE)/Fundamentals of Engineering (FE) scores*
5. TOEFL or IELTS scores (for international applicants)
6. Evidence of significant professional engineering experience
7. Professional certifications
8. Reference letters

*The GRE/FE may be waived by exception with an appeal made by a student with verified substantial work experience (two years or more) in an Engineering company with a BS in Engineering or Natural Sciences (such as Physics, Mathematics or Chemistry)

Course Requirements
Students must complete 36 units (9 courses), six of which must be at the 200 level, including:

2. Four specialization courses in an engineering concentration area. Listed for each specialization below.
3. Four units of ENGR296V

MSOL Specializations

Bioengineering
This specialization emphasizes principles and application of bioengineering based on a solid fundamental foundation in biological science and engineering to equip students with diverse communications skills and training in the most quantitative bioengineering research so that they can become leaders in their respective fields.

BIEN 223: Engineering Analysis of Physiological Systems
BIEN 224: Cellular and Molecular Engineering
BIEN 249: Integration of Computational and Experimental Biology
BIEN 264: Biotransport Phenomena

Data Science
Any four of the following courses will be sufficient for the specialization course requirements for this specialization.

STAT 206: Statistical Computing
STAT 208: Statistical Data Mining Methods
CS 229: Machine Learning
CS 230: Computer Graphics
CS 235: Data Mining Techniques
CS 236: Database Management Systems
CS 242: Information Retrieval and Web Search
EE 241: Advanced Image Processing
EE 243: Advanced Computer Vision
ME 200: Sustainable Product Design
ME 223: Secure and Reliable Control Systems
ME 230: Computer-Aided Engineering Design
ME 240A: Fundamentals of Fluid Mechanics
ME 274: Plasma-aided Manufacturing and Materials Processing

Specialization courses are offered by the participating departments, whereas core courses are offered at the college level to all students. Specialization courses are taught by BCOE faculty as traditional classes to on-campus M.S. and Ph.D. students while also being delivered to online students. Online students are expected to satisfy the same requirements as on-campus students.

For areas of specialization and further information, see msoe.ucr.edu.

**Graduate Courses**

**ENGR 200 Engineering in the Global Environment (4)**
Lecture, 4 hours. Prerequisite(s): graduate standing in Engineering. ENGR 200 online section; enrollment in the Master-in-Science in Engineering program. Addresses the adaptive challenges facing engineers in a global environment. Covers relevant business dynamics, national and international requirements, and less formal elements beyond the realm of core technical competence. Designed to widen the engineering practice framework to incorporate necessary added skills to succeed in an increasingly global environment.

**ENGR 201 Technology Innovation and Strategy for Engineers (4)**
Lecture, 4 hours. Prerequisite(s): graduate standing in Engineering. ENGR 201 online section; enrollment in the Master in Science in Engineering program. Provides coverage of innovation, innovation project management, innovation protection management, organizational structuring and collaboration, and human resource management of technical professions. Brings together business models, leading academic research, and current organizational concerns in a blended learning environment that explores real companies and their strategies.

**ENGR 202 Introduction to Systems Engineering (4)**
Lecture, 4 hours. Prerequisite(s): graduate standing in Engineering. ENGR 202 online section; enrollment in the Master in Science in Engineering program. An introduction to systems, the systems design process, systems analysis and design evaluation, design for operational feasibility, and systems engineering management. Describes subjects such as requirements analysis, concept definition, system synthesis, design analysis, design tradeoffs, risk tradeoffs, interface definition, engineering design, and systems integration.

**ENGR 203 Principles of Engineering Management (4)**
Lecture, 4 hours. Prerequisite(s): graduate standing in Engineering. ENGR 203 online section; enrollment in the Master in Science in Engineering program. Covers the essential managerial skills engineers need for managing in today's global economy. Exposes approaches to management that reveal constraints that guide business decisions. Topics include the functions of management: planning, organizing, leading, and controlling. Designed for engineers who manage people, projects, and technical innovation.

**ENGR 296 Professional Project Design (1-4)**
Individual study, 3-12 hours; written work, 3-12 hours. Prerequisites: enrollment in the Master in Science in Engineering program and consent of the instructor. A directed specialized professional written design project. The design project will have a literature review, abstract, introduction, discussion and conclusion along with references. The design project topic will be determined between the instructor and student.

Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

**English**

Subject abbreviations: BSWT and ENGL

College of Humanities, Arts, and Social Sciences

George Haggerty, Ph.D., Chair
John C. Briggs, Ph.D., Director, Entry-Level Program
Director, Undergraduate Studies
Stephen Soin, Ph.D.,
Director, Graduate Admissions
Weihsin Gui, Ph.D.,
Director, Graduate Studies
Department Office, 1201 Humanities and Social Sciences; (951) 827-1451

Professors
Steven G. Axelrod, Ph.D., Distinguished Professor
John C. Briggs, Ph.D.
Jennifer Doyle, Ph.D.
John M. Ganim, Ph.D., Distinguished Professor
George E. Haggerty, Ph.D., Distinguished Professor
David Lloyd, Ph.D., Distinguished Professor
Sheryl Vint, Ph.D.

Professors Emeriti
Rise B. Axelrod, Ph.D.
Joseph W. Childers, Ph.D.
Kimberly J. Devlin, Ph.D.
Edwin M. Eigner, Ph.D.
Robert N. Essick, Ph.D.
Carole Fabricant, Ph.D.
Ralph Hanna, III, Ph.D.

Associate Professors
Heidi Brayman Haciel, Ph.D.
Andrea Denny-Brown, Ph.D.
Weihsin Gui, Ph.D.
Keith Harris, Ph.D.
Katherine A. Kinney, Ph.D.
Vorris Nunley, Ph.D.
Michelle Herrmann Raheja, Ph.D.
Richard Rodriguez, Ph.D.
Stephen Hong Sohn, Ph.D.
James Tobias, Ph.D.
Carole-Anne Tyler, Ph.D.
Deborah S. Willis, Ph.D.
Traise Yamamoto, Ph.D.
Susan Zieger, Ph.D.

Assistant Professors
Robert Hernandez, Ph.D.
Mark Minch, Ph.D.
Emma Stapely, Ph.D.
Fuson Wang, Ph.D.

The English Department offers the university community a range of composition courses that develop the skill of writing effective prose, a skill essential to undergraduate work and to communication in society generally. Students can also enjoy and profit from a broad range of literature courses offered by the department, including a number of lower-division courses designed especially with the non-English major in mind.

Major

The English major offers a well-balanced, thought-provoking program for students with a serious interest in the study of literature.
Major Requirements

The major requirements for the B.A. in English are as follows:

1. English 020A, ENGL 020B, and ENGL 020C (15 units). These courses are normally required of all English majors as a prerequisite to upper-division courses.

2. ENGL 102 (4 units), or 102W (4 units). This course should normally be taken prior to or concurrently with the student’s first upper-division English course.

Include at least one course (in bold) that deals with race and ethnicity (within requirements 3 and 4):

3. Four courses (16 units); one course from each of the following areas: a) English Literature to 1660: ENGL 117A, ENGL 117B, ENGL 117C, ENGL 117T, ENGL 128E, ENGL 128F, ENGL 128G, ENGL 129A, ENGL 147F, ENGL 147S, ENGL 148Q, ENGL 149, ENGL 151A, ENGL 151B, ENGL 151T, ENGL 152, ENGL 153, ENGL 154

c) American Literature to 1900: ENGL 120A, ENGL 126A, ENGL 127A, ENGL 128O, ENGL 130, ENGL 131, ENGL 132, ENGL 138A, ENGL 147M, ENGL 148W

4. One course (4 units) on literature and related fields, including theory, or on a literary theme or genre, postcolonial literature, literature and gender, or literature and sexuality, to be chosen from among the following: ENGL 100 (E-Z), ENGL 101, ENGL 104, ENGL 121 (E-Z), ENGL 122 (E-Z)/LGBS 122 (E-Z), ENGL 124A, ENGL 124B, ENGL 127T, ENGL 140 (E-Z), ENGL 141 (E-Z), ENGL 142 (E-Z), ENGL 143 (E-Z), ENGL 144 (E-Z), ENGL 145 (E-Z)/MCS 145 (E-Z), ENGL 146 (E-Z)/MCS 146 (E-Z), ENGL 179A, ENGL 179B, ENGL 179T

5. English 189: Capstone Research Seminar.

6. Four additional upper-division English courses (16 units). Only 4 units from either ENGL 103 or any upper-division Creative Writing course will be accepted toward the fulfillment of this requirement. Four units of ENGL 190 may be counted toward this requirement. Proposals for ENGL 190 must be approved by a sponsoring faculty member and the department chair. If the student wishes to offer units from ENGL 190 as part of the 16 units, a copy of an approved petition will be placed in the student’s file. Total units in major: 59 units, of which at least 15 units and no more than 20 units must be at the lower-division level.

Students are encouraged to take at least one of the following as a college breadth requirement or as an elective: CLA 027A, CLA 027B, CLA 040, CPLT 017A, CPLT 017B, CPLT 017C, ETST 114, ETST 120, ETST 124, ETST 138, ETST 170/WRIT 170, ETST 183; or any literature course in a language other than English. Students are also encouraged to take a course in British or American history, such as HIST 017A, HIST 017B, HISE 150, HISE 151, HISE 152.

Each student works with the Undergraduate Academic Advisor and the Faculty Advisor for help in shaping a program and following it through to graduation. Students should see the advisors on a regular basis, normally once per quarter prior to registration. Information about times and meeting places for advisors is posted online and is available in the department office from the undergraduate academic advisor.

Minor

The English minor is designed to provide an overview of English and American literature, an opportunity for the exercise of disciplined literary analysis, and a varied experience of the best literature in English.

1. Lower-division requirements (14 units)

a) Two courses chosen from ENGL 020A, ENGL 020B, ENGL 020C

b) One course chosen from ENGL 012A, ENGL 012B, ENGL 012C, ENGL 012 (E-Z), ENGL 014, ENGL 015, ENGL 017, ENGL 018, ENGL 022, ENGL 033/MCS 033

2. Upper-division requirements (16 units)

a) Four courses of upper-division English. Only four (4) units from ENGL 103 or ENGL 190 will be accepted toward fulfillment of this requirement. Proposals for ENGL 190 must be approved by a sponsoring faculty member and the department chair. If the student wishes to offer units from ENGL 190 as part of the 16 units, a copy of the approved petition will be placed in the student’s file.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Teaching Credential Preparation Programs

Students interested in becoming teachers at the elementary or secondary school level may combine the English major with a program of study leading to the multiple subjects (elementary) or single subject (secondary) credential preparation program. Details and counseling on the Prepare to Teach Program, a preparation program for the multiple subjects credential, are available in the Office of Interdisciplinary Programs, 3111 INTS, (951) 827-1801. Details and counseling on other programs are available in the Department of English or the Graduate School of Education.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program

The Department of English offers the Ph.D. degree in English.

Admission All domestic and international applicants must supply GRE General Test scores (quantitative and verbal) earned within the past five years.

Doctoral Degree

The Department of English offers the Ph.D. degree in English.

The doctoral program in English prepares students to become informed teachers and scholar-critics capable of significant original literary scholarship.

Admission Admission is open to qualified candidates with a B.A. or M.A. degree, preferably in English or a related field. Students...
with an M.A. in another field may be required to take additional course work.

Course Work The candidate entering the program without an M.A. must complete (with a grade of “B” or better) a minimum of 66 units of course work. Prior to taking Qualifying Examination I, students must meet the course work requirement of the M.A. Degree (42 units). Upon successfully passing Qualifying Examination I, students must complete at least an additional six seminars (24 units) in 200-level course work, excluding ENGL 280, ENGL 291, ENGL 292, and ENGL 299. The candidate with an M.A. from another institution must complete a minimum of 36 units of course work in 200-level courses, excluding ENGL 280, ENGL 291, ENGL 292, and ENGL 299. All students, in consultation with the graduate advisor, select primary and secondary fields of study and identify a third, more specialized research topic related to a dissertation topic. Once course work requirements are satisfied, all students take the Qualifying Examination II and complete a dissertation.

Language Requirement Students entering with a B.A. must demonstrate proficiency in two languages other than English before advancement to candidacy. Students entering with an M.A. from institutions that required proficiency in a language other than English for the master’s degree must demonstrate proficiency in a second language before advancement to candidacy. In lieu of a second language, students from both groups may complete one of three alternatives involving the first language or a related field approved by the Graduate Committee. The department recognizes American Sign Language (ASL) as a language. For details consult the graduate advisor or english.ucr.edu.

Students entering with an M.A. from institutions that did not require proficiency in a language other than English for the master’s degree must demonstrate proficiency in one language other than English. Alternatives described above are not available to these students.

Qualifying Examinations I and II At the end of the sixth quarter, students who have entered the program with a B.A. become eligible to receive an M.A. upon completion of the Qualifying Examination I. For this examination, students submit a portfolio of three essays, one of which has been substantially revised in consultation with the examining committee, and a 1000- to 1500-word metacommentary explaining the aims and achievements of the essays and their contributions to a coherent research agenda. The student is then examined orally for one hour on the portfolio and two distinct fields related to at least two of the three essays. Following successful completion of this examination and a review of the entire student file, the graduate committee recommends the awarding of the M.A. degree. (The Qualifying Examination I is waived for students with an M.A. from another institution.) After the completion of all course work, students take the Qualifying Examination II to be advanced to candidacy.

The Qualifying Examination II consists of an oral examination of up to three hours based on a research portfolio submitted in advance to the examining committee. The student's portfolio should be prepared in consultation with the examining committee. It usually consists of a potentially publishable research essay, bibliographies of important texts for the student's research areas, a draft dissertation prospectus, and sample teaching syllabi. The oral examination begins with a short presentation by the student followed by questions and comments from the examining committee based on materials in the research portfolio and the student's presentation. Following the successful completion of this examination, the student will be advanced to candidacy if all coursework and language requirements are also completed.

Dissertation The dissertation should be related to the individualized course of study preceding it and should draw out the best research and critical talents of the candidate. For a more detailed description of the requirements for the Ph.D., contact the Graduate Assistant, Department of English.

Normative Time to Degree including UCR M.A. Work 18 quarters (or 15 quarters for students with an M.A. from another institution)

Basic Writing

Lower-Division Courses

BSWT 001 Immersive English (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Examination; concurrent enrollment in BSWT 002. An intensive introduction to oral communication in the academic arena, focusing on academic discussion, dialogue, groupwork, and presentations. Emphasizes active listening and speaking. Designed for students who need immersive instruction in English as a second language before going on to Basic Writing 3 (BSWT 003). Graded Satisfactory (S) or No Credit (NC).

BSWT 002 Oral Communication (2) Lecture, 1.5 hours; extra reading, 1.5 hours. Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Examination; concurrent enrollment in BSWT 001. Training in oral communication for the sake of improving academic speech, comprehension, and writing in English. Includes reports, talks, academic discussions, and dialogues. For second-language students in need of intensive training. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

BSWT 003 Basic Writing for Second-Language Students (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Exam or a Satisfactory (S) or C grade in BSWT 001; concurrent enrollment in BSWT 003D or BSWT 003L and BSWT 004. An introductory course designed for students who need instruction in English as a second language. Helps to develop writing proficiency by means of regular written assignments and intensive individual interaction between student and instructor. Students who pass the course with a grade of “S” should enroll in ENGL 004. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class. Graded Satisfactory (S) or No Credit (NC).

BSWT 003D Basic Writing for Second-Language Students (2) Discussion, 2 hours; activity, 6 hours. Prerequisite(s): concurrent enrollment in BSWT 003. Focuses on reading literature with close attention to grammar and style, organizing essays, honing syntax, and asking and answering academic questions. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class. Offered in summer only. Graded Satisfactory (S) or No Credit (NC).

BSWT 003L Basic Writing for Second-Language Students (1) Laboratory, 3 hours. Prerequisite(s): concurrent enrollment in BSWT 003 and BSWT 004. Focuses on mastery of principles and applications of English grammar and idiomatic expression, as well as critical reading, which are pertinent to second-language students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 3 units.

BSWT 004 Basic Writing Journal Workshop (1) Activity, 3 hours. Prerequisite(s): concurrent enrollment in BSWT 003 and BSWT 003L. Instruction in and performance of oral discourse: summaries, analyses, and original arguments. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 3 units.

Lower-Division Courses

ENGL 001A Beginning Composition (4) Lecture, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): fulfillment of the University of California Entry Level Writing Requirement. Introduces students to the strategies of personal writing in a multicultural context. Students must be formally enrolled prior to the beginning of instruction and must attend the first day to avoid being dropped from the class. Credit is awarded for only one of ENGL 001A or ENGL 01PA.

ENGL 001B Intermediate Composition (4) Lecture, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): ENGL 001A with a grade of “C” or better or ENGL 01PA with a grade of “C” or better. Emphasizes the transition from personal writing to a multicultural context. Students must be formally enrolled prior to the beginning of instruction and must attend the first day to avoid being dropped from the class.

ENGL 001C Applied Intermediate Composition (4) Lecture, 3 hours; extra reading, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): ENGL 001B with grade of “C” or better. Addresses the function of writing in a range of contemporary situations (including that of the academy) from a critical and theoretical perspective. Students must be formally enrolled prior to the beginning of instruction and must attend the first day to avoid being dropped from the class. Credit is awarded for only one of ENGL 001C, ENGL 01HC, or ENGL 01SC.

ENGL 002 English Study Group (0) Lecture, 4 hours; activity, 4 hours. Prerequisite(s): concurrent enrollment in the Summer Bridge Program, ENGL 004, and ENGL 004D. An introduction to developing thinking and problem-solving skills. Introduces university life through exposure to test-taking techniques, effective note-taking strategies, time management, and university procedures and practices. Carries workload credit equivalent to 2 units but does not count towards graduation units. Offered in summer only. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENGL 002 or MATH 002.

ENGL 004 English Writing (4) F, W, S, Summer Lectures, 3 hours; extra reading, 3 hours. Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Exam or a grade of “S” in BSWT 003; concurrent enrollment in ENGL 004D or ENGL 004L. Covers ground rules of academic inquiry and exchange in English writing. Students who pass the course with a grade of “C” or better have completed the University of California Entry Level Writing Requirement and are eligible to enroll in ENGL 001A. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class.

BSWT 004 English Writing (4) F, W, S, Summer Lectures, 3 hours; extra reading, 3 hours. Prerequisite(s): concurrent enrollment in BSWT 003 and BSWT 004. Focuses on mastery of principles and applications of English grammar and idiomatic expression, as well as critical reading, which are pertinent to second-language students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 3 units.
ENGL 004D English Writing (1) Discussion, 1 hour. Prerequisite(s): concurrent enrollment in ENGL 004. Focuses on critical reading of assigned texts, organizing essays, honing syntax, and asking and answering academic questions. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENGL 004D, ENGL 004L or ENGL 04DE.

ENGL 004E English Writing Hybrid (4) Summer Lecture, 6 hours; extra reading, 3 hours; activity, 3 hours; hard-copy reading journals and online discussion with peers, followed by reporting to the class, 3 hours per week (individual and group activity). Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Exam or a grade of "S" in BSWT 003; concurrent enrollment in ENGL 04DE. Covers ground rules of academic inquiry and exchange in English writing. Fifty percent of the course will be taught online. Requires access to Adobe Flash Player and Broadband connection. Students who pass the course with a grade of "C" or better have completed the UC Entry Level Writing Requirement. Offered in summer only. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 004 or ENGL 004E.

ENGL 004L English Writing (1) Laboratory, 3 hours. Prerequisite(s): concurrent enrollment in ENGL 004. Focuses on mastery of principles and applications of English grammar and idiomatic expression, as well as critical reading, for students who do not need, or have advanced beyond, second-language instruction. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 3 units. Credit is awarded for only one of ENGL 004D, ENGL 004L, or ENGL 04DE.

ENGL 005 Ideas in Conflict (4) Lecture, 3 hours; extra writing and rewriting, 5 hours. Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Exam; concurrent enrollment in ENGL 0005 or ENGL 005L. Examines elements of academic argument in the context of major, conflicting texts. Particular attention is given to identifying, analyzing, and framing debatable questions and issues; finding and leveraging appropriate, persuasive arguments; and tapping the analytic resources of standard English. Includes extensive readings and numerous writing assignments along with formal oral presentations. Students who pass the course with a grade of "C" or better have completed the University of California Entry Level Writing Requirement and are eligible to enroll in ENGL 001A. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class. Satisfactory (S) or No Credit (NC) grading is not available.

ENGL 005D Ideas in Conflict (1) Discussion, 1 hour. Prerequisite(s): concurrent enrollment in ENGL 005. Focuses on reading assigned texts with close attention to grammar and style, organizing essays, honing syntax, and asking and answering academic questions. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 3 units.

ENGL 006D Qualifier Course Adjunct (1 or 2) Discussion, 1-2 hours. Prerequisite(s): concurrent enrollment in a qualifier course. Provides individual and group instruction in support of writing-intensive courses designated as qualifier courses. Focuses on interpreting the qualifier course's assignments; developing topics; preparing, editing, and revising drafts. Qualifier courses are offered by various departments to give eligible students an opportunity to meet the University of California Entry Level Writing Requirement while earning baccalaureate credit. Students may obtain information about qualifier courses by contacting the University Writing Program. Students should be formally enrolled prior to the beginning of instruction and should attend the first meeting to avoid being dropped from the class. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENGL 004D, ENGL 004L or ENGL 04DE.

ENGL 007 Workshop in Writing Across the Curriculum (0.5) Workshop, .5 hours. Prerequisite(s): None. Focuses on exploratory strategies for writing assignments in W-courses: close reading of prompts, forming a relevant thesis, and finding, selecting, and organizing evidence. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 2 units.

ENGL 008 Oral Communication (4) Discussion, 3 hours; activity, 3 hours. An introduction to public speaking in genres and for occasions appropriate in the academy and in society. Emphasis is on preparing, delivery, and evaluating speeches; and tapping the syntactic resources of standard English. Includes extensive readings and numerous writing assignments. Students who pass the course with a grade of "C" or better have completed the University of California Entry Level Writing Requirement and are eligible to enroll in ENGL 001B. Students must be formally enrolled prior to the beginning of instruction and must attend the first day to avoid being dropped from the class. Credit is awarded for only one of ENGL 001A or ENGL 01PA.

ENGL 010A Beginning Composition: Intensive (4) Lecture, 3 hours; tutorial, .5 hours; extra writing and rewriting, 3 hours. Prerequisite(s): an appropriate score on the University of California Analytical Writing Placement Exam; consent of the Director of the University Writing Program. Requires concurrent enrollment in ENGL 005L. Introduces students to the strategies of personal writing in a multicultural context. Students who pass the course with a grade of "C" or better have completed the University of California Entry Level Writing Requirement and are eligible to enroll in ENGL 001B. Students must be formally enrolled prior to the beginning of instruction and must attend the first day to avoid being dropped from the class. Credit is awarded for only one of ENGL 001A or ENGL 010A.

ENGL 010C Applied Intermediate Composition for Science and Engineering Majors (4) Lecture, 3 hours; extra reading, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): ENGL 001B with grade of "C" or better, admission to the University Honors Program or consent of instructor. Honors course corresponding to ENGL 001C and ENGL 010C. Covers extended expository prose with emphasis on principles of explanation, interpretation, and argument. Focuses on the theoretical implications of various modes of academic inquiry. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 001C, ENGL 010C, or ENGL 010SC.

ENGL 0102A Introduction to British Literary Tradition (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): ENGL 001B with grade of "C" or better, admission to the University Honors Program or consent of instructor. Introduces British literature from its beginnings to Shakespeare; explores literary forms, genres, and periods, and introduces students to the classics of literary theory and to the literary history of Britain. Requires concurrent enrollment in ENGL 0102B or ENGL 0103.

ENGL 0102B Introduction to American Literary Tradition (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): ENGL 001B with grade of "C" or better. Explores American literature from its beginnings to the present; explores literary forms, genres, and periods, and introduces students to the classics of literary theory and to the literary history of the United States.

ENGL 0102C Introduction to Alternative Critical Perspectives on Literature and Culture (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours; extra writing and rewriting, 3 hours. Prerequisite(s): ENGL 001B with grade of "C" or better, admission to the University Honors Program or consent of instructor. Explores the theoretical implications of various modes of academic inquiry. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 001C, ENGL 010C, or ENGL 010SC.

ENGL 0102D Great American Speeches (4) Lecture, 3 hours; extra reading, 3 hours; extra writing and rewriting, 3 hours. Focuses on the theoretical implications of various modes of academic inquiry. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 001C, ENGL 010C, or ENGL 010SC.

ENGL 0103 Modern Literature (4) Lecture, 3 hours; extra reading, 3 hours. An introductory course designed primarily for nonmajors. Focuses on important themes or techniques in modern and contemporary literature. Prerequisite(s): ENGL 001B with grade of "C" or better, admission to the University Honors Program or consent of instructor. Explores the historical implications of various modes of academic inquiry. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 001C, ENGL 010C, or ENGL 010SC.

ENGL 0104 Shakespeare on Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An examination of cinematic adaptations of Shakespeare's plays. Focuses on issues of cinematic theory, historical adaptation, and thematic reconstruction. Credit is awarded for only one of ENGL 0104 or ENGL 010SC.

ENGL 0107C Honors Applied Intermediate Composition (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ENGL 010B with grade of "C" or better, admission to the University Honors Program or consent of instructor. Honors course corresponding to ENGL 010C and ENGL 010SC. Covers extended expository prose with emphasis on principles of explanation, interpretation, and argument. Focuses on the theoretical implications of various modes of academic inquiry. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 001C, ENGL 010C, or ENGL 010SC.
ENGL 023 African American Autobiography (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): fulfillment of the University of California Entry Level Writing Requirement. An introduction to African American literature, focusing on how black literature in the United States has been shaped by self-narrated responses to terror and oppression. Examines autobiographies by Frederick Douglass, Harriet Jacobs, Langston Hughes, Ida Wells-Barnett, and Malcolm X.

ENGL 033 Introduction to Comparative Media Studies (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to the study of two or more media, such as film and television or digital media. Explores various critical approaches to the media (e.g., formalism, feminism, Marxism). Focuses on the media of rhetoric, media similarities and differences, and cross-media borrowing.

ENGL 040D English Writing Hybrid (1) Discussion, 1.5 hours; workshop, 1.5 hours. Prerequisite(s): concurrent enrollment in ENGL 004E. Focuses on critical reading of assigned texts, organizing essays, honing syntactic and semantic skills, and answering academic questions. Offered in summer only. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENGL 004D, ENGL 004L, or ENGL 040E.

Upper-Division Courses

ENGL 100 (E-Z) Scriptures, Myths, and Interpretation (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Focuses on issues of scriptural and mythological analysis. Explores the impact of scripture and mythology in literature written in English; textual development of the Hebrew scriptures; the King James version; major authors’ uses of scripture and myth; exegesis; scripture and myth in current criticism and theory.

ENGL 101 Critical Theory (4) Lecture, 3 hours; consultation, 1 hour. A study of major theoretical issues in representative critical and scholarly works.

ENGL 102 Introduction to Critical Methods (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): a major in English or consent of instructor. An in-depth analysis of the formal features of several genres, as well as an introduction to theoretical and critical approaches. Credit is awarded for only one of ENGL 102 or ENGL 102W.

ENGL 102W Introduction to Critical Methods (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): a major in English or consent of instructor. An in-depth analysis of the formal features of several genres, as well as an introduction to theoretical and critical approaches. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 010C. Credit is awarded for only one of ENGL 102 or ENGL 102W.

ENGL 103 Advanced Composition (4) Lecture, 3 hours; discussion/consultation, 1 hour. Prerequisite(s): ENGL 001C or the equivalent. Principles of expository prose, as criticism and theory. A focused study of works by Shakespeare selected from different genres.

ENGL 108A Introduction to Shakespeare (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of Shakespeare’s dramatic genres as they are designated in the First Folio.

ENGL 108B Shakespearean Comedy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of plays selected from one of Shakespeare’s dramatic genres as they are designated in the First Folio.

ENGL 117A Shakespeare: History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A close analytical study of plays selected from one of Shakespeare’s dramatic genres as they are designated in the First Folio.

ENGL 117B Shakespeare: Comedy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A close analytical study of plays selected from one of Shakespeare’s dramatic genres as they are designated in the First Folio.

ENGL 117C Shakespeare: Tragedy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A close analytical study of plays selected from one of Shakespeare’s dramatic genres as they are designated in the First Folio.

ENGL 117T Topics in Shakespeare (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A close analytical study of plays selected from one of Shakespeare’s dramatic genres as they are designated in the First Folio.

ENGL 120A Native American Literature to 1900 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of Native American literature from the era of oral narrative to 1900, with special attention to autobiography and fiction, as well as criticism and theory.

ENGL 120B Native American Literature after 1900 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of American long fiction after 1900 to the present, with special attention to poetry, visual culture, fiction, and self-life-narration, as well as criticism and theory.

ENGL 120T Studies in Native American Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of Native American literature from 1900 to the present, with special attention to poetry, visual culture, fiction, and self-life-narration, as well as criticism and theory.

ENGL 121 (E-Z) Postcolonial Literatures of Asia, Africa, and the Caribbean (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A focused study of a topic, genre, period, or author in Native American literature. Examples might include visual culture, oral narrative, collaborative autobiography, ethnography, or poetry.

ENGL 121 (E-Z) Postcolonial Literatures of Asia, Africa, and the Caribbean (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. The analysis of colonial discourse and of the postcolonial condition. The following topics, among others, may be addressed: historiography and subalternity; nationalism, gender, and sexuality; neocolonialism and transnationality; theorizing resistance; postcolonial identity politics and the discourses of tradition and modernity; the postcolonial intellectual; and postcolonial filmmaking and Third Cinema.

ENGL 122 (E-Z) Queer Texts and Bodies (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of English and American literature from the perspective of sexuality and sexual identity. Covers issues such as gay and lesbian texts and contexts; sexual ideologies and literature; marginalized writers and texts; and the uses of theories of sexualities in the study of literature. Cross-listed with LGBS 122 (E-Z).

ENGL 124A Female Novelistic Traditions: Eighteenth and Nineteenth Centuries (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of the works of women novelists, writing at different historical moments and in different cultural milieux. Attention is given to the psychological, political, and technical features of the tradition; the connections and contrasts within it; and the problematics of female literary influence.

ENGL 124B Female Novelistic Traditions: Twentieth Century (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of the works of women novelists writing at different historical moments and in different cultural milieux. Attention is given to the psychological, political, and technical features of the tradition; the connections and contrasts within it; and the problematics of female literary influence.

ENGL 125A The Development of the English Novel: Eighteenth Century (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of British fiction, with some attention to the criticism and theory of the novel.

ENGL 125B The Development of the English Novel: Nineteenth Century (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of British fiction, with some attention to the criticism and theory of the novel.

ENGL 125C The Development of the English Novel: Twentieth Century (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of British fiction, with some attention to the criticism and theory of the novel.

ENGL 126A The American Novel: Nineteenth Century (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of American long fiction in the nineteenth century, with special attention to such modes as romance, realism, and naturalism.

ENGL 126B The American Novel: Since 1900 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of American long fiction since 1900, with special attention to such modes as realism, modernism, and postmodernism.

ENGL 127A American Poetry: Before 1900 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of American poetry, focusing on the evolutionary and revolutionary aspects of its forms and themes.

ENGL 127B American Poetry from Early to Mid Twentieth Century (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition)
ENGL 127C American Poetry: Later Twentieth Century to the Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of American poetry focusing on the evolutionary and revolutionary aspects of its forms and themes.

ENGL 127T Studies in American Poetry (4) Lecture, 3 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An intensive study of a topic, motif, genre, period, or movement in American poetry. Examples might include political or regional poetry, the epic or lyric, or Beat poetry or Language poetry.

ENGL 128 (E-Z) Major Authors (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive study of a major English or American author. E. Chaucer; F. Spenser; G. Milton; I. Swift; J. Austen; K. Wordsworth; M. Dickens; N. George Eliot; O. Melville; Q. Dickinson; R. Woolf; S. Joyce; T. Faulkner; U. Baldwin; V. Salman Rushdie; W. Maya Angelou; X. Toni Morrison.

ENGL 129A English and American Drama: Elizabethan and Jacobean Drama (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A focused study of a topic, motif, genre, period, or movement in American literature.

ENGL 129B English and American Drama: Restoration and Eighteenth-Century Drama (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of British and American drama. Each segment may be taken independently of the others.

ENGL 130 American Literature, 1620-1830 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Examination of writing in America of the pre-colonial, colonial, and early national periods, including the work of such writers as Anne Bradstreet, Benjamin Franklin, Susanna Rowson, and Washington Irving.

ENGL 131 American Literature, 1830 to the Civil War (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of innovation and conflict in the American Renaissance, as represented in such writers as Emerson, Hawthorne, Poe, Melville, Stowe, Thoreau, Douglas, and Whitman.

ENGL 132 American Literature from the Civil War to 1914 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. New departures in the American literary consciousness as registered in the works of such writers as Emily Dickinson, Mark Twain, Charles W. Chesnutt, Kate Chopin, Henry James, Henry Adams, and Edith Wharton.

ENGL 133 American Literature, 1914-1945 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Modern perspectives and literary innovations in the work of such writers as William Faulkner, F. Scott Fitzgerald, Zora Neale Hurston, Wallace Stevens, William Carlos Williams, Gertrude Stein, and Eugene O’Neill.

ENGL 134 American Literature, 1945 to the Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of postmodern, contemporary, and multicultural texts by such writers as Toni Morrison, Thomas Pynchon, Maxine Hong Kingston, Robert Lowell, Sylvia Plath, John Ashbery, and Leslie Marmon Silko.

ENGL 135 Modern Irish Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of modern Irish literature, set against the background of the political and religious conflicts of Irish history.

ENGL 136 Latina and Latino Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical survey of U.S. Latina/o literature, with particular attention to aesthetic achievements, recurrent forms and themes, and interrelations with other American literatures.

ENGL 136T Studies in Latina and Latino Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A focused study of ideas, forms, or movements in Latina/o literature such as autobiography, growing-up narratives, popular discourses (teatro, the corrido, social movement poets), and the mainstream Latina/o literary “boom.”

ENGL 138A African American Literature through the Harlem Renaissance (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical survey of African American literature with particular attention to the development of an African American literary tradition and the challenge posed to the traditional canon of American literature.

ENGL 138B African American Literature since the Harlem Renaissance (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical survey of African American literature with particular attention to the development of an African American literary tradition and the challenge posed to the traditional canon of American literature.

ENGL 138T Studies in African American Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of American literature, with particular attention to the evolution of African American literature with particular attention to the development of an African American literary tradition and the challenge posed to the traditional canon of American literature.

ENGL 140 (E-Z) Studies in Literary Genres (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Practical and theoretical study of such literary genres as the lyric, the epic, the romance, tragedy, comedy, and satire.

ENGL 141 (E-Z) Literature and Related Fields (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical survey of the study of literature in relation to other areas: creativity, myth, iconography, society, science, behavior, and translation.

ENGL 142 (E-Z) Cultural Studies (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. The formal, historical, and theoretical analysis of culture in its broadest sense, including popular literature, the mass media, and/or the interplay between “low” and “high” or peasant and elite cultural forms. Topics may be drawn from any historical field.

ENGL 143 (E-Z) Gender, Sexuality, and Visual Cultures (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of gender and sexuality in film, television, and visual culture.

ENGL 144 (E-Z) Race, Ethnicity, and Visual Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of race and ethnicity in film, television, and visual culture.

ENGL 145 (E-Z) Special Topics in Film and Visual Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An intensive formal, historical, and theoretical analysis of a theme or issue in film, media, television, and visual culture. E. Hollywood in the 1960s; F. Television and American Culture; G. Film as Writing and Writing as Film; J. Film, Race, and Ideology: The Case of the Vietnam War; K. Decolonizing the Screen. Cross-listed with MCS 144 (E-Z).

ENGL 146 (E-Z) Special Topics in Technoculture and Digital Media (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Advanced study of theories and practices of readers and audience interaction with technologies of cultural production in general and digital media in particular. Includes practical composition or research, E. Identities and Interactions; F. Cultures and Technologies of the Visual; G. Cultures and Technologies of the Aural; I. Advanced Composition and Rhetoric for Digital Media Authors. Cross-listed with MCS 146 (E-Z).

ENGL 147 (E-Z) Studies in a Major Work (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Concentrated study of a single major work from the English or American literary tradition, affording an opportunity for thorough explication of the work, exploration of historical backgrounds, and relevant critical approaches.
ENGL 148 (E-Z) Studies in Major Authors (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or at least one lower-division English course (other than composition) or consent of instructor. Intensive study of a major author not covered under ENGL 128 (E-Z). Some segments of this course may consider two authors with related concerns.

ENGL 149 Old English Literature (4) Lecture, 3 hours; outside reading, 3 hours. English literature of the Anglo-Saxon period: such works as Beowulf, "The Seafarer," and "The Wanderer."

ENGL 151A Middle English Literature: 1066-1500 (4) Lecture, 3 hours; outside reading, 3 hours. Covers the great works of the later fourteenth century—Chaucer's Troilus, Piers Plowman, and the poems of the Gawain poet.

ENGL 151T Studies in Medieval Literature (4) Lecture, 3 hours; extra reading, 4 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Analyzes English literature of the Middle Ages, focusing (where pertinent) on its continental backgrounds (the latter read in translation). Examines selected major literary works that illuminate topics such as Christian theology, monasticism, chivalry, and courtly love. Course is repeatable to a maximum of 8 units.

ENGL 152 Renaissance Revolutions (4) Lecture, 3 hours; outside reading, 3 hours. Studies in some of the major ideas and movements of the English Renaissance (1500-1600), such as Christian humanism, neo-Platonism, syncretism, puritanism, rational theology, science, republicanism, centering on such figures as More, Eloy, Castiglione, Ascham, Sidney, Jonson, Bacon, Hobbes, and Milton.

ENGL 153 Studies in Early Renaissance Literature (4) Lecture, 3 hours; extra reading, 3 hours. Studies in some of the major literary works of the period (excluding The Faerie Queene). Topics may center on comparisons with other art forms, on genres like the lyric, the pastoral, the romance, etc., or on ideas or topics of importance as they are reflected in the literary forms of the period.

ENGL 154 Studies in Late Renaissance Literature (4) Lecture, 3 hours; extra reading, 3 hours. Studies of some of the major literary figures of the period (excluding Milton). Topics may center on major late English renaissance ideas or themes such as the political, philosophical, or religious questions, or on other ideas or topics of importance, as they are reflected in the literary forms of the period (metaphysical or Cavalier poetry, the character, etc.).

ENGL 161A Restoration and Eighteenth-Century English Literature: 1600-1730 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Emphasizes drama (Wycherley, Congreve, Bneh, etc.) and satire (Dryden, Rochester, Pope, Gay, Swift).

ENGL 161B Restoration and Eighteenth-Century English Literature: 1730-1790 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Emphasizes the emerging English novel (Defoe, Richardson, Fielding, Smollett, Sterne, Burney), mid-century poetry (Thomson, Gray, Goldsmith), and the Age of Johnson --Chaucer's Troilus, Piers Plowman, and the poems of the Gawain poet.

ENGL 161T Studies in Eighteenth-Century Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of the relation of Restoration and eighteenth-century literature to its social and intellectual contexts: the rise of the bourgeoise, the growth of British imperialism, the Industrial Revolution, the triumph of Newtonian science, philosophical empiricism, classicism, primitivism, anti-antiquarianism, etc.

ENGL 166A Literature of the Romantic Period (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Covers writers such as Byron, Hazlitt, Keats, Scott, Mary Shelley, and Percy Shelley.

ENGL 166B Literature of the Romantic Period (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Covers writers such as Byron, Hazlitt, Keats, Scott, Mary Shelley, and Percy Shelley.

ENGL 166T Studies in English Romanticism (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of the relationship between the literature of the period and intellectual interests such as antiques, classicism, primitivism, perfectionism, transcendentalism, and organicism.

ENGL 172A Literature of the Early Victorian Period (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Covers Tennyson, Browning, Carlyle, Mill, and Newman.

ENGL 172B Literature of the Late Victorian Period (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Covers Swinburne, Pater, and Hopkins; The Pre-Raphaelites, the Aesthetic Movement, and Decadence.

ENGL 172T Studies in Victorian Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of such ideas and movements as Romanticism, Utilitarianism, the Tragic, the Real, Aestheticism, the New Naturalism, and Utopian theories, organized by areas or themes, as these ideas are reflected in the literature of the age.

ENGL 176A Twentieth-Century British and American Literature: 1900 to Late 1920s (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Study of representative literary works: fiction, non-fiction, poetry, and drama.

ENGL 176B Twentieth-Century British and American Literature: 1920s to 1950 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Covers major works by H.G. Wells, Arthur C. Clarke, Stanislaw Lem, Ursula K. Le Guin, and William Gibson.

ENGL 176C Twentieth-Century British and American Literature: 1950 to Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Study of representative literary works: fiction, non-fiction, poetry, and drama.

ENGL 176T Studies in Twentieth-Century British and American Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. An examination of significant twentieth-century authors and texts in their aesthetic, intellectual, political, and cultural contexts.

ENGL 178 Introduction to Science Fiction (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Introduction to the major themes, works, and approaches in the study of science fiction. Topics include science fiction as a genre and its expression in various media; critical approaches to science fiction; and the contribution of science fiction to cultural study, especially postmodern and posthuman theories.

ENGL 179A History of Fantasy and Horror Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A historical survey of science fiction literature from the nineteenth century to the present. Covers major works by H.G. Wells, Arthur C. Clarke, Stanislaw Lem, Ursula K. Le Guin, and William Gibson.

ENGL 179B History of Fantasy and Horror Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A historical survey of fantasy and horror literature from the nineteenth century to the present. Covers major works by Brin Stoker, H.P. Lovecraft, J.R.R Tolkien, and Angela Carter.

ENGL 179C Science and Science Fiction (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Investigates the relationship between science fiction and the role of culture in producing scientific knowledge. Readings include novels and scholarship in the history and sociology of science. Covers work by Nancy Kress, Greg Bear, Greg Egan, Thomas Kuhn, Donna Haraway, and Bruno Latour.

ENGL 179D Science Fiction on Film (4) Lecture, 3 hours; extra reading, 2 hours; screening, 2 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A historical survey of science fiction film and television from the twentieth century to the present. Includes readings in film and television criticism. Covers works by directors such as Robert Wise, Stanley Kubrick, Gene Roddenberry, and David Cronenberg. Course is repeatable to a maximum of 8 units.

ENGL 179T Studies in Science Fiction (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Focuses on a specific theme, subgenre, period, movement, or major author within the field of science fiction. Explores topics such as science fiction and social identity, cyberpunk, and H.G. Wells and the scientific romance.

ENGL 180 English Capstone Seminar (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): ENGL 102 or ENGL 102W. Advanced undergraduate study of a specific topic proposed by instructor.

ENGL 190 Special Studies (1-5) To be taken with the consent of the Chair of the department as a means of meeting special curricular problems.

ENGL 193A Senior Seminar (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): English standing or consent of instructor. Advanced undergraduate study of a specific topic proposed by instructor.

ENGL 193B Senior Seminar (2) Seminar, 1 hour; outside research, 2 hours; term paper, 2 hours. Prerequisite(s): ENGL 193A; senior standing with a
Graduate Courses

ENGL 200 Introduction to Graduate Study in English (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): consent of instructor or upper division standing. Introduces the operations of professional societies, journals, archives, and cooperating agencies related to the study and management of literature and language. Explores the ongoing operations of these organizations. Includes researching and writing analyses and/or histories under faculty supervision. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

ENGL 246 Seminar in Digital Media and Technocultural Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A team-taught introduction to a range of critical and theoretical issues of concern to entering graduate students, including canon formation, field organization, critical and theoretical assumptions behind the establishment of various fields, and the uses of theory.

ENGL 247 Seminar in Science, Literature and Media (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the history, theories, and practices of technoculture. Includes studies of computational or combinatorial texts and media. Brings together issues and contexts related to technological innovation, including the industrial production, re-fraction in aesthetic practices or popular cultural texts and sociopolitical deployment. Course is repeatable as content changes.

ENGL 248 Seminar in Science Fiction (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Analyzes the effects, in literary and other discourses, on theories and histories of gender and sexuality and on theories and histories of the field. May focus on such topics as Modernism, Postmodernism, regionalism, alternative canons, interrelations among texts, and connections between texts and cultures. Course is repeatable as content changes.

ENGL 252 Seminar in Black Literary and Cultural Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on black literary and cultural production within a framework of interdisciplinary black studies and literary and cultural theory. Examines the ways in which African American literature and/or the literatures of the African diaspora engage the histories of slavery, colonization, and freedom-making in the black Atlantic world. Course is repeatable to a maximum of 16 units.

ENGL 253 Seminar in Asian/American Literary and Cultural Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on Asian American literary and cultural production within a framework of Asian American, diasporic, and transpacific theory. Examines how Asian American literature engages dominant models of gender, race, class, sexuality, and nation in conjunction with the specific histories of the several ethnic groups that comprise Asian America and the Asian diaspora. Course is repeatable to a maximum of 16 units.

ENGL 262 Seminar in Renaissance Literature (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive study in particular areas of Renaissance literature and its legacy in modern critical configurations of romance. Course is repeatable as content changes.

ENGL 264 Seminar in Restoration and Eighteenth-Century Literature (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive study in particular areas of Restoration and eighteenth-century literature and society such as the “rise” of the novel; women writers and readers; interactions of “high” and “low” cultures; ideologies of gender and sexuality; capitalism, colonialism, and medical anthropological and historical representations of self and others. Course is repeatable as content changes.

ENGL 265 Seminar in Romantic Literature (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Research in late eighteenth- and early nineteenth-century literature and its legacy in modern critical configurations of romanticism. Course is repeatable as content changes.

ENGL 267 Seminar in Victorian Literature (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Concentrated research and discussion of topics, issues, and figures in Victorian literature and culture. Rubrics may include, but are not limited to, theoretical approaches to Victorian studies; questions of race, class, gender, and sexuality in Victorian culture; problems of aesthetics and genre; the politics of Empire; as well as author or text focused offerings. Course is repeatable as content changes.

ENGL 268 Seminar in British Literature since 1900 (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive study of film, television, and other forms of visually-oriented textuality. Approaches may include cultural criticism; media theory; structural and poststructural analysis; feminist, gender, and lesbian theory; semiotics. Course is repeatable as content changes.

ENGL 273 Seminar in Cultural Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive study of the field. May focus on such topics as Modernism, Postmodernism, regionalism, alternative canons, interrelations among texts, and connections between texts and cultures. Course is repeatable as content changes.

ENGL 274 Seminar in Feminist Discourses (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on theories and histories of gender and sexuality and analyzes the effects, in literary and other discourses, of foregrounding these categories. May involve special emphasis on “women” as writers and theorists and/or on feminist issues. Course is repeatable as content changes.

ENGL 275 Seminar in Film and Visual Cultures (4) Seminar, 3 hours; screening, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Analysis of film, television, and other forms of visually-oriented textuality. Approaches may include cultural criticism; media theory; structural and poststructural analysis; feminist, gender, and lesbian theory; semiotics. Course is repeatable as content changes.

ENGL 276 Seminar in Colonialism and Postcoloniality (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the analysis of colonial discourse and the postcolonial condition. Issues addressed include, among others, historiography and subalternity, nationalism, gender, and sexuality, neo-colonialism and transnationality; theorizing resistance; mimicry in colonial discourse; the academy, pedagogy, and the postcolonial intellectual. Course is repeatable as content changes.

ENGL 277 Seminar in Sexualities and Genders (4) Seminar, 3 hours; outside research, 3 hours. Prereq-
ENGL 278 Seminar in Minority Discourse (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive study and research in cultural traditions formerly excluded from literary history, such as African American, Asian American, Chicano, and Native American. Course is repeatable as content changes. Topics may include the history of sexuality, camp, posthuman genders and sexualities, queer theory, and lesbian and gay literature and film.

ENGL 279 Seminar in Rhetorical Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive research and study in rhetoric or composition theory. Topics may include the rhetorical dimensions of literature, literary theory, and civic discourse; the ethics or history of rhetoric; and conceptions of the writing process; and the relations between rhetorical, literary, and cultural criticisms. Course is repeatable as content changes.

ENGL 280 Colloquium in English and American Literature (2) Seminar, 2 hours. Prerequisite(s): graduate standing. Colloquia of both a formal and informal order on current research topics for students, faculty, and visiting scholars. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 281 Seminar in Comparative Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Intensive study of two or more ostensibly distinct fields, periods, disciplines, or arts. Course is repeatable as content changes.

ENGL 282 Seminar in Bibliography and Textual Criticism (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced research in the history of the book and textual production, including such topics as analysis of bibliographical apparatus, editorial theory and practice, and the economics of textual dissemination. Course is repeatable as content changes.

ENGL 289 Seminar in Genres (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines individual literary genres (poetry, the novel, drama, etc.) and subgenres (epic, romance, lyric, comedy, etc.) in terms of current or historical genre theories. Course is repeatable as content changes.

ENGL 290 Directed Studies (1-4) Consultation, 1-3 hours; individual study, 12 hours. Prerequisite(s): consent of instructor and graduate advisor. Advanced research study culminating in written work. Course is repeatable.

ENGL 291 Individual Study in Coordinated Areas (1-12) outside research, variable. A program of study designed to advise and assist candidates who are preparing for examinations. Repeatable under the following rules: (1) a student may take up to 12 units prior to the award of the M.A.; (2) a student may take up to 24 additional units after award of the M.A. but prior to successful completion of the Ph.D. qualifying examination. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 292 Concurrent Analytical Studies (1-4) Prerequisite(s): instructor approval, or approval of instructor in the field under whom the work will be carried out. Each 292 course will be taken concurrently with some 100 series course but on an individual basis. It will be devoted to research, criticism, and written work of a graduate order commensurate in amount with the number of units elected. ENGL 101 and ENGL 105 may not be used for this arrangement. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 296 Master’s Portfolio (2) Outside research, 6 hours; consultation, 2-3 hours. Prerequisite(s): completion of five quarters of master’s study in English; consent of the Graduate Advisor. Students revise, extend, and develop essays written during their master’s program in preparation for the master’s portfolio examination. Graded Satisfactory (S) or No Credit (NC).

ENGL 299 Research for Thesis or Dissertation (1-12) Thesis, 3-36 hours. Prerequisite(s): satisfactory completion of the Ph.D. qualifying examination. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

**Professional Courses**

ENGL 301 Introduction to the Teaching of English (1) individual and group conferences, 1 hour. Prerequisite(s): graduate standing. A flexible program of meetings and workshops specifically devoted to orienting apprentices and transfer TAs to the writing program at UC Riverside. Concentrates on the problem of organizing and teaching ENGL 001A, ENGL 001B, and ENGL 001C or its equivalent. Required of all apprentices and transfer TAs. Students must enroll concurrently in ENGL 302. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit for a maximum of 2 units.

ENGL 302 Teaching Practicum (1-4) Seminar, 1-4 hours. Prerequisite(s): graduate standing. A flexible program of meetings and conferences on the problems and techniques of writing instruction most pertinent to Basic Writing or to ENGL 001. Required of all TAs for at least five quarters, after which the TA may, with the permission of the Director of ENGL 001, elect to take ENGL 304 instead. Open to all graduate students. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 303 Advanced Teaching Practicum (1-2) Discussion, 1 hour; practicum, 1-2 hours. Prerequisite(s): graduate standing or consent of instructor. A flexible program of meetings and conferences on the problems and techniques of teaching literature, cultural studies, film studies, and related courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes.

ENGL 304 Professional Research Preparations (4) Seminar, 3 hours; outside research, 3 hours; consultation, 5 hours per quarter. Prerequisite(s): consent of instructor. Covers the procedures, preparation, and presentation of oral and written research materials, including prospectuses, with individual direction from instructor. Graded Satisfactory (S) or No Credit (NC).

ENGL 380 The Teaching of Written Composition (4) Summer Seminar, 8 hours. Prerequisite(s): consent of instructor; participation in the Inland Area Writing Project Summer Workshop. A study of research and practice in the teaching of written composition in the elementary and secondary schools. Offered in summer only. Students may receive either a letter grade or Satisfactory (S) or No Credit (NC) grade. See instructor for grading basis; no petition is required.

ENGL 381 Preparing to Teach Teachers (1-4) Summer Seminar, 2-8 hours. Prerequisite(s): consent of instructor; concurrent enrollment in ENGL 380. Participation in the Inland Area Writing Project Summer Workshop. Preparation and presentation of inquiry projects. Emphasis on inquiry into pedagogical assumptions and the way they contribute to expert teaching practices. Offered in summer only. Students may receive either a letter grade or Satisfactory (S) or No Credit (NC) grade. See instructor for grading basis; no petition is required.

ENGL 410 Seminar in Professional Development (2) Workshop, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Provides a flexible program of meetings and workshops on the development of skills and practices of the professional literary scholar. Includes conference presentations, academic publishing, pedagogy, grant writing, and other career-building practices. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

**Entomology**

Subject abbreviation: ENTM

College of Natural and Natural Sciences

Richard A. Redak, Ph.D., Chair
William E. Walton, Ph.D., Vice Chair
Department Office, 175 Entomology
insects.ucr.edu

Graduate Student Affairs
(800) 735-0717 or (951) 827-4116
insects.ucr.edu/programs/graduate.html

Undergraduate Faculty Advisor
(951) 827-5707
insects.ucr.edu/programs/undergraduate.html

Professors

Michael E. Adams, Ph.D., Entomology/Molecular Cell and Systems Biology
Peter W. Atkinson, Ph.D.
Boris Baer, Ph.D.
Ring T. Carde, Ph.D., Distinguished Professor
Alfred M. Boyce Chair in Entomology
Brian A. Federici, Ph.D., Distinguished Professor of Graduate Division
Alec Gerry, Ph.D.
John M. Heraty, Ph.D.
Jocelyn G. Millar, Ph.D., Distinguished Professor
Bradley A. Mullens, Ph.D.
Timothy D. Paine, Ph.D., Distinguished Professor
Tokuyi and Bettie L. Furuta Endowed Chair
Thomas M. Perrin, Ph.D., Alexander Ralikel, Ph.D., Distinguished Professor
University of California Presidential Chair
Richard A. Redak, Ph.D.
Michael K. Rust, Ph.D., Distinguished Professor of Graduate Division
Richard Stouthamer, Ph.D.
John T. Trumble, Ph.D., Distinguished Professor
William E. Walton, Ph.D.
Christiane Weirauch, Ph.D.

Professors Emeriti

Thomas S. Bellows, Jr., Ph.D.
Leland R. Brown, Ph.D.
Richard D. Goeden, Ph.D.
J. Daniel Hare, Ph.D.
Marshall W. Johnson, Ph.D.
E. Fred Legner, Ph.D.
Robert F. Luck, Ph.D.
James A. McMurtry, Ph.D.
Thomas A. Miller, Ph.D.
Joseph G. Morse, Ph.D.
Mir S. Mullia, Ph.D.
John D. Pinto, Ph.D.
S. Nelson Thompson, Ph.D.
P. Kirk Visscher, Ph.D.
Gregory P. Walker, Ph.D.

Assistant Professors

Omar Akbari, Ph.D.
Dong-Hwan Choe, Ph.D.
Kerry Mauck, Ph.D.
Quinn McFrederick, Ph.D.
Lauren Ponisio, Ph.D.
Jessica Purcell, Ph.D.
Erin W. Rankin, Ph.D.
Holli Woodward, Ph.D.

Undergraduate Faculty Advisor

Gregory P. Walker, Ph.D.
Major

The Department of Entomology offers undergraduate programs leading to either the B.S. or the B.A. degree. The B.S. degree offers students with a strong interest in the natural sciences an opportunity to emphasize this aspect of their education. The B.A. degree is available to students who wish to obtain a broader background in the humanities and social sciences than is required of students in the B.S. program.

Information on the programs and course requirements is available at CNAS Academic Advising Center, 1223 Pierce Hall. Counseling, course recommendations, and information on education and career goals are provided by the Undergraduate Faculty Advisor, Dr. Dong-Hwan Choe, 382 Entomology.

Transfer Selection Criteria

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with “C” grades or better:

- MATH 009A and MATH 009B (mandatory)

And at least one sequence from:

1. BIOL 005A/BIOL 05LA and BIOL 005B (and BIOL 005C, if articulated)
2. CHEM 001A, CHEM 011A, CHEM 001B, CHEM 011B, CHEM 001C, and CHEM 011C
3. Organic chemistry (one-year lower-division), each course completed with a grade of “B” or better
4. PHYS 002A, PHYS 02LA, PHYS 002B, PHYS 02LB PHYS 002C, and PHYS 02LC
5. PHYS 040A, PHYS 040B, and PHYS 040C
6. MATH 009C, MATH 010A, MATH 010B, and MATH 046

Courses must be completed with a letter grade, with no grade lower than a “C.”

Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the major may also fulfill some of the college's breadth requirements. Consult with a department advisor for course planning.

Major Requirements

The major requirements for both the B.A. and the B.S. degrees in Entomology are as follows:

1. Lower-division requirements (59 units)
   a) BIOL 005A, BIOL 005LA or BIOL 020, BIOL 005B, BIOL 005C
   b) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC
   c) MATH 007A or MATH 009A, MATH 007B or MATH 009B
   d) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C, CHEM 008A or CHEM 08HA, CHEM 008B or CHEM 08HB, CHEM 008C or CHEM 08HC, CHEM 08LA or CHEM 08LB, CHEM 08LC or CHEM 08LC.

2. Upper-division requirements (51 units)
   a) ENTM 100/BIOL 100, ENTM 107, ENTM 173/BIOL 173, ENTM 180, and 4 units in any combination of ENTM 190, ENTM 197, ENTM 199, or ENTM 199H
   b) Sixteen (16) additional units of entomology electives, which may include up to 2 additional units of ENTM 190, ENTM 197, ENTM 199 or ENTM 199H
   c) BCH 100
   d) BIOL 102
   e) BIOL 107A
   f) STAT 100A

BIOI 151 and BIOI 175 are suggested in order to acquire a background in the life sciences appropriate for an Entomology major.

For students intending to specialize at the graduate level in insect toxicology or insect physiology, biochemistry, and molecular biology, it is recommended that the BCH 110A, BCH 110B, and BCH 110C sequence and BCH 102 be substituted in place of an equal number of upper-division course units in life sciences. Due to course content overlap, credit is not awarded for BCH 110A, BCH 110B, or BCH 110C if it has already been awarded for BCH 100.

Sample Program

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Minor

The Department of Entomology offers a minor in Entomology designed to allow the student the freedom to pursue areas of particular interest.

The minor consists of no less than 20 and no more than 28 units of Entomology courses to be selected as follows:

1. ENTM 100/BIOL 100
2. Select from the following upper-division Entomology courses to complete unit requirement: ENTM 106, ENTM 107, ENTM 109, ENTM 112/BIOL 112/BPSC 112, ENTM 114, ENTM 124, ENTM 125, ENTM 126, ENTM 127/BIOL 127, ENTM 129, ENTM 129L, ENTM 133, ENTM 162/BIOL 162, ENTM 173/BIOL 173, ENTM 180, ENTM 190, ENTM 197, ENTM 199, ENTM 199H
3. No more than 4 units of ENTM 190, ENTM 197, ENTM 199, or ENTM 199H, either

<table>
<thead>
<tr>
<th>Total Units</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>17</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>
solely or in combination, may be applied toward the unit requirement.

4. Of the specified upper-division units, a minimum of 16 must be unique to the minor and may not be used to satisfy major requirements.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Program

The Department of Entomology offers programs leading to the M.S. (thesis plan) and Ph.D. degrees with specialization in, but not restricted to, the following areas of study:

- Arthropod vectors of human, animal, and plant pathogens
- Behavior
- Biochemistry and Physiology
- Chemical Ecology
- Conservation Biology and Global Change
- Endocrinology and Development
- Ecology and Evolution
- Genetics, Genomics, and Molecular Biology
- Insect Pathology
- Integrated Pest Management
- Invasive Species and Biological Control
- Medical and Veterinary Entomology
- Nematology
- Neuroscience
- Plant-Herbivore Interactions
- Social Insects and Pollination Biology
- Systematics
- Urban Entomology

Information on participating faculty and their research specializations may be found at insects.ucr.edu. University requirements for the M.S. and Ph.D. degrees are given in the Graduate Studies section of this catalog.

Admission

Students must have a bachelor’s degree with a major in Entomology, a biological science, Chemistry, Biochemistry, or a suitable equivalent. Regardless of undergraduate major, students must have had, or complete soon after entering graduate school, the following:

1. One year of course work each in general biology, general chemistry, and organic chemistry.
2. The equivalent of a one quarter course each in genetics and biochemistry.
3. The equivalent of 30 quarter units of life sciences other than entomology. Students who wish to specialize in insect biochemistry, insect physiology, molecular entomology, neuroscience, or toxicology may substitute additional courses in physical, organic, and biological chemistry, toxicology, and pharmacology for courses in life sciences.

Credit from these courses does not count toward the unit requirement of the M.S. degree.

The department requires GRE General Test scores (verbal, quantitative, and analytical). All applicants whose first language is not English and do not have an undergraduate or graduate degree from an accredited institution where English is the exclusive language of instruction must submit a recent Test of English as a Foreign Language (TOEFL) and obtain a minimum score on the exam of 550 (paper-based), 213 (computer-based), or 80 (internet-based).

Course Work

All students must take ENTM 201, ENTM 202, and ENTM 203 (14 units)

Seminar Requirements

1. All full-time students must enroll in the ENTM 250 seminar during each quarter in which it is offered. (units vary)
2. Students in the second year and beyond must present a seminar or a poster presentation of their research at the Annual Graduate Student Seminar Day

Professional Development

Entomology students must complete an annual Individual Development Plan along with their annual progress report, present an annual seminar or poster presentation covering their research investigations at the Annual Graduate Student Seminar Day, and complete one quarter of GDIV 403.

Doctoral Degree

Each student, with the advice of their Ph.D. Guidance Committee, will select courses that complement their research program and help the student prepare for the qualifying examination. (units vary)

Students must take at least four Entomology 2-unit seminar courses for a letter grade from the following list: ENTM 249, ENTM 252, ENTM 254, ENTM 255, ENTM 256, ENTM 258, ENTM 262, ENTM 289 (8 units)

Written and Oral Qualifying Examinations

Advancement to candidacy depends on the student passing written and oral qualifying examinations.

Dissertation and Final Oral Examinations

Following completion of their research, students submit a written dissertation and conclude their studies with an oral public defense of the dissertation

Teaching Requirement

Ph.D. students must fulfill a three quarter teaching requirement.

Normative Time to Ph.D.

17 quarters

Master’s Degree

Students should refer to the Graduate Studies section of the catalog for the minimum master’s degree requirements.

Each student, with the advice of their M.S. Guidance Committee, will select courses that complement their research program. (units vary).

Students must take at least two Entomology 2-unit seminar courses for a letter grade from the following list: ENTM 249, ENTM 252, ENTM 254, ENTM 255, ENTM 256, ENTM 258, ENTM 262, ENTM 289 (4 Units)

Thesis and Final Oral Examination

Following completion of their research, students submit a written thesis and conclude their studies with an oral public defense of the thesis

Normative Time to M.S.

6 quarters

Opportunities for Interdisciplinary Graduate Study

Faculty from the Department of Entomology also participate in the following additional graduate programs:

- Biochemistry and Molecular Biology
- Cell, Molecular, and Developmental Biology (CMDB)
- Neuroscience
- Chemistry
- Environmental Toxicology
- Evolution, Ecology, and Organismal Biology (EEOB)
- Genetics, Genomics and Bioinformatics

These interdepartmental programs draw on the strengths of distinguished scientists from several units. For further information concerning work in these areas, see the respective program descriptions in the Programs and Courses section of this catalog or contact the Biological Sciences Graduate Student Affairs Center, at (800) 735-0717.

Lower-Division Courses

ENTM 010 Natural History of Insects (4) F, W, S
Lecture, 3 hours; demonstrations, 1 hour. A study of the fascinating world of insects and of their impact on man; designed for non-entomology majors. Living and preserved insects and many other visual aids are used.

ENTM 020 Bees and Beekeeping (4) F or S, Alternate Years
Lecture, 3 hours; discussion, 1 hour. Fundamentals of keeping honey bees, their fascinating social behavior, and their economic importance as pollinators of agricultural crops and as producers of honey and other products. Demonstrations of bee biology and behavior, with colonies of bees, and of beekeeping techniques, equipment, and extraction of honey. Baer

ENTM 050 The Evidence for Evolution (4) W Lecture, 3 hours; extra reading, 3 hours. Introduces and explores the extensive evidence supporting evolution as the driver of biological diversity. Designed for non-science majors and/or those with limited prior knowledge about biology. Includes the scientific method, paleontology, natural selection, genetics, speciation, and the importance of sex. Addresses the broader need for scientific literacy in society. Letter Grade or Satisfactory/No Credit (S/NC); no petition required. Cross-listed with BPSC 050, Purcell
Upper-Division Courses

ENTM 100 General Entomology (4) F Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005B, BIOL 005C, or equivalents; or consent of instructor. Introductory study of insects, Earth’s most diverse group of animals (75 percent of animal species are insects). Lecture covers the anatomy, physiology, ecology, behavior, and diversity of insects. Laboratory focuses on insect identification. Cross-listed with BIOL 100. Paine, Perrigo

ENTM 106 Insect Evolution (3) S Lecture, 2 hours; laboratory, 3 hours. Prerequisite(s): BIOL 100/ENTM 100 or consent of instructor. Introduces principles of insect morphology, with emphasis on characters of phylogenetic and adaptive significance and insect evolution. Topics include the comparative anatomy and phylogenetic relationships of extinct and living insect groups. Laboratory emphasizes principles of comparative morphology and evolutionarily important character complexes. Weirauch

ENTM 107 Insect Biodiversity (4) W Lecture, 2 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): BIOL 100/ENTM 100 or equivalent or consent of instructor. The major growing regions of Southern California form the basis for laboratory discussion. Detailed notes and collections from field trips to all species learned through field observation, discussions with industry representatives, and laboratory study. Cross-listed with ENTM 100. Paine, Perrigo

ENTM 113 Urban Entomology (4) S, Even Years Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): BIOL 100/ENTM 100 or consent of instructor. Biology and management of arthropod pests of the urban-industrial community with an emphasis on structural, household, and stored product pests. Exercises on the recognition and identification of these pests, their life histories, and strategies for their control. Cho

ENTM 125 Pesticides, Biological Organisms, and the Environment (3) F, Odd Years Lecture, 3 hours. Prerequisite(s): two of the following courses; BIOL 005A; BIOL 005B; BIOL 005C; CHEM 084B or CHEM 084A; or CHEM 084B or CHEM 084A; or equivalents. Consider environmental impact of pesticide use and design and implementation of strategies to minimize adverse impact. Strakosch

ENTM 126 Medical and Veterinary Entomology (4) W, Odd Years Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005B, BIOL 005C, or consent of instructor. Covers the identification and management of arthropods that affect human and animal health. Consider arthropods as direct pests and vectors of notorious diseases (e.g., malaria, plague). Also addresses disease epidemiology and prevention, as well as control of pests and associated diseases. Gerry

ENTM 127 Insect Ecology (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, or BIOL 005C; CHEM 001C or CHEM 001B; or CHEM 084B or CHEM 084A; or CHEM 084B or CHEM 084A; or equivalents. Focuses on the life history and ecology of insects. Cross-listed with BIOL 127. Walton

ENTM 129 Introduction to Biological Control (2) F Lecture, 2 hours. Prerequisite(s): BIOL 100/ENTM 100 or consent of instructor. Principles and methods of biological control; biology and behavior of entomophagous insects; historical review and critique of important world projects. Stouthamer

ENTM 133 Forensic Entomology (3) S, Even Years Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): BIOL 100/ENTM 100 or consent of instructor. Forensic applications of entomophagous insects; terminology and techniques for the forensic entomologist. Stouthamer

ENTM 154 Forensic Entomology (3) S Lecture, 2 hours; discussion, 1 hour; extra reading, 4 hours. Prerequisite(s): BIOL 005C with a grade of "C-" or better; or consent of instructor; ENTM 154L required (may be taken concurrently). Introduces the application of entomological principles and collection of entomological data to be used as evidence in courts of law. Explores the diversity, structure, and development of insects as well as the basis of using insects to determine time and place of death in criminal cases. Gerry

ENTM 154L Forensic Entomology Laboratory (2) Laboratory, 6 hours. Prerequisite(s): BIOL 005C with a grade of C- or better; ENTM 100 or ENTM 126 with a grade of C- or better; ENTM 154 (may be taken concurrently); or consent of instructor. Laboratory identification of insects of forensic importance including insects used in medical-legal investigations and as evidence in courts of law; collection and handling of insects of forensic importance from investigation sites; experiments designed to illustrate procedures for sampling, rearing, and estimating insect development time based upon environmental conditions and collection site characteristics. Gerry

ENTM 162 Insect Behavior (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C; or BIOL 100/ENTM 100; or consent of instructor. Studies insects as agents of disease, weeds, and pests of agriculture and examines their behavior and interactions with hosts, competitors, and natural enemies. Stouthamer

ENTM 173 Insect Physiology (4) S, Even Years Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 005A and BIOL 005B; or BIOL 100/ENTM 100; or consent of instructor. Focuses on the physiology of insects. Cross-listed with BIOL 162. Woodward

ENTM 180 Capstone Research Seminar in Entomology (2) Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): ENTM 100, ENTM 126, or consent of instructor. Introduces students to the research process, integrates previous coursework, and prepares students for graduation in Entomology. Satisfactory (S) or No Credit (NC) grading is not available. Carde, Cho, Weirauch

ENTM 190 Special Studies (1-4) F, W, Individual study, 3-12 hours. Prerequisite(s): upper-division standing and consent of instructor. Directed studies by a faculty member to address specific curricular needs. A written proposal signed by the supervising faculty member and the undergraduate advisor is required. Course is repeatable as content changes to a maximum of 4 units. Gerry

ENTM 199 Research for Undergraduates (1-4) F, W, S Outside research, 3-12 hours. Prerequisite(s): senior standing and consent of instructor. Research in entomology performed under supervision of a faculty member. A written proposal signed by the supervising faculty member and the undergraduate advisor is required. Requires a formal oral presentation, poster, project, or a written report. Course is repeatable to a maximum of 6 units. Gerry

ENTM 199H Senior Honors Research (1-5) F, W, S Laboratory, 3-15 hours. Prerequisite(s): senior status; consent of instructor; a GPA of 3.5 or better in Entomology courses and 3.2 in all University course work. Honors course corresponding to ENTM 199. Research in entomology under supervision of a faculty member in entomology. A written proposal signed by the supervising faculty member and the undergraduate advisor is required. The student will submit a written report. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENTM 199 or ENTM 199H.
Graduate Courses

ENTM 201 Core Areas of Entomology I: Subcellular-Cellular Disciplines (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 100 or BCH 110A (may be taken concurrently); or consent of instructor. Introduces principles of molecular biology and insect physiology. Topics include genetic material and mechanisms, genomics, bioinformatics, gene control, genetic manipulations, endocrine and hormonal signaling, ecology, reproduction, and the muscle, nervous, and sensory systems. Adams, Akbari, Raikhel

ENTM 202 Core Areas of Entomology II: Suborganis-omal-Organisal Disciplines (5) S Lecture, 4 hours; laboratory, 3 hours. Prerequisite(s): ENTM 201 or consent of instructor. Introduces principles of insect morphology, insect systematics, insect taxonomy, and physiology of systems used for energy transformation. Topics include comparative anatomy and functional morphology, digestion, excretion, osmoregulation, respiration, systematic theory, taxonomy, and insect identification. McFrederick, Weirauch

ENTM 203 Core Areas of Entomology III: Supraorganisomal Disciplines (5) S Lecture, 4 hours; laboratory, 3 hours. Prerequisite(s): ENTM 202, undergraduate course in ecology, or consent of instructor. Introduces principles of insect ecology, genetics, evolution, behavior, and pest management. Addresses insect population dynamics and community interactions, genetics of geographic variation, insect behavior, and the management and control of pestiferous species. Includes computer simulations and use of molecular tools applied to supraspecific phenomena. Carde, Paine, Purcell, Stouthamer

ENTM 207 Arthropod Vectors in Relation to Plant Disease (4) F Lecture, 2 hours; laboratory, 4 hours. Prerequisite(s): BIOL 200 or 101A; BIOL 120/MCBL 120/PLPA 120; or consent of instructor. Detailed analyses of interacting mechanisms involved in the transmission of plant pathogens by arthropods. Emphasis on learning through extensive laboratory experimentation. Perrin

ENTM 209 Microtechniques in Insect Morphology (3) W, Even Years Laboratory, 6 hours; outside research, 3 hours. Prerequisite(s): BIOL 100A, BIOL 100B, BIOL 100C, or consent of instructor. Development of research techniques and skills used in the study of insect morphology. Covers the principles of and provides hands-on experience with the following: microscopy, scanning electron microscopy, whole-mount slide preparation techniques, morphometric measurement and analysis, scientific illustration, macrophotography, and histological techniques.

ENTM 210 Molecular Biology of Human Disease Vectors (3) Lecture, 2 hours; seminar, 1 hour. Prerequisite(s): consent of instructor. Covers the molecular aspects of vectors transmitting the most dangerous human diseases. Involves lectures and student presentations about current issues in molecular biology and genomics of vector insects and pathogens they transmit. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CMB 210 and MCBL 210. Raikhel

ENTM 212 Ecological Systems in Space and Time (4) F, W, S Lecture, 3 hours; field, 30 hours per quarter. Prerequisite(s): One undergraduate course in population or community ecology or paleoecology, or consent of instructor. Focuses on how ecological systems are interpreted and reconciled at the community, landscape, and paleontological scales. Addresses the role of extrinsic factors operating at each of these scales. Also examines the historical development of our understanding of ecological systems at various scales. Cross-listed with EEOB 212 and GEO 212. Raikhel

ENTM 219 Theory of Systematics (4) F, W, S Lecture, 4 hours. Prerequisite(s): BIOL 112/BPSC 112/ENTM 112 or equivalent or consent of instructor. Examines topics that have developed around a series of classical and recent papers on the principles, philosophy, and methodology of modern systems and phylogenetic methods. Cross-listed with EEOB 219 and GEO 219. Heraty, Springer

ENTM 227 Insect Population Ecology (3) W, Odd Years Lecture, 3 hours. Prerequisite(s): BIOL 127/ENTM 127 or consent of instructor. Recommended: ENTM 129; STAT 100A; STAT 100B or equivalent. Theory of animal population regulation. Factors affecting distribution and abundance of animals with emphasis on examples from the Arthropoda. Prerequisite(s): consent of instructor. Lecture explores topics and practices relating to the use of natural enemies in the suppression of insect, weed, pathogen, and vertebrate populations. The laboratory surveys insect and other natural enemies, their attributes, collection, cultivation, quarantine handling, and field use. Normally letter graded, but students may petition the instructor for a Satisfactory (S) or No Credit (NC) grade.

ENTM 229 Advanced Biological Control (4) F, Alternate Years Lecture, 2 hours; laboratory, 3 hours. Prerequisite(s): BIOL 127/ENTM 127 or consent of instructor. Lecture explores topics and practices relating to the use of natural enemies in the suppression of insect, weed, pathogen, and vertebrate populations. The laboratory surveys insect and other natural enemies, their attributes, collection, cultivation, quarantine handling, and field use. Normally letter graded, but students may petition the instructor for a Satisfactory (S) or No Credit (NC) grade.

ENTM 230 Entomophagous Insects (4) F Lecture, 2 hours; laboratory, 6 hours. Prerequisite(s): BIOL 100/ENTM 100 or equivalent, graduate standing, or consent of instructor. Introduces the biology and identification of entomophagous insects. Students collect and rear parasites and prepare specimens according to professional standards. Laboratory identification focuses on the family level for parasitic insects. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Heraty

ENTM 240 Research Methods in Insect Chemical Ecology (4) W, Odd Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): consent of instructor. Survey of the methods used in the isolation, identification, and bioassay of biologically active natural products. Topics include bioassay design and execution, and microscale chemical separation and identification techniques. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade.

ENTM 241 Insect-Plant Interactions (4) F, Odd Years Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): BIOL 127/ENTM 127 or consent of instructor. Concepts of the development and maintenance of ecological associations between plants and arthropod herbivores in ecological and evolutionary time; organization of arthropod communities on plants; phytochemical basis for the mediation of plant-arthropod associations; coevolution of plants and herbivorous insects; manipulation of plant-arthropod associations in arthropod pest management programs. Mauck, Trumble

ENTM 242 Development of Hypotheses and Research Design (3) F, W, S Lecture, 1 hour; discussion, 1 hour; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores topics in insect systematics and the role of extrinsic factors operating at each of these scales. Also examines the historical development of our understanding of ecological systems at various scales. Cross-listed with EEOB 212 and GEO 212. Raikhel

ENTM 249 Special Topics in Entomology (1-6) Lecture, 1-6 hours; laboratory, 0-15 hours. Prerequisite(s): graduate standing or consent of instructor. Explores topics in entomology within the area of specialization of each faculty member. Content emphasizes recent advances in the special topic area and varies accordingly. Students who take examinations or submit a term paper receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable as content changes.
ENTM 272 Research Seminar in Insect Communication and Behavior (1) F, W, S Seminar, 1 hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in insect communication and behavior. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Choe

ENTM 276 Research Seminar in Medical, Urban, and Veterinary Entomology (1) F, S Seminar, 1 hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in medical, urban, and veterinary entomology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Choe, Gerry, Mullens, Walton

ENTM 277 Research Seminar in Insect Biochemistry and Toxicology (1) F, W, S Seminar, 1 hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in insect biochemistry and toxicology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Gill

ENTM 289 Special Topics in Neuroscience (2) F, W, S Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BCH 289, BIOL 289, CHEM 289, NRS 289, and PSYC 289.

ENTM 290 Directed Studies (1-6) F, W, S Literature studies on special topics under direction of a member of the staff. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENTM 291 Individual Study in Coordinated Areas (1-6) F, W, S Prerequisite(s): graduate standing. Faculty assisted programs of individual study for candidates who are preparing for examinations. The following rules apply: 1) Up to 6 units may be taken prior to award of the Master's degree, such units to be in addition to minimum unit requirements for the degree; 2) Up to 12 additional units may be taken prior to advancement to candidacy for the Ph.D.; 3) The course may be repeated within these limits. Graded Satisfactory (S) or No Credit (NC).

ENTM 297 Directed Research (1-6) F, W, S Exploratory research toward the development of the dissertation problem or other research not specifically for thesis or dissertation. Graded Satisfactory (S) or No Credit (NC).

ENTM 299 Research for Thesis or Dissertation (1-12) F, W, S Outside research, 3-36 hours. Prerequisite(s): graduate standing. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

ENTM 301 Teaching Entomology at the College Level (1) F, W, S Seminar, 1 hour. Prerequisite(s): graduate standing in Entomology. A program of weekly meetings and individual formative evaluation required of new entomology Teaching Assistants. Covers instructional methods and classroom section activities most suitable for teaching Entomology. Conducted by departmental faculty or the Teaching Assistant Development Program. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENTM 302 College Teaching Practicum (1-4) F, W, S Practicum consultation, 3-12 hours. Prerequisite(s): graduate standing and consent of instructor. Supervised teaching in college level classes under supervision of the course instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENTM 303 Philosophy and Pedagogy of Teaching Undergraduate Life Sciences (3) F Lecture, 1 hour; laboratory, 3 hours; workshop, 1 hour. Prerequisite(s): graduate standing in life sciences. Explores the opportunities and challenges associated with developing an undergraduate course in the life sciences. Emphasizes determining how students learn, as well as exploring contemporary instruction methods that foster student engagement in the classroom. Graded Satisfactory (S) or No Credit (NC). Cross-listed with BIOL 303. Cardullo, Paine, Regan

Environmental Engineering

See Chemical and Environmental Engineering

Environmental Sciences

Subject abbreviation: ENSC
College of Natural and Agricultural Sciences

Laosheng Wu, Ph.D., Chair
Daniel Schlenk, Ph.D., Vice-Chair
CNAS Undergraduate Academic Advising Center, (951) 827-7294;
CNASstudent@ucr.edu, envisci.ucr.edu

Professors
Michael A. Anderson, Ph.D., Environmental Chemistry
Marilyn Fogel, Ph.D. Environmental Sciences
Jianying "Jay" Gan, Ph.D. Environmental Chemistry
Robert C. Graham, Ph.D. Soil Mineralogy and Pedology
Keith C. Knapp, Ph.D. Natural Resource Economics
Daniel Schlenk, Ph.D. Aquatic Ecotoxicology
James Sicksman, Ph.D. Watershed Hydrology and Biochemistry
Jiri Simunek, Ph.D. Hydrology
Laosheng Wu, Ph.D. Soil Physics
Marylyn V. Yates, Ph.D. Environmental Microbiology

Professors Emeriti
Christopher Amrhein, Ph.D. Soil Chemistry
Janet T. Arey, Ph.D. Atmospheric Chemistry
Roger Atkinson, Ph.D. Atmospheric Chemistry
Andrew C.-S. Chang, Ph.D. Agricultural Engineering
David E. Crowley, Ph.D. Soil Microbiology
Walter J. Farmer, Ph.D. Soil Chemistry
William T. Frankenberger, Jr., Ph.D. Soil Microbiology
William A. Jury, Ph.D. Soil Physics
Lanny J. Lund, Ph.D. Soil Morphology, Genesis, and Classification
Albert L. Page, Ph.D. Soil Chemistry
David R. Parker, Ph.D. Soil Biogeochemistry
Roberto Sanchez-Rodriguez, Ph.D. Environmental Policy
Henry V. Vaux, Jr., Ph.D. Natural Resource Economics
Paul J. Ziemann, Ph.D. Atmospheric Science

Associate Professor
Roya Bahreini, Ph.D. Atmospheric Science
David M. Crohn, Ph.D. Biosystems Engineering

Assistant Professors
Hoori Ajami, Ph.D. Groundwater Hydrology
Andrew B. Gray, Ph.D. Watershed Hydrology
Francesco Hopkins, Ph.D. Climate Change and Sustainability
Ying-Hsuan Lin, Ph.D. Environmental Toxicology
William Porter, Ph.D. Environmental Sciences
David C. Voz, Ph.D. Environmental Toxicology
Samantha C. Ying, Ph.D. Soil Biogeochemistry

Cooperating Faculty
Emma Aronson, Ph.D. (Plant Pathology & Microbiology)
Kenneth A. Baerenklau, Ph.D. (School of Public Policy)
Anel Dinar, Ph.D. (School of Public Policy)
Kurt A. Schwabe, Ph.D. (School of Public Policy)

Major

The Department of Environmental Sciences offers B.A. and B.S. degrees in Environmental Sciences. Students can choose to concentrate their studies in one of two options: Natural Science and Environmental Toxicology. The necessity of maintaining an acceptable level of environmental quality is placing increasing demands upon governments and industries locally, nationally, and worldwide. To help meet these demands, the Environmental Sciences program is designed to provide training for students intending to enter environmental professions or for students preparing for graduate study in law, research, or teaching in a capacity that utilizes a background in the science of the human environment.

The structure of the Environmental Sciences curriculum provides a broad scope of instruction that enables students to explore the various disciplines and professions involved with solving environmental problems as well as opportunities for students to focus their training in accordance with their own educational and career objectives. All students majoring in Environmental Sciences must complete a set of "core requirements" consisting of courses that provide a basic understanding of the physical, biological, and social sciences and their application to the analysis of environmental processes and issues. In addition to the core requirements, students must complete the required courses and an appropriate number of elective courses as designated in the option they select. Students are not expected to select an option during the freshman year so that they can be introduced to dimensions of the environmental sciences about which they may have no previous knowledge. Those wishing to change their selection of an option may do so at any time as long as they are able to complete the requirements for the bachelor's degree within the 216-unit limit specified by the College of Natural and Agricultural Sciences.

Environmental Internship Program

The Environmental Internship Program offers students opportunities to work with government agencies, private firms, and nonprofit organizations involved in environmental affairs. As excursions into professional life, internships provide "hands-on" experience in applying the principles presented in courses. Beyond the highly specialized training associated with on-the-job activities, students can gain insights into their aptitudes, aspirations and work habits that enable them to clarify their academic and career objectives. Professional acquaintances established during internships can continue to serve as important contacts for students after the internship is completed. Although most internships are part-time (12–15 hours per week) positions in the Riverside area, organizations that host student interns
are located throughout the United States and in Washington, D.C. Students working as interns may receive stipends, hourly wages, or serve as volunteers, depending upon the specific appointment. Up to 16 units of credit toward the bachelor’s degree may be earned by developing an academic component of the internship in consultation with a faculty supervisor and enrolling in ENSC 198-I.

Undergraduate Research

Students interested in enhancing the status of knowledge about environmental processes or seeking new solutions to environmental problems may gain training and experience as part-time employees in the department’s research laboratories and other research facilities, such as the Air Pollution Research Center and the U.S. Department of Agriculture Soil and Water Research Service, located on campus. Those wishing to conduct their own research under faculty supervision may earn academic credit by enrolling in ENSC 197. Expenses for both laboratory and field experiments are eligible for funding by the campus mini-grant program which supports undergraduate research and creative activity.

Environmental Toxicology Option

As a curriculum that emphasizes the chemistry and biochemistry of toxic substances in the environment, this option prepares students for careers dealing with the control of toxics in the environmental media of air, water, soil, and ecosystems and in such related fields as public health and industrial hygiene. Qualified students completing this option may enter UCR’s graduate program in Environmental Toxicology without significant deficiencies in their undergraduate curriculum.

Natural Science Option

As a general curriculum emphasizing the natural sciences, this option is suitable for students wishing to maintain a broad range of choices in technically oriented environmental professions such as air and water pollution control, hazardous materials management, public health, natural resource management, and environmental impact analysis. The Natural Science option is also appropriate as background for graduate study in such disciplines as ecology, forestry, air and water science, and environmental engineering. Students may earn either the B.A. or B.S. degree by completing the requirements specified by the College of Natural and Agricultural Sciences.

California Teach-Science/Mathematics Initiative (CaTEACH-SMI)

California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities, such as the SMII Alpha Center Apprentice Program, to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources which includes the National Science Foundation (NSF) Noyce Scholarship Program, to promote planning and professional development towards a science/mathematics education career.

For more information about the CaTEACH-SMI program, please visit smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at facebook.com/ScienceMathInitiativeAtUcr.

Transfer Selection Criteria

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with a "C" grade or better:

- MATH 007A or MATH 009A; MATH 007B or MATH 009B (mandatory)
- And at least one sequence from:
  - BIOL 005A/BIOL 05LA or BIOL 020 and BIOL 005B (and BIOL 005C, if articulated)
  - CHEM 001A, CHEM 01LA, CHEM 001B, CHEM 01LB, CHEM 001C, and CHEM 01LC
  - Organic chemistry (one-year lower-division), each course completed with a grade of "B" or better
  - PHYS 002A, PHYS 02LA, PHYS 002B, PHYS 02LB PHYS 002C, and PHYS 02LC
  - PHYS 040A, PHYS 040B, and PHYS 040C
  - MATH 009C, MATH 010A, MATH 010B, and MATH 046

Courses must be completed with a letter grade, with no grade lower than a "C." Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the major may also fulfill some of the College’s breadth requirements. Consult with a department advisor for course planning.

Major Requirements

The major requirements for both the B.A. and the B.S. degrees in Environmental Sciences are as follows: Students must fulfill MATH 007A or MATH 009A; MATH 007B or MATH 009B; CHEM 001A, CHEM 001B, CHEM 001C; BIOL 002 or BIOL 005A; BIOL 003 or BIOL 005B; or BIOL 020, ENSC 001, ENSC 002, ENSC 006, ENSC 100, ENSC 101, and ENSC 102 with a grade point average of 2.0 or better and no grade lower than a C-. If a grade lower than a C- is received in 2 or more core courses required for the major, either in separate courses or repetitions of the same course, the student may be discontinued from the major. Students must, under such circumstances, petition the department to remain in the major. Students are also required to choose one of the options and satisfactorily complete the option requirements. Students in Environmental Sciences are required to demonstrate adequate progress toward earning the degree. Adequate progress is defined as completion of MATH 009B or MATH 007B prior to the beginning of the Winter Quarter of the second year of residence or Junior standing (>90 units) and at least one course from ENSC 100, ENSC 101, or ENSC 102 must be completed prior to the end of the third year of residence or senior standing (>135 units).

Note: To gain maximum benefit from participating in the Undergraduate Research and Environmental Internship Programs, students intending to enroll in ENSC 197 and ENSC 198-I should contact their advisor during the quarter prior to enrollment in these courses.

Core Requirements

1. Lower-division requirements (36 units)
   a) ENSC 001, ENSC 002
   b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
   c) MATH 007A or MATH009A; MATH 007B or MATH 009B
   d) POSC 010

2. Upper-division requirements (14 units):
   ENSC 100, ENSC 101, ENSC 102, ENSC 191

Environmental Toxicology Option (72-78 units)

1. BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B
2. CHEM 005 or BIOL 005C; CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 8HLA or CHEM 12A, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 8HLB or CHEM 12B, CHEM 08LC and CHEM 08HC and CHEM 8HLC or CHEM 12C
3. ENTC 101, ENTC 154
4. PHYS 002A, PHYS 002B, PHYS 002C
5. PHYS 02LA, PHYS 02LB, PHYS 02LC are recommended
6. ENSC 006/ECON 006
7. BCH 100 or both BCH 110A and BCH 110B; BIOL 102 or BIOL 121/MCBL 121; BCH 110C or BIOL 107A
8. STAT 100A and STAT 100B
9. Elective Courses: At least one course from ENSC 127, ENSC 133/MCBL 133, ENSC 135/CHM 135/ENTX 135, ENSC 136/CHM 136/ENTX 136, ENSC 140, ENSC 141/MCBL
Environmental Sciences Graduate Program / 276

Graduate Program

Subject abbreviation: ENSC
College of Natural and Agricultural Sciences
Laosheng Wu, Ph.D., Director
David C. Volz, Ph.D., Graduate Advisor
John Herring, Student Affairs Officer
(951) 827-2441; envi sci@ucr.edu
evisci.ucr.edu

The Environmental Sciences Graduate Program offers the M.S. and Ph.D. degrees in Environmental Sciences. Advanced training in Environmental Sciences is becoming increasingly necessary to address complex problems involving natural resources and environmental quality. Although this task frequently requires specialized knowledge in various fields of science, it also requires understanding and integration of a wide variety of interacting physical, chemical, biological, and societal influences. This interaction makes graduate study in environmental sciences distinct from many other scientific fields.

We have designed our program to offer advanced training in a number of specialized field areas within environmental sciences, operating within a single graduate degree program administered by the Department of Environmental Sciences. Students trained in the Complex Sciences Graduate Program can fill many areas of expertise needed in the state and nation. Potential career opportunities exist at regulatory agencies, consulting firms, government and academic research institutions, and industrial research facilities.

Admission Entry to the program requires completion of a baccalaureate degree in a field appropriate as preparation for graduate study in environmental sciences. Students normally will come to the program from an environmental sciences related discipline such as atmospheric science, aquatic science, earth science, environmental chemistry, hydrology, or soil science; a basic science such as biology, chemistry, or physics; or in a social science discipline such as economics, political science, geography, or sociology. Students may conduct research under the supervision of a sponsoring faculty member in any of the following field areas. Students must specify a field area for entry into the program.

In addition to the following requirements, all applicants must meet the general requirements as set forth in this catalog under the Graduate Studies section.

Environmental Chemistry and Ecotoxicology The Environmental Chemistry and Ecotoxicology field area focuses on the sources, physical and chemical transformations, and removal processes of chemicals in soil, water, and air, and their impacts on ecological systems.

Entrance requirements There are no entrance requirements for the Environmental Chemistry area beyond the general requirements for admission to the ESGP. For Ecotoxicology, prospective students would be expected to have had courses in General Biology/Zoology and Organic Chemistry. Students who do not have sufficient background to take the core course or specific elective courses may, however, need to first take prerequisite courses.

Environmental Microbiology The Environmental Microbiology field area encompasses the study of microbial processes in natural and agricultural ecosystems and the effects of microorganisms on environmental processes and environmental quality. Research topics include fundamental research on microbial physiology, genetics, and ecology as related to the environment, applied research on microbial effects on the fate and transport of pollutants, anthropogenic effects on microbial communities, fate and transport of human pathogenic microorganisms in the environment, and the application of microorganisms and microbial assays as indicators of soil and water quality.

Entrance requirements Students admitted to the Environmental Microbiology field area are expected to have a baccalaureate degree in biology, microbiology, or closely related field or demonstration of extensive background in biology and microbiology. Recommended prior course work includes chemistry (general, organic, and biochemistry), biology (general and advanced course work), microbiology (general), and statistics (general). Deficiencies in these areas must be remedied during the first year of graduate school.

Environmental and Natural Resource Economics and Policy The economics and policy field area is not currently accepting new students. Students seeking advanced training in environmental and natural resource economics and policy should contact the Graduate Advisors in the Department of Economics and the School of Public Policy at UC Riverside for alternative programs of study.

Soil and Water Sciences The Soil and Water Science field area offers comprehensive training in the chemistry, physics, biology, and ecology of soils, surface waters and wetlands. Students can specialize in a variety of areas, including soil and aquatic chemistry, hydrology, limnology, soil-plant relations, bioremediation, geomicrobiology, contaminant fate and transport, water resources management, hillslope processes, soil genesis, soil mineralogy and geomorphology, and related areas.

Entrance requirements Admission to the Soil and Water Sciences field area requires a baccalaureate degree with preparation in both physical and life sciences. It is recommended that students have completed one year of general chemistry, as well as courses in general physics, organic chemistry, calculus through integrals, general biology, statistics, and physical geology or physical geography.

Environmental Sciences and Management The Environmental Sciences and Management field area is not currently accepting new students. Students seeking advanced training in environmental management and policy should contact the Graduate Advisors in the Department of Economics and the School of Public Policy at UC Riverside for alternative programs of study.
Course Work The Ph.D. and M.S. degree programs both require completion of the courses given below, which are specific to each field area. Students with a M.S. objective may need to take additional courses to fulfill the requirements of the Plan I (Thesis) or Plan II (Comprehensive Examination) options. Upon acceptance to the program, the student will select an Advisory Committee made up of three members of the participating faculty in the ESGP to assist in the planning of the individualized curriculum. Electives are chosen in consultation with the Advisory Committee. Students are encouraged to attend a seminar each quarter (to be chosen in consultation with the major advisor). Students must complete 2 units of ENSC 401 (Professional Development in Environmental Sciences) within their first year of entering the ESGP. There is no foreign language requirement for the program.

Environmental Chemistry and Ecotoxicology All students must complete one core course: ENSC 200/ENTX 200/CHM 246.

Students focusing on Environmental Chemistry must complete 4 electives from the following list, of which at least 2 must be at the graduate level:
- ENSC 104, ENSC 127, ENSC 133/MCBL 133, ENSC 135/ENTX 135/CHM 135, ENSC 136/CHM 136, ENSC 214, ENSC 217, ENSC 224, ENSC 225, ENSC 232, ENTX 200L, ENTX 244/CHM 244, ENTX 245/CHM 245

Students focusing on Ecotoxicology must complete: ENTX 201 and ENTX 208 and take at least two electives from the following list, one of which must be at the graduate level: ENSC 214, ENSC 217, ENSC 224, ENSC 225, ENSC 232, ENTX 200L, ENTX 244/CHM 244, ENTX 245/CHM 245, ENTX 154, ENTX 205

Environmental Microbiology Students must complete the following core courses: MCBL 221, MCBL 211, and at least 4 elective courses (or 12 credit hours) approved by their advisor, three of which must be at the graduate level.

Environmental and Natural Resource Economics and Policy Course requirements include:
- core course sequences consisting of ECON 200A, ECON 200B, ECON 200C and ECON 205A, ECON 205B, ECON 205C; field course sequence consisting of ECON 207, ECON 208, ECON 209; and three elective courses comprised of upper division undergraduate courses and/or graduate courses approved by their advisor. Students must earn a satisfactory score on the doctoral cumulative examination in microeconomic theory, attain a “B” average in each of the core and field course sequences, and pass the doctoral qualifying examination with written and oral components.

No student will be given more than three attempts to achieve a satisfactory grade on the microeconomic theory cumulative examination. Any unexcused absences from the required examinations will be regarded as a failure.

Soil and Water Sciences Students must complete one course in each of the following core course groups.

Chemistry
- ENSC 104
- CHM 136/ENSC 136

Physics
- ENSC 107
- ENSC 163

Biology
- ENSC 133/MCBL 133
- BPSC 134/ENSC 134
- ENSC 141/MCBL 141

Natural Structure and Diversity
- ENSC 138/ GEO 138
- ENSC 140

Students may have completed these prior to admission or they may take them early in their graduate program. Students must present a departmental seminar summarizing results of their thesis or dissertation or internship during the final quarter of matriculation.

Environmental Sciences and Management Because students enrolled in this field area may carry out interdisciplinary research for their advanced degree, the graduate course plan will be individualized. It is expected that the student and his/her Advisory Committee will design a course plan that includes graduate environmental science, management, and/or policy courses. The student will be required to take 6 courses (24 units), 3 of which must be at the graduate level.

Master’s Degree

The Department of Environmental Sciences offers the M.S. degree in Environmental Sciences under the Plan I (Thesis) and Plan II (Comprehensive Examination) options. The general requirements for the M.S. degree are found in the Graduate Studies section of the General Catalog. All students are required to give a presentation annually at the Environmental Sciences Graduate Program Student Symposium.

Plan I (Thesis) Plan I (Thesis) Students must complete a minimum of 36 quarter units of graduate and upper-division undergraduate courses in, or significantly related to, Environmental Sciences. These must include the course requirements given above for the specific field area. At least 24 of the 36 units must be in graduate courses. A maximum of 12 of these units may be in graduate research for the thesis. No more than 4 units of ENSC 290 and 2 units of graduate seminar courses may be applied toward the degree. A thesis must be written and accepted by the M.S. thesis committee members, and a final oral defense of the thesis must be passed.

Plan II (Comprehensive Examination) Students must complete a minimum of 36 quarter units of graduate and upper-division undergraduate courses in, or significantly related to, Environmental Sciences. These must include the course requirements given above for the specific field area. At least 18 units must be in graduate courses. Students may count no more than 2 units of graduate seminar courses and 6 units of graduate internship courses toward the required 18 units and no units from graduate research for thesis or dissertation.

Students must take a comprehensive written examination that covers fundamental topics in environmental sciences. The written examination, which is three to four hours long, is prepared and evaluated by a committee appointed by the field director. The examination is taken during the latter part of the final quarter in the M.S. program. Students must wait at least eight weeks before retaking a failed examination. Students failing the examination twice are dismissed from the program.

Normative Time to Degree 2 years

Doctoral Degree

The Department of Environmental Sciences offers the Ph.D. degree in Environmental Sciences. The general requirements for the Ph.D. degree are found in the Graduate Studies section of the General Catalog.

Course Work Students must complete the course requirements given above for the specific field area. All students are required to give a presentation annually at the Environmental Sciences Graduate Program Student Symposium.

Ph.D. Written Qualifying Examination Following completion of all course work prescribed by the student’s Advisory Committee, a Ph.D. Written Qualifying Examination will be prepared and administered to the student by a Ph.D. Written Qualifying Examination Committee. The Ph.D. Written Qualifying Examination Committee will consist of at least three faculty members with interests in the student’s line of research. The purpose of this examination is to determine that the student has gained sufficient knowledge in the chosen field to perform professionally and competently. This exam may be attempted only twice. If this exam is failed twice, the student may be redirected to the M.S. degree if the student does not already hold an M.S. in Environmental Sciences or terminated from the program.

Ph.D. Oral Qualifying Examination A student who satisfactorily passes the Ph.D. Written Qualifying Examination may proceed with the Ph.D. Oral Qualifying Examination, which will focus on the dissertation proposal. This examination is conducted before the Oral Qualifying Examination Committee, consisting of five faculty members, one of whom must be from outside the ESGP. This examination may be attempted only twice. If this exam is failed twice, the student will be redirected to the M.S. degree if the student does not already hold an M.S. in Environmental Sciences or terminated from the program. The Ph.D. Written and Oral Qualifying Examinations will normally be taken at the end of the second year of graduate study and before the start of the third year.

Dissertation All Ph.D. students must write a doctoral dissertation, which must be read and accepted by all members of the Doctoral Dissertation Committee, comprised of at least three faculty members from the ESGP. A final oral dissertation defense in front of at least three doctoral dissertation committee members may be required.

Relationship between Master’s and Doctoral Programs The M.S. and Ph.D. programs
are separate. Students who enter the Ph.D. program do not need to acquire a M.S. degree first, although students may elect to take both.

Normative Time to Degree 5 years

Lower-Division Courses

ENSC 001 Introduction to Environmental Science: Natural Resources (4)
Lecture, 3 hours; discussion, 1 hour. An introduction to environmental science, focusing on natural resource description, management, and conservation. Topics include ecosystem characteristics and function; material and energy flows; population dynamics and influence of population on the environment; energy resources and conservation; and mineral and soil resources and their management. Credit is awarded for only one of ENSC 001 or ENSC 001H.

ENSC 001H Honors Introduction to Environmental Science: Natural Resources (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ENSC 001. An introduction to environmental science, focusing on natural resource description, management, and conservation. Topics covered include ecosystem characteristics and function; material and energy flows; population dynamics and influence of population on the environment; energy resources and conservation; and mineral and soil resources and their management. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENSC 001 or ENSC 001H.

ENSC 002 Introduction to Environmental Science: Environmental Quality (4)
F Lecture, 3 hours; discussion, 1 hour. An introduction to environmental science, focusing on the impact of human development and technology on the quality of natural resources and living organisms. Topics include soil, water, and air pollution; water, land, and food resources; wildlife management and species endangerment; toxicology and risk management; and solid and hazardous waste management. Credit is awarded for only one of ENSC 002 or ENSC 002H.

ENSC 002H Honors Introduction to Environmental Science: Environmental Quality (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ENSC 002. An introduction to environmental science, focusing on the impact of human development and technology on the quality of natural resources and living organisms. Topics covered include soil, water, and air pollution; water, land, and food resources; wildlife management and species endangerment; toxicology and risk management; and solid and hazardous waste management. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENSC 002 or ENSC 002H.

ENSC 003 Contemporary Issues in the Environmental Sciences (4)
S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): An issue-oriented approach to understanding the scientific principles behind environmental issues. Case studies of environmental issues appearing in the mass media provide the context for assessing the status of scientific knowledge and its role in human decision making. Credit awarded for only one of ENSC 003 or ENSC 003H.

ENSC 003H Honors Contemporary Issues in the Environmental Sciences (4)
S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ENSC 003. An issue-oriented approach to understanding the scientific principles behind environmental issues. Case studies of environmental issues appearing in the mass media provide the context for assessing the status of scientific knowledge and its role in human decision making. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENSC 003 or ENSC 003H.

ENSC 006 Introduction to Environmental Economics (4)
F Lecture, 3 hours; discussion, 1 hour. An introduction to the basic principles of economics and their application to problems of environmental quality and natural resource utilization. Emphasis is on the failure of markets as a cause of environmental degradation and the role of government in resolving problems of resource scarcity. Does not satisfy the Natural Science breadth requirement for the College of Humanities, Arts, and Social Sciences. Cross-listed with ECON 006.

Upper-Division Courses

ENSC 100 Introduction to Soil Science (4)
F Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CHEM 001C and CHEM 01L or both CHEM 01HC and CHEM 1LHC; ENSC 002 (or ENSC 002H) or CEE 010; or consent of instructor. Explores the fundamental principles of soil science and soils as a natural resource. Introduces the morphology, physicochemical properties, fertility, classification, development, and management of soils in relation to the environment.

ENSC 101 Water Resources (4)
F Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): Both CHEM 001C and CHEM 01L or both CHEM 01HC and CHEM 1LHC; ENSC 002 (or ENSC 002H); or consent of instructor. An introduction to the hydrologic cycle: water sources, distribution, conveyance; physical, chemical, and biological properties of water; water treatment and reuse; and regulatory framework.

ENSC 102 Introductory Atmospheric Science (4)
S Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CHEM 001C and CHEM 01L or both CHEM 01HC and CHEM 1LHC; ENSC 002 (or ENSC 002H); or consent of instructor. Covers the structure of the atmosphere and meteorological phenomena. The causal consequences of air pollution. Addresses air quality standards and the stratospheric and tropospheric ozone. Also introduces the chemistry of air pollution and air pollution control strategies.

ENSC 103 Environmental Pollution and Health (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 001, ENSC 002. Focuses on the history, theory, and practice of assessing, understanding, and mitigating impacts of environmental pollution on human health. Reviews core disciplines that underpin the field of environmental health as well as case studies from industrialized, emerging, and developing countries around the world. Cross-listed with ENTX 103.

ENSC 104 Environmental Soil Chemistry (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 005 or ENSC 100 or consent of instructor. Quantitative study of the chemistry of the solid, liquid, and gas phases in soils and sediments. Topics include solid and solution speciation, mineral solubility, ion exchange and adsorption reactions, oxidation-reduction, and the chemistry of organic contaminants and toxic trace elements in soils.

ENSC 105 Ecophyology (4)
F Lecture, 3 hours; discussion, 1 hour; field trip, 4 hours per quarter. Prerequisite(s): ENSC 002 or ENSC 002H. Introduction to the role of water in ecosystems. Explores the movement of water through ecosystems and interactions with biota across a range of climatic and ecological zones. Examines the major human impacts on hydrology and their ecological and environmental implications. Field trips to representative hydrological systems.

ENSC 107 Soil Physics (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 007B or MATH 009B or MATH 08LA; ENSC 002; ENSC 100; or consent of instructor. Topics include physical properties of soils and methods of evaluation. Emphasizes movement of water, heat, gases, and chemicals through soil.

ENSC 120 Soil Ecology (3)
F Lecture, 3 hours. Prerequisite(s): BIOL 001B or both BIOL 005A and BIOL 051B; both CHEM 001C and CHEM 01L (or both CHEM 01HC and CHEM 1LHC); ENSC 100; or consent of instructor. Examination of soil biota and their relationships with plants and the soil environment. Emphasizes soil biotic interactions that influence soil fertility, plant disease, and plant growth. Examines the importance of the different microbial and faunal groups from the rhizosphere to the ecosystem level. Cross-listed with BRSC 120.

ENSC 127 Fate and Transport of Contaminants in the Environment (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 100; MATH 007B or MATH 009B or MATH 081B; or consent of instructor. Topics include interactions of environmental contaminants with abiotic factors and transport of major organic and inorganic contaminants in the environment.

ENSC 133 Environmental Microbiology (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 051A or BIOL 020, BIOL 05SB, BIOL 056C; or consent of instructor. Introduction to nonpathogenic microorganisms in the environment. Topics include an introduction to microbial genetics and metabolic genetic diversity; methods; symbiotic interactions; biofilms; and geomicrobiology and biogeochemistry. Explores life in extreme environments and the effects of the physical and chemical environment on microbes. Cross-listed with MCBL 133.

ENSC 134 Soil Conditions and Plant Growth (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 104/BSIC 104 or ENSC 100; or consent of instructor. A study of the chemical, physical, and biological properties of soils and their influence on plant growth and development. Topics include soil-plant water relations; fundamentals of plant mineral nutrition; soil nutrient pools and cycles; soil acidity, alkalinity, salinity and sodicity; root:soil symbioses; and rhizosphere processes. Cross-listed with BSIC 134.

ENSC 135 Chemistry of the Clean and Polluted Atmosphere (4)
F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; CHEM 008B and CHEM 08HB or CHEM 08HLB, or consent of instructor; ENSC 102 recommended. Structure of the troposphere and stratosphere; formation of atmospheric ozone; tropospheric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemistry of volatile organic compounds; formation of photochemical air pollution; modeling of air pollution control strategies; stratospheric ozone depletion and global warming. Cross-listed with CHEM 135 and ENSC 135.

ENSC 136 Chemistry of Natural Waters (4)
S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; CHEM 008B and CHEM 08HB or CHEM 08HLB, or consent of instructor; ENSC 102 recommended. Structure of the troposphere and stratosphere; formation of atmospheric ozone; tropospheric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemistry of volatile organic compounds; formation of photochemical air pollution; modeling of air pollution control strategies; stratospheric ozone depletion and global warming. Cross-listed with CHEM 136 and ENSC 135.

ENSC 138 Soils of Natural Ecosystems and Landforms (4)
S Lecture, 3 hours; laboratory, 4 hours per quarter; one half-day field trip and three 1-day field trips. Prerequisite(s): ENSC 100, GEO 001; or consent of instructor. Study of the properties of soils in diverse natural environments. Examines how soils form and their roles in ecosystem function and landscape processes. Includes causes of soil variability, fundamentals of soil classification, and indicators of current and past environmental conditions. Field trips emphasize the

ENSC 140 Limnology (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 101; or consent of instructor. A study of surface waters. Considers in detail the physical and chemical processes in surface waters, aquatic biology, ecosystem dynamics, and aspects of surface water quality and modeling.

ENSC 141 Public Health Microbiology (4) F Lecture, 4 hours. Prerequisite(s): BIOL 002 or BIOL 005A, BIOL 051A or BIOL 200, BIOL 003 or BIOL 051B; upper-di- vision standing, or consent of instructor. Introduction to transmission dynamics of microorganisms through environmental media, including drinking water, wastewater, food, and air. Topics include characterization of environmentally transmitted pathogens, microbial risk assessment, sampling and detection methods, water and wastewater treatment, microbiological aspects of solid waste, and microbial regulations and standards. Cross-listed with MCBL 141.

ENSC 143A Environmental Economics (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 003 or equivalent, MATH 009A or equivalent, or consent of instructor. An introduction to economic analysis of natural resources and the environment with an emphasis on hydrologic processes and their roles in the creation and evolution of river systems, floods, and floodplains. Reviews fundamental theories of predicting, managing, and communicating potential human health and environmental risks of hazardous chemicals. Reviews fundamental components and explores uncertainties, probabilistic approaches, and real-world challenges of risk analysis. Cross-listed with ENTX 203.

ENSC 165 Principles of Groundwater Science (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001B; ENSC 101; MATH 007B or MATH 009B or MATH 099B. Covers the fundamental understanding of groundwater resources and aquifer properties. Explores physical principles of fluid flow in sediments and rocks, surface water-groundwater interactions, and contaminant transport. Discusses current issues in groundwater movement and sustainability with an emphasis on California water resources. Students present topics related to groundwater science and management.

ENSC 172 Principles of Environmental Impact Analysis (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 006/ENSC 006 or ENSC 143A/ECON 143A; and one of the following ENSC courses: ENSC 100, ENSC 101, ENSC 102; or consent of instructor. Introduces to natural resource ownership, protection, and management through environmental accords. Uses social scientific methods of analysis to investigate specific issues such as air quality, energy, and biodiversity. Cross-listed with POSC 206.

ENSC 191 Seminar in Professional Development in Environmental Sciences (2) F, W, Seminar, 2 hours. Prerequisite(s): graduate standing, POSC 010 or POSC 010H or POSC 010W, POSC 020 or POSC 020H; consent of instructor. An introduction to the principles of surface water quality modeling. Explores mathematical representations of surface water systems. Reviews theory and develops algorithms and numerical techniques for simulating the processes that produce fluvial landforms. Reviews fundamental components and explores uncertainties, probabilistic approaches, and real-world challenges of risk analysis. Cross-listed with SWSC 208.

Graduate Courses

ENSC 200 Fate and Transport of Chemicals in the Environment (4) Lecture, 4 hours. Prerequisite(s): CHEM 109 or CHEM 110B, CHEM 008A and CHEM 008B or CHEM 08HA and CHEM 08HB, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HL, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLH; or consent of instructor. Covers identification of toxics and their sources in the environment; equilibrium partitioning of chemicals between air, water, soil, sediment, and biota using physico-chemical properties; and the transport and transformations of chemicals in air, water, and soil media. Includes case studies of fate and transport of selected toxic chemicals. Cross-listed with CHEM 246 and ENTX 200.


ENSC 204 Fluvial Geomorphology (4) Lecture, 4 hours; two four-hour field trips. Prerequisite(s): graduate standing or consent of instructor. Advanced inquiry into the processes that produce fluvial landforms. The topics of erosion, sediment transport and deposition and their roles in the creation and evolution of river systems, floods, and floodplains. Reviews fundamental theories of predicting, managing, and communicating potential human health and environmental risks of hazardous chemicals. Reviews fundamental components and explores uncertainties, probabilistic approaches, and real-world challenges of risk analysis. Cross-listed with ENTX 203.

ENSC 206 Environmental Policy and Law (4) S, Even Years Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing, POSC 010 or POSC 010H or POSC 010W, POSC 020 or POSC 020H; consent of instructor. An introduction to the principles of surface water quality modeling. Explores mathematical representations of surface water systems. Reviews theory and develops algorithms and numerical techniques for simulating the processes that produce fluvial landforms. Reviews fundamental components and explores uncertainties, probabilistic approaches, and real-world challenges of risk analysis. Cross-listed with SWSC 208.

ENSC 207 Surface Water Quality Monitoring (4) W, Odd Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 209 or consent of instructor. An introduction to the principles of surface water quality modeling. Explores mathematical representations of surface water systems. Reviews theory and develops algorithms and numerical techniques for simulating the processes that produce fluvial landforms. Reviews fundamental components and explores uncertainties, probabilistic approaches, and real-world challenges of risk analysis. Cross-listed with SWSC 208.

ENSC 210 (E-Z) Topics in Environmental Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 204; ECON 205A or equivalent. A study of economic valuation of natural resources and the environment. Includes environmental demand theory, travel cost models, random utility models, discrete choice models. An introduction to contingent valuation technique, and hedonic price and pricing models. Also covers theory, empirical methods, and applications. Cross-listed with ECON 209.
site(s): ECON 207/ENSC 211 or consent of instructor. An in-depth study in selected areas of environmental and natural resource economics. E. Transportation and Environmental Quality. F. Political Economy of Environmental Policy. ECON 210/ENSC 210E are repeatable to a maximum of 8 units. Cross-listed with ECON 210 (E-Z).

ENSC 211 Environmental Economics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 200A or equivalent. Covers the theory and methods of environmental economics. Topics include externality theory, bargaining solutions, property rights, and resource allocation mechanisms. Also covers environmental policy under uncertainty and asymmetric information, as well as dynamic and general equilibrium models of environmental quality. Cross-listed with ECON 207.

ENSC 212 Natural Resource Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 200A or equivalent. Covers dynamic models of nonrenewable resources. Topics include uncertainty, game theory, and the measurement of resource scarcity. Examines empirical models of nonrenewable and renewable resources. Cross-listed with ECON 208.

ENSC 217 Vadose Zone Processes (4) W, Even Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 107, MATH 009B or MATH 09HB; or consent of instructor. Studies physical and mathematical descriptions of transient flow and transport processes in the vadose zone. Emphasizes numerical solutions to equations describing the movement of water, gas, contaminants, and heat including chemical and biological reactions. Explores mathematical models for direct and inverse solutions, spatial heterogeneity, and determination of soil hydraulic properties. Cross-listed with SWSC 217.

ENSC 218 Isotopes in Ecology and Environmental Science (4) F, Odd Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 107, CHEM 001C and CHEM 011C or both CHEM 01H and CHEM 1HLC. Explores the principles and techniques of isotope tracer fractionation and mixing commonly used in ecology and environmental science. Introduces isotope notation, mixing models, and kinetic and equilibrium fractionation concepts. Includes case studies involving stable- and radioisotopes of carbon, nitrogen, oxygen, and sulfur. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 4 units.

ENSC 227 Global Change and the Earth System (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; consent of instructor; ENSC 232/SWSC 232 is recommended. Examines the fundamental principles of earth system science in the context of global change. Emphasizes contemporary research on the relationship between humans and the Earth's environment. Topics include the earth system prior to human influence; the Anthropocene era (1850 to present); the responses of the Earth's support machinery to human activities; consequences of global change for human well-being; and pathways towards greater sustainability. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ENSC 232 Biogeochemistry (4) W, Odd Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; consent of instructor. A study of the biogeochemical cycling and exchange of carbon and important nutrients (N, S, base cations) between the lithosphere, hydrosphere, and atmosphere. Quantitatively describes processes of scales ranging from local to global. Addresses modern concerns about water and atmospheric quality, including global climate change. Cross-listed with SWSC 232.

ENSC 245 Chemistry and Physics of Aerosols (3) F, Odd Years Lecture, 3 hours. Prerequisite(s): CHEM 109, CHEM 110B; or consent of instructor. Fundamentals of chemical and physical processes controlling behavior and properties of airborne particles. Topics include particle mechanics; electrical, optical, and thermodynamic properties; nucleation; surface and aqueous-phase chemistry; gas-particle partitioning; sampling; size and chemical analysis; atmospheric aerosols; and environmental effects. Cross-listed with CHEM 245 and ENTX 245.

ENSC 265 Special Topics in Earth and Environmental Sciences (1-3) F, W, S Seminar, 1-3 hours. Prerequisite(s): graduate standing; involves oral presentations and small-group discussions of selected topics in the areas of biogeochemistry, global climate change, geomicrobiology, earth surface processes, and interplanetary life. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 10 units. Cross-listed with GEO 265.

ENSC 275 Research Seminar in Environmental Sciences (1) Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Seminar in selected topics in Environmental Sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENSC 280 Directed Studies (1-8) Consultation, 1-3 hours; individual study, 1-15 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Individual study of selected topics in Environmental Sciences under faculty direction. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENSC 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor. Individual research performed under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENSC 299 Research for the Thesis or Dissertation (1-12) (NC). Course is repeatable.

ENSC 301 Professional Development in Environmental Sciences (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Research in environmental sciences for the M.S. thesis or Ph.D. dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Environmental Toxicology

**Subject abbreviation: ENTX**

College of Natural and Agricultural Sciences

Yinsheng Wang, Ph.D., Chair and Program Director
Program Office, 1140 Bachelor Hall (800) 735-7017 or (951) 827-4116 etox.ucr.edu

Professors

Michael E. Adams, Ph.D. Neurosciences (Entomology/Cell Biology and Neuroscience) Michael F. Allen, Ph.D. Plant Pathology/Plant Pathology (Plant Pathology)

Julia Bailey-Serres, Ph.D. Genetics (Botany and Plant Sciences)

Quan "Jason" Cheng, Ph.D. Analytical Materials (Chemistry)

Carl F. Cranor, Ph.D. Regulation of Toxic Substances (Philosophy)

David E. Crowley, Ph.D. Environmental Microbiology (Environmental Sciences)

David A. Eastmond, Ph.D. Toxicology (Cell Biology and Neuroscience)

Jianying "Jay" Gan, Ph.D. Water Quality (Environmental Sciences)

Serjeet S. Gill, Ph.D. Toxicology (Cell Biology and Neuroscience)

Ryan Julian, Ph.D. Chemistry (Chemistry)

Cynthia K. Larive, Ph.D. Analytical Chemistry (Chemistry)

Xuan Liu, Ph.D. Transcriptional Regulation (Biochemistry)

Ernest Martinez, Ph.D. Molecular Biology (Biochemistry)

Manuela Martins-Green, Ph.D. Cell Biology (Cell Biology and Neuroscience)

Ashok K. Mulchandani, Ph.D. Biosensors (Chemical and Environmental Engineering)

Mihi Ozkan, Ph.D. Nanoelectronics and Nanoprobes (Electronic and Computer Engineering)

Daniel Schlenk, Ph.D. Aquatic Toxicology (Environmental Sciences)

Frances M. Sladek, Ph.D. Transcriptional Regulation (Cell Biology and Neuroscience)

Prudence Talbot, Ph.D. Cell Biology (Cell Biology and Neuroscience)

John Trumble, Ph.D. Integrated Pest Management (Entomology)

Sharon Walker, Ph.D. Environmental Engineering (Environmental Engineering)

Yinsheng Wang, Ph.D. Biological Mass Spectrometry (Chemistry)

Marylyn V. Yates, Ph.D. Environmental Microbiology (Environmental Sciences)

Wenwan Zhong, Ph.D. Analytical Chemistry (Chemistry)

Associate Professors

Jeffrey B. Bachant, Ph.D. Chromosome Segregation (Cell Biology and Neuroscience)

Margarita C. Curri, Ph.D. Neurosciences (Cell Biology and Neuroscience)

Li Fan, Ph.D. DNA Repair and Replication (Biochemistry)

Nicole L. zur Nieden, Ph.D. Embryonic Stem Cells (Cell Biology and Neuroscience)

Constance Nugent, Ph.D. Telomere Replication (Cell Biology and Neuroscience)

Jikui Song, Ph.D. Biophysics (Biochemistry)

Assistant Professors

Roya Bahreini, Ph.D. Air Quality (Environmental Sciences)

Gregor Blaha, Ph.D. Molecular Biophysics (Biochemistry)

Joseph Genereux, Ph.D. Proteomics (Chemistry)

Ying-Hsuan Lin, Ph.D. Atmospheric Transformation (Environmental Sciences)

Haihou Liu, Ph.D. Environmental Chemistry (Chemical and Environmental Engineering)

Jinyin Liu, Ph.D. Water Quality Systems Engineering (Chemical and Environmental Engineering)

Jeff Perry, Ph.D. Structural Biochemistry (Biochemistry)

David Votz, Ph.D. Developmental Toxicology (Environmental Sciences)

Min Xue, Ph.D. Supramolecular Chemistry (Chemistry)

Samantha Ying, Ph.D. Soil Biogeochemistry (Environmental Sciences)

Haofei Zhang, Ph.D. Atmospheric Organic Aerosol (Chemistry)
Graduate Program

The program offers the M.S. and Ph.D. degrees in Environmental Toxicology.

The interdepartmental graduate program in Environmental Toxicology has participating faculty from the departments of Biochemistry, Botany and Plant Sciences, Cell Biology and Neuroscience, Chemical and Environmental Engineering, Chemistry, Entomology, Electrical and Computer Engineering, Environmental Sciences, Philosophy, and Plant Pathology and Microbiology.

The goal of the program is to train toxicologists capable of directing research in areas of environmental toxicology. Areas of specialization include biochemical toxicology and chemical toxicology. To attain this goal, a three-tiered curriculum has been designed whereby students must complete

1. A core of courses in environmental toxicology: ENSC 200/ENTX 200/CHEM 246, ENTX 201, ENTX 201L, ENTX 202, ENTX 270
2. A selection of elective courses in environmental toxicology and other relevant fields chosen in consultation with the student’s major professor and the Guidance Committee to develop depth in particular areas of specialization
3. Research training in specific areas of environmental toxicology

The program stresses the importance of innovative and independent laboratory research as the major component of the student’s education.

Admission

Students must have a B.A. or B.S. degree from an accredited institution and an academic record that satisfies the minimum admission standards established by the UCR Graduate Division. In addition, results from the GRE General Test (verbal, quantitative, analytical) must be submitted at the time of application. Although no specific undergraduate degree specialization is required, applicants should have adequate backgrounds in the basic physical sciences such as chemistry, physics, and mathematics as well as in the biological sciences.

Course Work

Normally, students admitted to regular standing have satisfied all prerequisite course work. Under special circumstances, students who have not completed all undergraduate requirements may be admitted provided that these deficiencies are corrected early in their graduate studies. Deficiencies must be corrected by taking the appropriate course work if undergraduate or other previous training has not included equivalent courses to the following:

| BIOL 005A, BIOL 05LA, BIOL 005B |
| BCH 100 or both BCH 110A and BCH 110B, BCH 110C or BIOL 107A |
| CHEM 109 or CHEM 110A |
| MATH 009A, MATH 009B |

| PHYS 002A, PHYS 002B, PHYS 002C |
| STAT 100A and STAT 100B |

Students who meet all the undergraduate entrance requirements should be able to complete the core Environmental Toxicology requirements in the first year and most electives by the end of the second year.

Laboratory Rotation

All students participate in laboratory rotation through enrollment in ENTX 201L. Students spend time in one laboratory per quarter familiarizing themselves with research techniques utilized in the laboratory of an Environmental Toxicology faculty member. Rotation laboratories are chosen in consultation with the graduate advisor and individual faculty members. Students may enroll in up to three quarters of laboratory rotation before declaring a major professor. Students who wish to declare a major professor after one quarter are not required to enroll for additional laboratory rotation. The major professor serves as chair of the student’s Guidance and Dissertation committees.

Guidance Committee

Each graduate student establishes a guidance committee which participates in the annual student progress evaluation procedure and advises the student on curriculum and research. The committee consists of the major professor plus at least two other faculty members, one of whom must be a member of the Environmental Toxicology Program. Each student, in consultation with the major professor, nominates the members of the guidance committee. The committee must be named by the end of the quarter in which the student selects a major professor. The composition of the guidance committee must be approved by the curriculum and student affairs committee.

Master’s Degree

The program offers the M.S. degree in Environmental Toxicology.

Students enrolling in the master’s degree program must meet the requirements for the Plan I of the UCR Graduate Council, take core courses as described above, and submit an acceptable thesis.

Plan I (Thesis)

Thirty-six (36) units, of which 24 must be in graduate-level courses, are required. No more than 12 units of ENTX 290, ENTX 297, and ENTX 299 may be used to satisfy the unit requirement. All students must enroll in the Environmental Toxicology seminar (ENTX 270 and ENTX 271) each quarter offered, although no more than 3 units from seminar courses can be accrued towards degree credit. A final draft of the thesis is to be given to the thesis committee two weeks before the final oral examination. A final oral examination consists of an open research seminar, presented by the candidate and advertised to all the students and faculty in the Environmental Toxicology Program. Following the seminar, the student is questioned by the guidance committee on the thesis research and on matters related to the general field of the thesis research.

Normative Time to Degree

6 quarters

Doctoral Degree

The program offers the Ph.D. degree in Environmental Toxicology.

Students must meet general university requirements of the Graduate Division as found in the Graduate Studies section of this catalog.

Course Work

Beyond the required core sequence, all students must enroll in the Environmental Toxicology seminar (ENTX 270 and ENTX 271) each quarter offered, and complete a program of courses to be approved by the guidance committee. All course work schedules are submitted to the graduate advisor for approval. The Ph.D. degree is awarded when the student passes the preliminary and qualifying examinations and demonstrates an ability to do original research by preparation and submission of an acceptable dissertation.

Preliminary Examination

The preliminary examination is a standardized, written test generally offered once a year prior to the beginning of the fall quarter. Students normally take it following the completion of the core curriculum. The examination must be satisfactorily completed in order to enroll for the seventh academic quarter in the Ph.D. program. The examination consists of questions related to environmental, organismal and suborganismal aspects of toxicology. These questions are designed to test the student’s ability to synthesize and integrate concepts in toxicology, rather than merely reiterate the material covered in the Environmental Toxicology core curriculum. The examination is administered by a committee consisting of the faculty members involved in teaching the core curriculum. On the basis of the results of this examination, the committee recommends appointment of a faculty qualifying committee, additional course work in specific area(s) of weakness, transfer to a terminal master’s program, or withdrawal from the program. In exceptional circumstances, the preliminary examination can be taken a second time.

Oral Qualifying Examination

The qualifying examination is an oral examination conducted by the qualifying committee. The qualifying committee, appointed by the graduate dean from nominations made by the faculty, is composed of the student’s major professor and four additional members, one of whom must be from outside the Graduate Environmental Toxicology group. It covers the student’s area of specialization and research field as well as general subjects at the discretion of the qualifying committee. The qualifying examination must be successfully completed by the end of the ninth quarter of full-time enrollment in the Ph.D. program. Under exceptional circumstances, the qualifying examination may be taken a second time. Upon successful completion of the qualifying examination, the student is advanced to candidacy.

Dissertation and Final Oral Examination

A dissertation committee composed of at least three members is appointed by the graduate dean shortly after advancement to candidacy. Students must submit a dissertation based on independent, original research acceptable to all dissertation committee members. A final
draft of the dissertation is to be given to the committee two weeks before the dissertation defense seminar. Before approval of the dissertation, students must present their research orally at a thesis defense seminar. The seminar must be advertised to the campus community and is open to all who wish to attend. Following the seminar, the student is questioned by the dissertation committee on the thesis research and on matters related to the general field of the thesis research.

Teaching Requirement Ph.D. students must fulfill a two-quarter teaching requirement.

Normative Time to Degree 15 quarters

Upper-Division Courses

ENTX 101 Fundamental Toxicology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A; BIOL 005B; CHEM 008A and CHEM 08LA or CHEM 08LA and CHEM 08LA and CHEM 08HA or CHEM 08LA and CHEM 08LA and CHEM 08LA; CHEM 08BA and CHEM 08BL or CHEM 08HA and CHEM 08HA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LB; CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HC, or consent of instructor. Fundamental concepts relating to the adverse effects of chemical agents. Topics covered include dose-response relationships, absorption, distribution, metabolism, excretion, mechanisms of toxicity, and the effects of selected environmental toxicants on various organs and systems. Characterization and assessment of risks are also covered. Sladek

ENTX 103 Environmental Pollution and Health (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 003, ENSC 010, or consent of instructor. Review of the history, theory, and practice of assessing, understanding, and mitigating impacts of the natural and built environment on human health. Reviews core disciplines that underpin the field of environmental health as well as case studies of industrially, energy, and developing countries around the world. Cross-listed with ENSC 103. Schlenk

ENTX 125 Pesticides, Biological Organisms, and the Environment (3) Lecture, 3 hours. Prerequisite(s): two of the following courses: BIOL 005A; BIOL 005B; BIOL 005C; CHEM 008A and CHEM 08LA or CHEM 08BA and CHEM 08HA and CHEM 08LA; CHEM 08BA and CHEM 08BL or CHEM 08HB and CHEM 08LB; CHEM 008C and CHEM 08BH and CHEM 08HC. An introduction to the chemistry, mode of action, and use of insecticides, acaricides, herbicides, and biopesticides from discovery to environmental interactions. Includes genetics of pesticide resistance development and government regulation. Cross-listed with ENTM 125 and PLPA 125. Miller

ENTX 135 Chemistry of the Clean and Polluted Atmosphere (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08LA and CHEM 08HA and CHEM 08LA; CHEM 008A and CHEM 08BL or CHEM 08HB and CHEM 08LB, or consent of instructor; ENSC 102 recommended. Structure of the troposphere and ozone; formation of atmospheric ozone; tropospheric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemistry of volatile organic compounds; formation of photochemical air pollution; modeling of air pollution trajectories; stratospheric ozone depletion and global warming. Cross-listed with CHEM 135 and ENSC 135. Atkinson

ENTX 150 Cancer Biology (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A or CBNS 101. May be taken concurrently with consent of instructor. Explores the origin, development, and treatment of cancer with emphasis on molecular mechanisms. Covers topics such as oncogenes, tumor suppressors, cell cycle and differentiation, AIDS, and hereditary and environmental factors in the development of cancer. Cross-listed with CBNS 150. Sladek

ENTX 154 Risk Assessment (4) S Lecture, 3 hours; discussion. 1 hour. Prerequisite(s): ENTX 101; STAT 100A or equivalent; or consent of instructor. An introduction to the basic principles and methods by which health risks associated with exposure to chemical and physical agents are determined. Topics include hazard identification, dose response and exposure assessments, as well as risk characterization and management. Eastmond

Graduate Courses

ENTX 200 Fate and Transport of Chemicals in the Environment (4) W, Even Years, Lecture, 4 hours. Prerequisite(s): CHEM 100 or CHEM 110B; CHEM 008A and CHEM 08LA or CHEM 08BA and CHEM 08HA and CHEM 08LA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LB; CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HC; or consent of instructor. Concepts of fate and transport of selected toxic chemicals. Cross-listed with CHEM 246 and ENSC 200. Gan and Lin

ENTX 200L Analysis and Identification of Environmental Toxicants (3) W, Odd Years, Lecture, 1 hour; laboratory, 6 hours. Prerequisite(s): CHEM 125 (lecture portion only); CHEM 246/ENSC 200/ENTX 200; or consent of instructor. Provides laboratory experience in specialized methods of identification and analysis of toxic organic compounds in gaseous, aqueous, and soil media. Methods of sample collection and extraction are presented. Students utilize both gas and liquid chromatographic techniques. Toxicant analysis by gas chromatography (GC), GC/mass spectrometry, and GC/Fourier transform infrared spectroscopy is emphasized. Arey

ENTX 201 Principles of Toxicology (4) F Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): BCH 110A, BCH 110B, or consent of instructor. The structure-activity and dose-response relationships of environmental toxicants; their absorption, distribution, metabolism, excretion; and evaluation of their toxicity and factors that influence toxicity. Quantitative risk assessment. Topics vary by semester. Eastmond

ENTX 201L Laboratory Rotation (2) F, W, S. Laboratory, 6 hours. Prerequisite(s): graduate standing in Environmental Toxicology and consent of instructor. Advanced laboratory rotation to research techniques in biochemical and chemical toxicology. Students will spend time in a laboratory to familiarize themselves with research topics and techniques. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Eastmond

ENTX 202 Mechanisms of Toxicity (4) W, Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A; ENTX 201; or consent of instructor. Biochemical and physiological mechanisms underlying the toxicity of environmental toxicants. The interaction of toxicants with subcellular components and macromolecules with emphasis on mechanism of action, in particular neurotoxicity of pesticides, chemical and physical agents are determined. Topics vary. Gill


ENTX 204 Genome Maintenance and Stability (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 110 or BIOL 114 or CBNS 101; BIOL 102 is strongly recommended. Emphasizes chromosome-based processes that maintain genome integrity and ensure accurate genome transmission during cell division. Topics are drawn from the primary literature and include chromatin structure and composition, DNA repair and recombination, telomere function and chromosome maintenance, mitotic chromosome segregation, and checkpoint surveillance mechanisms. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BCH 204 and CMDB 204.

ENTX 205 Biotransformation of Organic Chemicals (4) S Lecture, 4 hours. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08BA and CHEM 08LA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LB; BCH 110A; BCH 110B; BCH 110C or equivalents, or consent of instructor. Explores the catalytic actions and regulatory pathways of Phase I (e.g., cytochromes P450) and Phase II (e.g., Uridine Diphosphate Glucuronosyl-Transferase) enzymes involved in organic chemical biotransformation. Demonstrates the contribution of biotransformation in toxicology. Schlenk

ENTX 208 Ecotoxicology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, CHEM 008A and CHEM 08LA or CHEM 08BA and CHEM 08HA and CHEM 08LA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LB, or consent of instructor. Introduction to the impact of chemicals upon ecological systems. Examination of the fate and effects of environmental chemicals in various hierarchies of biological organization to learn how to carry out precise and accurate assessments of ecological risk. Cross-listed with ENSC 208 and SWSC 208. Schlenk

ENTX 245 Chemistry and Physics of Aerosols (3) F, Odd Years, Lecture, 3 hours. Prerequisite(s): CHEM 109, CHEM 110B; or consent of instructor. Fundamentals of chemical and physical processes controlling behavior and properties of airborne particulates. Topics include particle charging, electrical, optical, and thermodynamic properties; nucleation; surface and aqueous-phase chemistry; gas-particle partitioning; sampling; size and chemical analysis; atmospheric aerosols; and environmental effects. Cross-listed with CHEM 245 and ENSC 245.

ENTX 252 Special Topics in Environmental Toxicology (1-3) F, W, S. Seminar, 1-3 hours. Prerequisite(s): graduate standing. Intriguing and intensive small-group discussions of selected topics in the area of special competence of each participant Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 20 units.

ENTX 270 Seminar in Environmental Toxicology (1) F, W, S. Seminar, 1 hour. Prerequisite(s): graduate status in Environmental Toxicology. Lectures by visiting scholars and staff on current research topics in Environmental Toxicology. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Eastmond

ENTX 271 Seminar in Environmental Toxicology (2) S Seminar, 15 hours per quarter, Individual Study, 15-20 hours per quarter. Prerequisite(s): graduate standing in Environmental Toxicology. An interdisciplinary seminar consisting of student presentations of original research and discussion of current research topics in environmental toxicology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 12 units.

ENTX 290 Directed Studies (1-6) F, W, S. Outside research, 3-18 hours. Prerequisite(s): graduate status in Environmental Toxicology. Literature or research topics under direction of the staff. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENTX 297 Directed Research (1-6) F, W, S. Outside research, 3-18 hours. Prerequisite(s): graduate status in Environmental Toxicology. Directed research
performed towards the development of a dissertation problem or other research performed under the direction of staff. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**ENTX 299 Research for Thesis or Dissertation (1-12)**
Outside research, 3-36 hours. Prerequisite(s): graduate status in Environmental Toxicology. Research performed under the direction of a faculty member towards a thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**Ethnic Studies**
Subject abbreviation: ETST
College of Humanities, Arts, and Social Sciences
Keith Harris, Ph.D., Chair
Department Office, 4033 INTN
keith.harris@ucr.edu
(951) 827-1016; ethnicstudies.ucr.edu

**Professors**
Edward T. Chang, Ph.D. Asian American Studies
Alfredo M. Miranda, Ph.D. Chicano Studies (Ethnic Studies/Sociology)
Armando Navarro, Ph.D. Chicano Studies

**Professors Emeriti**
Edna M. Bonacich, Ph.D. Race, Class, and Gender (Ethnic Studies/Sociology)
Ralph L. Crowder, Ph.D. African American Studies

**Associate Professors**
Alfonso Gonzales, Ph.D. Chicano Studies
Paul Green, Ph.D. Race, Education, and Law
Anthony Macias, Ph.D. Chicano Studies
Jennifer Najera, Ph.D. Chicano Studies
Robert Perez, Ph.D. Native American Studies
Andrea Smith, Ph.D. Native American Studies

**Assistant Professors**
Gerald Clarke, M.F.A., Native American Studies
Emily Hue, Ph.D., American Studies
Crystal Mun-Hye Baik, Ph.D. Asian American Studies
Victoria Bomberry, Ph.D. Native American Studies
Wesley Leonard, Ph.D., Native American Studies

**Majors**
Ethnic Studies is the systematic and comparative study of the social construction of race, racism, and racial or ethnic subordination, and the history, culture, and contemporary experiences of racial or ethnic groups who have not been fully incorporated into U.S. society. The Department of Ethnic Studies focuses on the experiences of four racial or ethnic groups (African Americans, Asian Americans, Chicana/o and Latina/o, and Native Americans) whose histories, cultures, and experiences have been neglected by traditional disciplines. Ethnic studies students examine inter- and intra-group differences and commonalities in history, culture, racism, the impact of law, and social inequality in contemporary society. Also examined are conflicts, tensions, and the building of effective inter-group coalitions and alliances among racially subordinated groups.

The Department of Ethnic Studies offers majors leading to a B.A. degree in Ethnic Studies, African American Studies, Asian American Studies, Chicano Studies, and Native American Studies. Students may develop either a general emphasis in Ethnic Studies or a concentration on a specific group. The major enables students to study race and ethnicity in comparative perspective, to gain greater multicultural insight and understanding, and to prepare them to enter the workforce and function effectively and critically as informed citizens in a diverse multicultural society.

With the changing ethnic composition of society is a growing demand for individuals in education, government, and the private sector with knowledge and expertise in race and ethnic relations. An Ethnic Studies major also helps to prepare students for graduate or professional school and careers in a number of areas including education, corrections, law, human services, social welfare, urban planning, and state and county government.

**University Requirements**
See Undergraduate Studies section.

**College Requirements**
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

**Major Requirements**
The Ethnic Studies Department offers a B.A. degree in Ethnic Studies, African American Studies, Asian American Studies, Chicano Studies, or Native American Studies.

**Ethnic Studies Major**
The major requirements for the B.A. degree in Ethnic Studies are as follows:

Core courses required of all majors
1. Lower-division requirements (12 units)
   a) ETST 001
   b) Two courses chosen from ETST 002, ETST 003, ETST 005, or ETST 007
2. Upper-division requirements (40 units)
   a) ETST 101A or ETST 101B
   b) ETST 100 or ETST 131
   c) ETST 191R
   d) Three courses chosen from three of the following areas of emphasis:
      (1) African American Studies
      (2) Asian American Studies
      (3) Chicano Studies
      (4) Native American Studies
   e) Four courses chosen from Ethnic Studies courses that are comparative in nature

**African American Studies Major**
The major requirements for the B.A. degree in African American Studies are as follows:

Core courses required of all majors
1. Lower-division requirements (12 units)
   a) ETST 001
   b) ETST 002
   c) One chosen from ETST 002, ETST 005, or ETST 007
2. Upper-division requirements (40 units)
   a) ETST 101A or ETST 101B
   b) ETST 100 or ETST 131
   c) ETST 109-I and ETST 191R
   d) Sixteen (16) additional upper-division units in Ethnic Studies chosen from courses focusing on the African American experience
   e) A minimum of one Ethnic Studies course chosen from two of the following four areas of emphasis (8 units)
      (1) African American Studies
      (2) Chicano Studies
      (3) Native American Studies
      (4) Comparative Issues

**Note** No internship courses may be counted toward the upper-division electives in Ethnic Studies.

**Asian American Studies Major**
The major requirements for the B.A. degree in Asian American Studies are as follows:

Core courses required of all majors
1. Lower-division requirements (12 units)
   a) ETST 001
   b) ETST 005
   c) One chosen from ETST 002, ETST 003 or ETST 007
2. Upper-division requirements (40 units)
   a) ETST 101A or ETST 101B
   b) ETST 100 or ETST 131
   c) ETST 106 and ETST 191R
   d) Sixteen (16) additional upper-division units in Ethnic Studies chosen from courses focusing on the Asian American experience
   e) A minimum of one Ethnic Studies course chosen from two of the following four areas of emphasis (8 units)
      (1) African American Studies
      (2) Chicano Studies
      (3) Native American Studies
      (4) Comparative Issues

**Note** No internship courses may be counted toward the upper-division electives in Ethnic Studies.

**Chicano Studies Major**
The major requirements for the B.A. degree in Chicano Studies are as follows:

Core courses required of all majors
1. Lower-division requirements (12 units): ETST 001, ETST 002 and ETST 004/HIST 004
2. Upper-division requirements (40 units)
   a) ETST 100A or ETST 101B
   b) ETST 100 or ETST 131
   c) ETST 191R
The Ethnic Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.

1. Lower-division requirement (4 units): ETST 001
2. Upper-division requirements (20 units)
   a) ETST 100, ETST 131
   b) Twelve (12) additional upper-division units in Ethnic Studies courses that are either comparative in nature or focus on African Americans, Asian Americans, Chicanos, or Native Americans (Courses must be approved by Ethnic Studies advisor.)

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

### African American Studies Minor

The African American Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.

1. Lower-division requirement (4 units): ETST 007
2. Upper-division requirements: 20 additional upper-division units in Ethnic Studies chosen from courses focusing on African Americans

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

### Asian American Studies Minor

The Asian American Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.

1. Lower-division requirement (4 units): ETST 003
2. Upper-division requirements: 20 additional upper-division units in Ethnic Studies chosen from courses focusing on Asian Americans

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

### Chicano Studies Minor

The Chicano Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.

1. Lower-division requirement (4 units): ETST 002 or ETST 004/HIST 004
2. Upper-division requirements: 20 additional upper-division units in Ethnic Studies chosen from courses focusing on Chicano

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

### Native American Studies Minor

The Native American Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.

1. Lower-division requirement (4 units): ETST 001
2. Upper-division requirements: 20 additional upper-division units in Ethnic Studies chosen from courses focusing on Native Americans

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

### Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

### Graduate Program

The Department of Ethnic Studies offers M.A. and Ph.D. degrees in the interdisciplinary field of Ethnic Studies.

#### Admission

For the M.A. and Ph.D. degrees, students are admitted for the fall quarter of each academic year only. The basic requirement for admission into the programs is a bachelor’s degree or its equivalent from an accredited institution with a major in any subject field.

Admission to the graduate program is based on the following criteria:

1. Prior academic performance, especially in undergraduate or graduate classes in Ethnic Studies or related fields.
2. Performance on the Graduate Record Examination.
3. Letters of recommendation from at least three persons familiar with an applicant’s potential for achieving academic excellence. Two of the letters must be from professors in the applicant’s major subject.
4. Compatibility between applicant’s areas of interest and department’s research and teaching emphases.
5. Quality of the writing sample. Applicants must submit a scholarly paper not to exceed 15-double spaced pages, such as a term paper, section of a thesis, or published work.
6. Completed application and materials (including transcripts) required from Graduate Division.

The Ethnic Studies website at ethnicstudies.ucr.edu provides more details on the Ph.D. program, degree requirements, and application procedures. General Graduate Division university requirements are available on the Graduate Division website at graduatedivision.
ucr.edu and in the Graduate Studies section of this catalog.

Master’s Degree
The M.A. degree program is designed for students whose goal is to complete the M.A. as their ultimate objective. While completion of the M.A. degree does not lead to automatic admission into the Ph.D. program, successful students may be encouraged to apply to the Ethnic Studies Ph.D. program at UCR or to similar programs at peer campuses. The M.A. program is designed for students who wish to enhance their existing scholarly training and enhance their professional qualifications, or who hope to prepare themselves for admission into a relevant Ph.D. program.

Coursework All students must complete the M.A. core curriculum. The minimum course unit requirement for completion of the M.A. is 36.

Course Requirements The core Ethnic Studies M.A. graduate curriculum consists of two theory courses (ETST 200 and 201), and one methodology course (ETST 203). The remainder of each M.A. student’s specific curricular program is structured in consultation with his or her assigned faculty mentor. The candidate must complete a minimum of 36 units of course work with a cumulative grade point average of 3.0 or better, which include the three core courses and at least 24 additional units in 200-series courses. At least 12 of these 24 additional units must be in Ethnic Studies. These courses cannot include ETST 297 or ETST 299. Eight (8) units of 300-series courses may be counted toward the unit requirement with the permission of the graduate advisor.

M.A. Completion
Plan II (Comprehensive Examination)
Graduate students are required to successfully complete a Written M.A. Examination by the end of their second year. The exam will test the student’s knowledge of the methodological and theoretical foundations of the field of Ethnic Studies and will cover material from the required core courses as well as courses in the student’s area(s) of specialization. This exam is evaluated by a faculty committee of the candidate’s choosing. If the student passes this exam, the committee will recommend awarding of the M.A. degree in Ethnic Studies.

Normative Time to Degree: Six quarters.

Doctoral Degree
The Department of Ethnic Studies offers the Ph.D. degree in the interdisciplinary field of Ethnic Studies. Students proceed through the graduate program from coursework to exams to fieldwork and writing the dissertation. The Ph.D. program prepares students for teaching and research careers in the private and public sector.

Coursework All students, including those who have a master’s degree at the time of admission, must complete the basic core curriculum.

Course Requirements The core Ethnic Studies graduate curriculum consists of two theory courses (ETST 200 and 201), one methodology course (ETST 203), and a graduate proseminar on professionalization (ETST 405). Where appropriate, students are encouraged to take an additional course in methodology (quantitative or qualitative), in addition to ETST 203. Students are also required to enroll in and attend the Ethnic Studies Colloquium during each quarter of the first two years of graduate work.

During the second year students will begin to select courses that are relevant to one or more of the following areas of specialization:

Area I: Theories of Race and Power
Area II: Cultural Politics and Production
Area III: The State, Law, and Social Transformation

Students are also encouraged to supplement regular curricular offerings by initiating individual or small-group reading courses with appropriate Ethnic Studies faculty (ETST 290’s etc.) or with cooperating faculty in other CHASS departments.

First-year core requirements:
- ETST 200 (Fall) History of Ideas in Ethnic Studies
- ETST 201 (Winter) Contemporary Theories in Ethnic Studies
- ETST 203 (Spring) Methodologies in Ethnic Studies
- ETST 289 (Fall, Winter, Spring) Departmental Colloquium

Second-year core requirements:
- ETST 289 (Fall, Winter, Spring) Departmental Colloquium
- ETST 405 (Fall) Graduate Proseminar on Professionalism

Research and Teaching Requirements A student’s program must include at least one academic quarter of supervised research through enrollment in ETST 297 and/or by working as a research assistant. The equivalent of at least one academic quarter of college classroom teaching is also required of all students.

Grades A student must complete courses in the core curriculum and the specialization areas with a grade of “B” or better in each course.

Ph.D. Written and Oral Qualifying Examinations
Written Qualifying Examination Graduate students are required to successfully complete a Written Qualifying Examination by the end of the spring quarter of their second year. The exam will test the student’s knowledge of the methodological and theoretical foundations of the field of Ethnic Studies and will cover material from the required core courses as well as courses in the student’s area(s) of specialization. This exam is evaluated by a faculty committee. If the student passes this exam, the committee will recommend awarding of the M.A. degree in Ethnic Studies. If the M.A. is awarded, or if the student already has an M.A. in Ethnic Studies, the faculty then votes on whether or not the student should continue in the Ph.D. program.

Oral Qualifying Examination Students must compose, in consultation with a committee consisting of three to four faculty members, three written field statements that pertain to theoretical, methodological, and substantive foci related to the preparation of their dissertation.

Graduate students are required to successfully complete an Oral Qualifying Examination by the end of the winter quarter of their third year in which the student must display mastery over his/her three fields. If the oral exam is passed, the student will advance to candidacy.

Dissertation Prospectus The Ph.D. candidate must also submit, no later than the fall quarter of their fourth year, a written prospectus outlining the topic, thesis, methods, resources, and timeline for the completion of the dissertation. The candidate must hold a Prospectus Meeting with Dissertation Committee members for final approval of the dissertation prospectus.

Foreign Language Requirement There is no formal language requirement. However, in certain research areas a language requirement may be required if it is deemed that the language is germane to the student’s research. In those cases where foreign language is required, competency can be established either by presenting evidence of satisfactory completion of the UCR Language Placement Exam, or by means of a translation test administered by the Graduate Affairs Committee.

Dissertation and Presentation Doctoral students who have advanced to candidacy will research and write a dissertation under the guidance of a Dissertation Committee. The dissertation should focus on a specific aspect of the candidate’s fields of study, and must conform to the format prescribed by the Graduate Council. After the Dissertation Committee approves the completed dissertation, the candidate must formally present his/her dissertation as part of the Departmental Colloquium series.

Normative time to degree: The normative time for completion of the Ph.D. degree is six years.

Lower-Division Courses
ETST 001 Introduction to the Study of Race and Ethnicity (4) Lecture, 3 hours; discussion, 1 hour. ETST 001 will introduce students to major concepts and controversial issues in the study of race and ethnicity and shall provide a general overview of topics to be covered in more specialized Ethnic Studies courses. Credit is awarded for only one of ETST 001 or ETST 001H. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 001H Honors Introduction to the Study of Race and Ethnicity (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 001. Introduces students to major concepts and controversial issues in the study of race and ethnicity. Provides a general overview of topics covered in more specialized Ethnic Studies courses as well as an introduction to the methodology of scholarly research. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ETST
ETST 002 Introduction to Chicano Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. Provides an overview of the Chicano experience from 1848 to the present, comparing and contrasting with the experiences of the dominant society and those of other racial and ethnic groups. Credit is awarded for only one of ETST 002 or ETST 002H. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 002H Honors Introduction to Chicano Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 002. Provides an overview of the Chicano experience in the United States from antiquity to the present. Compares and contrasts the Native American experience with the experiences of the Chicano society and those of other racial and ethnic groups. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ETST 007 or ETST 002H. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 003 Introduction to African American Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. This course is designed to provide an overview of the African American experience in the United States from antiquity to the present. It employs comparative, historical, and cultural perspectives. Emphasis is placed on examining the African American experience in the world context and comparing the African American experience to the experiences of other racial and ethnic groups. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 004 Introduction to Chicanx History (4) Lecture, 3 hours; extra reading, 3 hours. The historical heritage of the Chicanx from Spanish and Indian origins to the Chicanx movement, with an emphasis on the period since 1845. Cross-listed with HST 004. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 005 Introduction to Asian American Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. This course provides an overview of the Asian American experience in the United States from the mid-nineteenth century immigration to Hawaii and the U.S. Pacific coast to the present. The Asian experience is compared and contrasted with that of African Americans, Native Americans, and Hispanic Americans. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 005H Honors Introduction to Asian American Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 005. Introduces students to the concepts and controversies in Asian American Studies. Provides a general overview of topics covered in more specialized Ethnic Studies courses as well as an introduction to the methodology of scholarly research. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ETST 005 or ETST 005H. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 007 Introduction to Native American Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. This course provides an overview of the Native American experience in the United States from antiquity to the present. The Native American experience is compared and contrasted with the experiences of the dominant society and those of other racial and ethnic groups. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 007H Honors Introduction to Native American Studies in Comparative Perspective (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 007. Provides an overview of the Native American experience in the United States from antiquity to the present. Compares and contrasts the Native American experience with the experiences of the dominant society and those of other racial and ethnic groups. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ETST 007 or ETST 007H. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 008 Introduction to Chicano Cultural Studies (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): none. Identifies the cultural process of the Chicano experience, beginning with the Chicano Movement, and discusses the ideas, beliefs, values, and the forms of consciousness that shaped this process. Introduces literary and cultural works such as essay, film, theatre, music, poetry, and art. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 012 Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the religious forces of America; the roles of myths, rituals, and symbols; and images of transcendence. Examines religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Cross-listed with RLST 012. Credit is awarded for only one of ETST 012/RLST 012, ETST 012H/RLST 012H, ETST 012W/RLST 012W, or ETST 012X/RLST 012X. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 012H Honors Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour. Extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 012/RLST 012. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; and images of transcendence. Examines religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Cross-listed with RLST 012H. Credit is awarded for only one of ETST 012/RLST 012, ETST 012H/RLST 012H, ETST 012W/RLST 012W, or ETST 012X/RLST 012X. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 012X Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. A writing-intensive introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; and images of transcendence. Examines religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Cross-listed with RLST 012X. Credit is awarded for only one of ETST 012/RLST 012 or ETST 012H/RLST 012H or ETST 012W/RLST 012W, or ETST 012X/RLST 012X. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.
ETST 116 Medicine Ways of Native Americans (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the medical history of Native Americans. Focuses on traditional Native American medicine and health practices among Native American communities in the United States and Canada. Includes topics such as traditional healing practices, the relationship between traditional medicine and modern medicine, and the impact of colonization on Native American health and medicine.

ETST 111E Thesis in Native American Studies (1-4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): ETST 108, ETST 116, ETST 117, ETST 119. Research and writing under the direction of a faculty advisor. The thesis must be approved by the Department of Native American Studies.

ETST 112 The Civil Rights Movement, 1950-1970 (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Civil Rights Movement in the United States from 1950 to 1970, focusing on key events, figures, and strategies used by African Americans and others in the fight for civil rights.

ETST 113 Black Feminist Theory and Activism (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the writings and works of African American women who have contributed to the development of black feminist theory and activism. Focuses on the contributions of African American women to the Civil Rights Movement and the role of African American women in ongoing struggles for social justice.

ETST 114 Contemporary Latina/o and Immigrant Literature (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of Latina/o and immigrant literature, including Chicano/a, Latinx, and Latin American literature. Focuses on the experiences of Latina/o and immigrant communities in the United States and Latin America.

ETST 115 (E-Z) Topics in Native American History (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of selected topics in Native American history, including the history of Native American tribes in the United States and Canada, the impact of European colonization on Native American cultures, and contemporary issues facing Native American communities.

ETST 116 (E-Z) Themes and Topics in African History (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of selected themes and topics in African history, including the history of African empires, the impact of colonialism on African societies, and contemporary issues facing African nations.

ETST 117 (E-Z) Thesis in African History (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): ETST 116, ETST 117, ETST 119. Research and writing under the direction of a faculty advisor. The thesis must be approved by the Department of African Studies.

ETST 120 (E-Z) Special Topics in Chicano Studies (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of selected topics in Chicano/a studies, including Chicano/a literature, art, and culture.

ETST 121 The Civil Rights Movement, 1950-1970 (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Civil Rights Movement in the United States from 1950 to 1970, focusing on key events, figures, and strategies used by African Americans and others in the fight for civil rights.

ETST 122 The Black Student Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Student Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American students in the fight for civil rights.

ETST 123 The Black Power Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Power Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American activists in the fight for civil rights.

Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Woman's Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American women in the fight for civil rights.

ETST 125 The Black Gay and Lesbian Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Gay and Lesbian Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American gay and lesbian activists in the fight for civil rights.

Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Feminist Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American women in the fight for civil rights.

ETST 127 The Black Environmental Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Environmental Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American environmental activists in the fight for civil rights.

Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Economic Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American economic activists in the fight for civil rights.

ETST 129 The Black Political Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Political Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American political activists in the fight for civil rights.

ETST 130 The Black Radical Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Radical Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American radical activists in the fight for civil rights.

ETST 131 The Black Student Union Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Student Union Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American student activists in the fight for civil rights.

Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Power Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American activists in the fight for civil rights.

ETST 133 The Black Woman's Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Woman's Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American women in the fight for civil rights.

ETST 134 The Black Economic Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Economic Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American economic activists in the fight for civil rights.

ETST 135 The Black Political Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Political Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American political activists in the fight for civil rights.

ETST 136 The Black Radical Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Radical Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American radical activists in the fight for civil rights.

ETST 137 The Black Student Union Movement, 1960-1970 (4)
Lecture, 3 hours; research paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the Black Student Union Movement in the United States from 1960 to 1970, focusing on key events, figures, and strategies used by African American student activists in the fight for civil rights.
and wider United States society. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

**ETST 120 Contemporary Native American Literature (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Study of representative works of fiction, nonfiction, and poetry from the 1950s to the present. Emphasis upon the works of Louise Erdrich, Joy Harjo, N. Scott Momaday, Simon Ortiz, Leslie Silko, Gerald Vizenor, and James Welch, among others. **Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 123 Chicano Politics in Comparative Perspective (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of the historical, social, political, and cultural movements, ideologies, relations with intergovernmental agencies, political attitudes, and participation in the political process. Comparison of the Chicano political experience to that of other racial and ethnic groups in American politics. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 124 The Chicana (4)** Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The unique experience of the Chicana viewed from social, intellectual, historical, and artistic perspectives. **Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 125 Chicano Political History: Nineteenth and Twentieth Centuries (4)** Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): ETST 002 or ETST 002H or ETST 004/HIST 004; upper-division standing. Surveys the history of Chicano politics in the United States from Mexican independence in 1821 to the present. Assesses the continuity of the Chicano political tradition through comparison of the Chicano political experience before and after the establishment of American sovereignty. **Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 126 The Chicano and the Law (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The unique experience of the Chicano viewed from social, intellectual, historical, and artistic perspectives. **Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 127 Latino Men and Masculinity (5)** Lecture, 3 hours; term paper, 3 hours; written work, 3 hours. Prerequisite(s): ETST 001 or ETST 001H or ETST 002 or ETST 002H or ETST 003 or ETST 005 or ETST 005H or ETST 007 or ETST 007H or consent of instructor. Analysis of Chicano/Latino men and masculinity in historical and comparative perspective. Examines social construction and expression of race and ethnicity such as the order/pluralistic, assimilational, and functionalist models, as well as Marxism, internal colonialism, feminism, postmodernism, and critical theory. **Fulfills the Humanities and the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 128 Chicano Sociology (5)** Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; individual study, 4 hours; written work, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the Mexican experience in U.S. society. Explores the history as a minority; mass immigration in the twentieth century; relationships with American institutions; present socioeconomic status; variations in social status from region to region; political and economic variations and integration with non-Mexicans; economic and social relations and integration with non-Mexicans. Cross-listed with SOC 128. Credit is awarded for only one of ETST 128/SOC 128 or ETST 128S/SOC 128S. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 128S Chicano Sociology (5)** Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; individual study, 4 hours; written work, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the Mexican experience in U.S. society. Explores the history as a minority; mass immigration in the twentieth century; relationships with American institutions; present socioeconomic status; variations in social status from region to region; political and economic variations and integration with non-Mexicans; economic and social relations and integration with non-Mexicans. Cross-listed with SOC 128S. Credit is awarded for only one of ETST 128S/SOC 128S or ETST 128. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 129 Theories in Chicano Studies (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ETST 001 or ETST 001H; ETST 002 or ETST 002H; ETST 004/HIST 004; upper-division standing or consent of instructor. Analyzes prevailing and emerging theories, paradigms, and trends in Chicano Studies. Examines and applies traditional social science theories of race and ethnicity such as the order/pluralistic, assimilationist, and functionalist models, as well as Marxism, internal colonialism, feminism, postmodernism, and critical theory. **Fulfills the Humanities and the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 130 History of Public Education in Communities of Color (4)** Seminar, 3 hours; term paper, 1 hour; outside research, 2 hours. Prerequisite(s): upper-division standing; consent of instructor. An introduction to a comparative analysis of public education as it relates to the experience of African Americans, Chicano/los, Chicanos/os, Chicanas/os, and Asian Americans. Focuses on experiences within the United States. Compares and contrasts experiences within these groups, as well as identifies major policy disagreements. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 131 Race, Class, and Gender (4)** Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; individual study, 4 hours; written work, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the Mexican experience in U.S. society. Explores the history as a minority; mass immigration in the twentieth century; relationships with American institutions; present socioeconomic status; variations in social status from region to region; political and economic variations and integration with non-Mexicans; economic and social relations and integration with non-Mexicans. Cross-listed with SOC 128S. Credit is awarded for only one of ETST 128S/SOC 128S or ETST 128. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 132 Iconography (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the Mexican experience in U.S. society. Explores the history as a minority; mass immigration in the twentieth century; relationships with American institutions; present socioeconomic status; variations in social status from region to region; political and economic variations and integration with non-Mexicans; economic and social relations and integration with non-Mexicans. Cross-listed with SOC 128S. Credit is awarded for only one of ETST 128S/SOC 128S or ETST 128. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 133 Asian Diaspora: Historical, Contemporary, and Comparative Perspectives (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the historical development of Asian American novels, short stories, and first-person accounts. Emphasis on the origin and growth of Asian American novels, short stories, and first-person accounts. Cross-listed with SEAS 137. **Fulfills the Humanities and the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 134 Asian American Literature: A Historical Survey (4)** Lecture, 3 hours; term paper, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the historical development of Asian American literature. Special emphasis placed on major works of the postwar period, as well as autobiographies, poetry, short stories, and plays that focus on social and economic struggles of Asian American communities. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences. **Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 137 The Vietnamese Americans: The Refugee and Immigrant Experience (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the Vietnamese American experience in contemporary society. Emphasizes the relationship of Vietnamese Americans to the larger society and their historical problems, family, religion, and the relationship between Vietnamese Americans and other ethnic groups. Cross-listed with SEAS 137. **Fulfills the Humanities and the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 140 Asian American Feminist Theory and Politics (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes contemporary issues facing Asian Americans: Asian American identity and images, education, employment, housing, dual oppression, interethnic conflicts, juvenile delinquency, gender-related conflicts, and anti-Asian violence. **Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.**

**ETST 141A Black Literature I (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Overview of the African American experience in the United States before World War II. Describes how the racialization of Asians as “non-White” and nonassimilable shaped the experiences of Chineseans, Filipinos, and South Asians in America. **Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.**

**ETST 141B Black Literature II (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the history of Koreans in the United States to analyze a wide range of contemporary social and identity issues. Students are encouraged to do original research, develop writing and communication skills, and devise research projects that address the immediacy of the Korean American experience. **Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.**

**ETST 142A Ethnic Studies / 288
term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers significant early African American writers and literary movements. Focuses on Diasporan slave narratives, protest literature, and the Harlem Renaissance. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 1418 Black Literature II (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): ETST 141A. Considers significant twentieth- and twenty-first-century African American writers and literary movements. Focuses on the Black Arts Movement, Black Women’s Feminist literature, and Hip-Hop. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 142 Organizations, Institutions, and the Chicano (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The study of organizations and institutions, focusing on their effect on the Chicano. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 143A Critical Filipina(o) Studies: Histories and Legacies of U.S. Conquest, Colonialism, and Empire (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): one of the following courses: ETST 001, ETST 001H, ETST 002, ETST 004/HIST 002, ETST 004/HIST 004, ETST 005, ETST 005H, ETST 007, ETST 007H, ETST 008, ETST 012, ETST 012H, ETST 012W, ETST 012X, ETST 014; or consent of instructor. Critically examines and theorizes the historical impact and legacies of U.S. conquest and colonialism in the Philippines. Analyzes the origins of Filipino American civic existence and its links to histories of U.S. racial formation, racialized industrialization, and racialized frontier warfare. Cross-listed with SEAS 143A. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 143B Critical Filipina(o) Studies: Interrogating the Filipino American Present (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): one of the following courses: ETST 001, ETST 001H, ETST 002, ETST 002H, ETST 003, ETST 004/HIST 004, ETST 005, ETST 005H, ETST 007, ETST 007H, ETST 008, ETST 012, ETST 012H, ETST 012W, ETST 012X, ETST 014; ETST 007H or HIST 035 or HIST 036 or HIST 037 or ETST 128S/SOC 128S. A comparative and historical analysis of subordinated communities and law emphasizing integrating theoretical understanding of racial, class, and gender subordination. Includes field experience working directly with groups that have traditionally lacked equal access to the legal and judicial system. Cross-listed with SOC 145. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 146 Educational Perspectives on the Chicano (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): consent of instructor. An examination of educational policy issues concerning Chicano students, such as testing and testing procedures, learning styles, socialization, and language acquisition. Other topics will depend on the research of the semester and will be related to the education of Chicanos. Cross-listed with EDUC 146. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 147 History of Black Education (4) Lecture, 3 hours; individual study, 4 hours. Prerequisite(s): upper-division standing. This course examines major themes in Black education: the education of slave and free Blacks; role of missionaries and philanthropists in Black education; the growth of Black colleges; curricular debates; and the NAACP challenge of the “separate but equal” doctrine. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 148 Caribbean Culture and Society (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the history and cultures of the Caribbean. Cross-listed with ANTH 168 and UNST 168. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 150 Asian American Family and Culture (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): ETST 005 or consent of instructor. Examines the influence of cultural legacy, ethnic background, immigration history, community structure, racism, class, and economic status on the sociological and psychological dynamics of the Asian American family and personality. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 151 Contemporary Asian American Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ETST 005 or consent of instructor. Survey of contemporary Asian American literature and culture. Explores identity politics, cultural nationalism, feminism, sexuality, postmodernism, postcolonialism, diaspora, and transnationalism. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 152 Asian American Film and Video (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): ETST 001 or ETST 001H, upper-division standing; or consent of instructor. Survey and analysis of cinematic works by and about Asian Americans. Topics include studies of forms and genres; viewing and interpretative practices; the conditions of production, distribution, and reception; as well as thematic concerns such as history and memory, the politics of representation, gender, and sexuality. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 153 Native American Intellectual Traditions (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the various aspects of the politics of the Chicano movement from 1965 to 1974. Focuses on in-depth analysis of the movement’s historical genesis, leading ideologies, organizational roles and tactics, as well as the issues that brought it into being. Also examines the forces that contributed to its demise. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 154 Chicano/a California: A Social and Cultural History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of musical and expressive cultures of everyday Mexican Americans in primarily Southern California to understand their social consciousness and cultural politics. Covers the historical evolution of diverse Chicano cultural identities, musical tastes, and communities. Focuses on the cultural, subcultural, ethnic, class mobility, gender, sexuality, racialization, and assimilation. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 155 Chicana/o California: A Social and Cultural History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of musical and expressive cultures of everyday Mexican Americans in primarily Southern California to understand their social consciousness and cultural politics. Covers the historical evolution of diverse Chicano cultural identities, musical tastes, and communities. Focuses on the cultural, subcultural, ethnic, class mobility, gender, sexuality, racialization, and assimilation. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
ETST 161 U.S. Latinos: Crossing Borders, Crossing Cultures (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the idea of Latino identity as a way to study heterogeneity of ethnic group identification. Focuses on historical chronology, literary traditions, and other cultural practices. Emphasis is on the experience of diversity and pluralism within the Latino experience. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 162 Learning Native American Languages (5) Lecture, 2 hours; workshop, 2 hours; individual study, 3 hours; outside research, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Provides a social situation in which students learn to speak a Native American language of their choice through individual study of reference materials, training in linguistic analysis, and class presentations. Examines the social impingement and spacing of these languages. Students must obtain learning materials for their language of study. Course is repeatable to a maximum of 10 units. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 163 (E-Z) Special Topics in Gender, Sexuality, and Race (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Selects topics addressing the issues of gender, sexuality, and race. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 164 History of African American Education: 1950-Present (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ETST 147. Introduces the major themes in African American education. Focuses on litigation in public education, politics, policies in circumventing desegregation, and churches and community organizations advancing desegregated education. Also explores poverty and urban schools, social programs, the Afrocentric pedagogy of failure, separate schools and segregation, and the achievement promise. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 165 Latinos Asylum and Migrant Detention (4) Seminar, 3 hours; clinic, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Seminar to study the politics of asylum and migrant detention practices in the United States in a global perspective. Students will gain knowledge on asylum and detention regime through both the lens of global political economy, critical race theory, and through practical engagement with refugee and migrant organizations/legal practitioners. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 166 Issues in Bilingual/Bicultural Education (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): PSYC 002. This course will analyze both the traditional theoretical approaches to the study of Black children and innovative approaches that are currently being developed by Black psychologists. The course will cover topics in the areas of cognitive, social, and personality development. Cross-listed with PSYC 167. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 168 Psychological Aspects of the Black Experience (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): PSYC 002. This course examines the interdependence between personal characteristics, African American culture, and the social conditions which influence the group. Group membership, life styles, role factors, and situational settings as social norms will be explored in order to understand the uniqueness of the Black experience. Cross-listed with PSYC 168. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 169 The Politics of Race and Performance (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers the complex practice of dance, music, and performance art by expressive artists of color and asks questions about address, audience, white uses of black performance techniques, dance in relation to self-conscious historical memory, and the politics of authenticity and commodification. Investigates performances from different locations, from explicitly politicized to heavily commercialized. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 170 Third World Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers black music from Congo Square to blues and jazz and hip hop as key sites for African Diasporic cultural and political formation. Focuses on black musical production and circulation. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 171 Black Music (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers black music from Congo Square to blues and jazz and hip hop as key sites for African Diasporic cultural and political formation. Focuses on black musical production and circulation. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 172 Music Cultures of Southeast Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in the Philippines, Indonesia, Malaysia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Designed for the student interested in the performing arts and culture of mainland Southeast Asia. No Western music background is required. Cross-listed with ANTH 176, AST 127, DNCE 127, and MUS 127. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 173 Black Art in America (4) Lecture, 3 hours; field, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Discusses black artists in the visual arts from slavery until the end of the Negro Renaissance (1930s). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 174 Race, Law and Education in the United States (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role legal decisions, judicial policymaking, and race play in education. Studies the impact on schools, their communities, students, teachers, administrators, and disenfranchised groups. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 175 Gender, Ethnicity, and Borders (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ETST 001 or GSST 010 or upper-division standing. Examines literary, theatrical, and visual sites where the "in-between" space of border cultures is mapped. Materials include autobiographies, testimonial literature, films, novels, performance scripts, and art. Focuses on the interplay of gender and ethnicity. Cross-listed with GSST 175. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 176 Geographies of Pain: Black Women, Trauma, and Survival (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the relationship between gender and violence. Illustrates ways in which crimes such as incest are not just instances of dysfunction within the black family but are also examples of the resistance and race play in the historical violence of the nation-state. Examines how integral violence is to the creation of blackness and to the necessity to envision practices of survival. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 177 The U.S. Prison Industrial Complex: Race, Gender, and Citizenship (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one of the following courses: ETST 001, ETST 001H, ETST 002, ETST 002H, ETST 003, ETST 004/HIST 004, ETST 005, ETST 005H, ETST 007, ETST 007H, ETST 008, ETST 012, ETST 012H, ETST 012W, ETST 012X, ETST 014; or consent of instructor. Explores the racialized and gendered information of U.S. jurisprudence, policing, and punishment practices. Explores the connections between prison expansion, corporate investment in prison and policing technology, exploitation of prison labor, and prison-building initiatives such as pork barrels for elected officials. Also analyzes anti-prison, prison reform, and penal abolitionist discourses. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 178 Imprisoned Radical Intellectuals and U.S. Liberation (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of the work of imprisoned writers of color as well as white intellectuals/activists who have influenced the formation of social movements in the United States since the 1970s as prisons and jails have become primary sites of political and racial conflict. Elaborates how race, gender, and patriarchy are central to the establishment of state regimes of incarceration. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 179 Understanding Whiteness: Racialization and Identity Formation in American Culture (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of U.S. racialization, identity formation, institutionalized racism, and structural inequality from the early Republic to the present. Examines continuing evolution of a national white racial consciousness; the legal, social, and economic exploitation of people of color; and the transfer of inherited legacies and benefits along racialized power lines. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 180 California Indian History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Provides students with a broad view of the rich and varied heritage and history of California Indians from the invasion of the Spanish to the twentieth century. Examines geographically and culturally diverse groups as a means of illustrating the various Euro-American policies that affected Indians. Cross-listed with HISA 140. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 181 Southwestern Indian History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Presents...
a historical examination of selected Native American groups in the Southwest. Examines the relationship of Southwestern Indians to the Spanish, Mexican, and United States governments. Focuses on Quechanos, Tohono O’odham, Navajos, Zunis, Hopis, Comanchers, and selected Pueblos along the Rio Grande. Cross-listed with HISA 141. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 182 Northwestern Indian History (4) Lecture; 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines selected aspects of Northwestern Indian History, from approximately the 1750s to the twentieth century. Deals with several native groups along the Northwest coast from Alaska to Oregon. Compares policies of the Russian, Spanish, English, and United States governments. Particular emphasis on the 1850s when numerous treaties with Native Americans in the Washington and Oregon territories. Cross-listed with HISA 143. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 183 Native American Oral Literature (4) Lecture; 3 hours; extra reading, 3 hours. Prerequisite(s): ETST 007; upper-division standing or consent of instructor. Comparative examination of Native American oral literature of tribes in the United States, Canada, and Mexico. Enhances the student’s understanding of Native American language, literature, drama, geography, ecology, history, and culture. Cross-listed with HISA 143. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 184 American Indian Policy in the Twentieth Century (4) Lecture; 3 hours; consultation, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. This course will begin with the end of the treaty-making period and the point in time that the United States emerged as a colonial power (1871). The history of the interaction between the United States government and the American Indian tribes from the year 1871 to 1988 will be presented phase by phase. In addition, it will explore the position and role of the American Indian during the last twenty years. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 185 Native American Law (4) Lecture; 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Emphasis on traditional law, civil and criminal rights, water rights, First Amendment religious freedom, and gambling on reservations. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 186 Policing and the Hegemony of “Law and Order” Race, Gender, Sexuality, Citizenship, and the Politics of Criminalization (4) Lecture; 3 hours; class project, 3 hours per week. Prerequisite(s): one of the following courses: ETST 001, ETST 001H, ETST 002, ETST 02H, ETST 003, ETST 004/HIST 004, ETST 005, ETST 007, ETST 007H, ETST 008, ETST 012, ETST 012H, ETST 012W, ETST 012X, ETST 014; or consent of instructor. Provides a critical approach to the interdisciplinary study of state violence and militarized policing. Examines ways in which policing technologies and tactics are privatized through racialized, gendered, and classed hierarchies. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 187 Anticolonialist Thought (4) Lecture; 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the political-intellectual work of anticolonialist struggle and independence movements. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 188 Native American Women (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Native American gender systems and the changing roles of women. Examines the cultural productions of indigenous women that make important interventions in our understanding of gender and social justice in contemporary Native America.

ETST 189 Popular Culture and the Production of Race (4) Lecture; 3 hours; screening, 3 hours. Prerequisite(s): ETST 001 or ETST 001H, ETST 100; or consent of instructor. Explores interdisciplinary and theoretical approach to the study of various popular film and television genres in relation to the production—and contestation—of racial meaning. Concerned with the material(b)>(c)<significance of film and television as, simultaneously, “entertainment,” “pleasure,” “mass culture,” “(self-)representation,” and “cultural resistance or insurgency.” Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing and consent of instructor. Independent study and research by qualified undergraduate students under the supervision of a particular faculty member. Course is repeatable to a maximum of 16 units.

ETST 191 (E-Z) Seminar in Ethnic Studies (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): for ETST 191E, ETST 191G, ETST 191K: consent of instructor; for ETST 191F: ETST 001 or ETST 001H, ETST 005 or ETST 005H; for ETST 191N: ETST 002 or ETST 002H or ETST 008; for ETST 191S: upper-division standing or consent of instructor. Seminar on selected topics related to the politics and culture of African American, Asian American, Chicano, Latino, and Native American ethnic groups. E, N, and S fulfill the Humanities requirement for the College of Humanities, Arts, and Social Sciences. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 192H Junior Honors Seminar (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): junior status or consent of instructor. Fulfills advanced research in various fields of faculty interest and expertise. Students are required to complete a research paper utilizing primary and secondary documents and other sources. Seminar focus varies from year to year. Course is repeatable to a maximum of 12 units. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 193 Senior Research Seminar (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): senior standing or consent of instructor. Advanced research in various fields of faculty interest. Students are required to complete a research paper and present their results in the seminar. Topics vary from year to year. Course is repeatable to a maximum of 8 units. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 198 R'Course - Variable Topics (1-4) 1. Activity, 3 hours; activity hours vary per r’ course proposal. Prerequisite(s): permission needed from department. An opportunity for UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 8 units. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 198T Group Internship (1-12) Internship, 2-24 hours; outside research, 1-12 hours. Prerequisite(s): upper-division standing; consent of instructor. On- or off-campus internship related to the interests of core ethnic-group students under the joint direction of an on- or off-campus supervisor and an Ethnic Studies faculty member. Course is repeatable to a maximum of 16 units. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 198I Individual Internship (1-12) Internship, 2-24 hours; outside research, 1-12 hours. Prerequisite(s): upper-division standing; consent of instructor. Off- or on-campus internship related to the ethnic community, conducted under the joint direction of an on- or off-campus supervisor and an Ethnic Studies faculty member. Requires a report based on the experience. Course is repeatable to a maximum of 16 units. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

Graduate Courses

ETST 200 History of Ideas in Ethnic Studies (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the foundational ideas critical for understanding the historical evolution of race and ethnic issues in the United States and within international relations. Prepares graduate students to conceptualize multidisciplinary and comparative ethnic studies research. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 201 Sociocultural Theories in Ethnic Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Examines theoretical approaches to the study of race and ethnicity in the United States. Assesses the relative strengths and weaknesses of key theoretical paradigms. Perspectives may include symbolic interaction, phenomenology, class analysis, sovereignty, literary criticism, feminism, psychoanalysis, racial formation, critical race theory, postmodernism, and global or transnational. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 203 Research Methods in Ethnic Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Examines some of the foundational theories and methods employed in the field of ethnic studies. Provides graduate students with an understanding of how to conduct and implement a research project utilizing multiple methods. Course is repeatable as content changes to a maximum of 12 units.

ETST 204 Critical Race Perspectives in Latino Education (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Examines the social, economic, and political factors that impact contemporary Latinx education. Explores alternative epistemologies that challenge traditional modes of schooling as well as alternative pedagogies - both in and outside public school classrooms - that are rooted in community-based knowledge.

ETST 205 Feminism, Race, and the Politics of Knowledge (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of in-
structur. Explores how race and gender are produced and institutionalized in U.S. social arrangements, emphasizing the social construction of race and gender in science, culture, and the law. Surveys a collection of nineteenth- and twentieth-century scientific and legal texts alongside feminist of color writings that analyze the relationship between knowledge, empowerment, and social justice. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ETST 215 Asylum Policy and Migrant Detention (4) Seminar, 3 hours; clinic, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers the politics of asylum and migration within the United States in a global perspective. Includes knowledge on asylum and detention regime through both the lens of global political economy, critical race theory, and through practical engagement with refugee and migrant organizations/legal practitioners. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ETST 221 Race, Gender, Law, and Equal Protection (4) Seminar, 3 hours; field, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Examines the interrelationships among law, race, gender, equal protection doctrine, and the state. Addresses contemporary and historical debates as to concepts such as critical legal studies, critical race theory, “LatCrit,” and feminist jurisprudence. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable as content changes to a maximum of 12 units.

ETST 222 Intersectionalities (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the concept of intersectionality in transnational framework and historical perspective. Addresses problems of social identity construction and the body. Considers analyses in relation to people of color and issues of race, sex, economic oppression, and cultural production from a transnational perspective. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 223 Chicana/o Expressive Culture: Theory and Practice (4) Seminar, 3 hours; written work, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines Chicana/o cultural studies theories while tracing the history of diverse communities and expressive cultures from Spanish colonial period to present day, including Chicana/o youth and the twenty-first century. Assesses role of popular culture in Mexican American life. Explores the Chicanas/o’s impact upon the development of popular culture and academia in American life. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 224 Race and State Violence (4) Seminar, 3 hours; term paper, 2 hours; written work, 1 hour. Prerequisite(s): ETST 201 or consent of instructor. Engages critical social theories of race. Focuses on state-mediated technologies of power and domination. Emphasizes analyses of race, racism, and white supremacy that conceptualize their historical constitution of statecraft and nation-building processes. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 225 Imperialism, Colonialism, and Racism: Global Historical Perspectives (4) Seminar, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Explores a critical interdisciplinary genealogy of imperialism, colonialism, and racism within the global context of capitalist modernity. Explores the characteristics of imperialism, colonialism, and racism, as well as their relation to each other and to nationalism, decolonization, and globalization. Addresses how these complex articulations have been theorized. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 226 Cultural Politics and Production (4) Seminar, 2 hours; screening, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Considers the discursive and expressive cultural forms produced by racialized subjects. Covers a range of literatures, music, and performance forms; the works of individuals and collectives; and social movements. Course is repeatable as content changes to a maximum of 12 units.

ETST 227 Anticolonialism and Its Aftermath (4) Seminar, 3 hours; term paper, 1 hour; written work, 2 hours. Prerequisite(s): ETST 201 or consent of instructor. Examines anticolonialist political thought in the context of contemporary and subsequent critical struggle in interdisciplin ary fields. Engages these thoughts through frameworks of critical race studies, feminist thought, queer studies, postcolonial studies, and cultural studies. Discusses relevance of anticolonialist thought to contemporary social and political problems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 228 Race, Law, and Educational Policy (4) Lecture, 3 hours; term paper, 1.5 hours; extra reading, 1.5 hours. Prerequisite(s): graduate standing or consent of instructor. Explores how law and race shape educational policies and practices. Examines legal and educational policies and practices shape race and law. Examines how decisions made at the federal, state, and local levels influence public education opportunities and access. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 230 Gramscian Thought & Subaltern Struggles (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers Antonio Gramsci’s primary writings as well as select texts by scholars that have applied his theoretical insights to the subaltern groups and states in multiple contexts. Includes the application of Gramscian theory and methods to advanced projects in the social sciences and humanities. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ETST 243 (E-Z) Special Topics in Ethnic Studies (4) Lecture, 3 hours; activity, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): graduate standing; consent of instructor. A critical analysis of current theory and research in special areas of Ethnic Studies. Covers a single topic not addressed in a regular course. Topics vary from quarter to quarter. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor. Course is repeatable as topics change to a maximum of 12 units.

ETST 244 Borders, Borderlands, and Chicana/o Studies (4) Seminar, 3 hours; outside research, 3 hours; extra reading, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Examines the borderlands as a site of social and political negotiation over space and within cultural studies. Topics include race, gender, activism, and counter-strategies. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D. Course is repeatable as content changes to a maximum of 12 units.

ETST 245 Theories in Chicana/o Studies (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the historical development of theoretical paradigms and models in Chicana/o studies. Covers 1960s protest literature, critical race theory, Chicana feminist theory, “LatCrit,” and cultural citizenship. Addresses critical evaluation and application of the paradigms in order to understand the experiences of Chicanas/os and other subordinated communities. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 246 Chicano Historiography: Identity, Politics, and the Writing of Chicana/o History (4) Seminar, 3 hours; written work, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Examines anticolonialist political thought in the context of contemporary and subsequent critical struggle in interdisciplinary fields. Engages these thoughts through frameworks of critical race studies, feminist thought, queer studies, postcolonial studies, and cultural studies. Discusses relevance of anticolonialist thought to contemporary social and political problems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 247 Policy and Politics: Grass Roots versus Coercive State (4) Seminar, 3 hours; discussion, 1 hour; written work, 2 hours. Prerequisite(s): graduate standing; consent of instructor. Provides a current examination of the status of Chicanas/o/Latina/o politics from the grassroots level as a site of political resistance and the role of political resistance. Examines divergent theoretical approaches within the contexts of liberal capitalism, pluralist versus elite theory, and identity politics. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 248 Race and Critical Educational Policy (4) Seminar, 3 hours; written work, 1 hour; extra reading, 2 hours. Prerequisite(s): graduate standing; consent of instructor. Examines a set of diverse, discipline-based conceptual perspectives and analytic frameworks used to interpret policy processes, purposes, contents, and outcomes. Focuses on the political dimensions of education policy issues through the application of Gramscian theory and methods to advanced projects in the social sciences and humanities. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 249 Race and Critical Educational Politics (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Examines the borderlands as a site of social and political negotiation over space and within cultural studies. Topics include race, gender, activism, and counter-strategies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

ETST 254 Asian American Cultural Critique and Theory (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing; consent of instructor. Examines major critical developments, interventions, and theories in Asian American cultural critique and theory. Charts the historical development of the field of Asian American literary and cultural studies. Investigates the contexts and constraints of the field’s institutional formation and recognition. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.
include Asian American historic, economic, political, social, and psychological issues. Course is repeatable as content changes to a maximum of 12 units.

**ETST 256 Critical Issues in Asian Pacific American Communities (4)** Seminar, 3 hours; practicum, 3 hours. Prerequisite(s); graduate standing. Examines contemporary issues facing Asian Pacific American communities. Students engage in active research in these communities.

**ETST 289 Colloquium in Ethnic Studies (1)** Colloquium, 1 hour. Prerequisite(s); graduate standing or consent of instructor. Lectures and discussions by students, faculty, and invited scholars on selected topics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

**ETST 290 Directed Studies (1-6)** scheduled research, 3-18 hours. Prerequisite(s); graduate status and consent of instructor. Research and special studies in Ethnic Studies. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**ETST 291 Individual Study in Coordinated Areas (1-12)** Individual study, 3-36 hours. Prerequisite(s); graduate standing; consent of instructor. A program of study designed to advise and assist candidates who are preparing for doctoral examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 24 units.

**ETST 292 Concurrent Analytical Studies in Ethnic Studies (1-4)** Individual study, 3-12 hours. Prerequisite(s); consent of instructor. Taken concurrently with a 100-series course in Ethnic Studies, but on an individual basis. Devoted to completion of a graduate-level paper based on research or criticism related to the 100-series course. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**ETST 293 Research Topics in Ethnic Studies (2)** Seminar, 3 hours. Prerequisite(s); graduate standing; consent of instructor. A series of seminars by guest, faculty, and advanced graduate students that addresses research topics in ethnic studies. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**ETST 294 Directed Research (1-2)** Outside research, 3-6 hours. Prerequisite(s); graduate standing; consent of instructor. Individualized research in topics outside the dissertation area. Conducted under the sponsorship of specific faculty members. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**ETST 297 Research for the Dissertation (1-12)** Outside research, 3-36 hours. Prerequisite(s); satisfactory completion of the Ph.D. qualifying examination. Faculty-directed research for preparation of the dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**ETST 299 Research Topics in Ethnic Studies (3)** Seminar, 1 hour. Prerequisite(s); graduate standing; consent of instructor. Research and special studies in Ethnic Studies. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**ETST 300 Teaching Practicum (1-4)** Practicum, 3-12 hours. Prerequisite(s); limited to teaching assistants; graduate standing. Supervised teaching in lower- and upper-division courses. Required of all Ethnic Studies teaching assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**ETST 405 Proseminar on Professionalization (2)** Seminar, 27 hours per quarter; practicum, 3 hours per quarter. Prerequisite(s); graduate standing; consent of instructor. Covers a broad range of topics related to academic professionalization. Addresses issues pertaining to the dissertation, publishing, professional activity, and the process of getting tenure. Also covers issues related to teaching at the university level. Graded Satisfactory (S) or No Credit (NC).

---

**Evolution, Ecology, and Organismal Biology**

See Biology (Graduate Program)

**Gender and Sexuality Studies**

(Formerly Women's Studies)

Subject abbreviation: GSST

**College of Humanities, Arts, and Social Sciences**

Juliann Emmons Allison, Ph.D., Chair
Department Office, 2033C CHASS INTN
juliann.allison@ucr.edu
(951) 827-1583;
Jane Ward, Ph.D., Vice Chair
Department Office, 2025 CHASS INTN
janev@ucr.edu
genderandsexualitystudies.ucr.edu

Professors

- Alicia Arrizón, Ph.D.
- Anthonia Ku, Ph.D. (Comparative Literature and Foreign Languages & Gender and Equality Studies)
- Marguerite R. Waller, Ph.D. (Comparative Literature and Foreign Languages)
- Associate Professors
  - Juliann Emmons Allison, Ph.D.
  - Amalia Cabezas, Ph.D. (Media and Cultural Studies)
  - Katja Guenther, Ph.D.
  - Sherine Hafez, Ph.D.
  - Tamara Ho, Ph.D.
  - Chikako Takeda, Ph.D.
  - Jane Ward, Ph.D.
  - Assistant Professor
  - Jade S. Sasser, Ph.D.
  - Eric A. Stanley, Ph.D.
  - Melanie Yazzie, Ph.D.

**Majors**

The Department of Gender and Sexuality Studies offers the B.A. in Gender and Sexuality Studies and the B.S. in Sustainability Studies.

**University Requirements**

See Undergraduate Studies section.

**College Requirements**

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

**Gender and Sexuality Studies Major**

The Gender and Sexuality Studies Department offers a coherent interdisciplinary curriculum with a major field of study in the areas of gender and sexuality. Each student is required to take a total of 13 courses.

At the upper-division level, the department provides concentrations in gender and cultural production, gender and families, sexualities and gender, and gender and work, and gender, science, and technology.

**Sustainability Studies Major**

Sustainability is broadly understood as the pursuit of a livable world for all human and non-human life at present and in the future. The Sustainability Studies Bachelor of Science degree offered by the Gender and Sexuality Studies Department investigates the historical and contemporary ways environments change, and are changed by, human activity. Focusing on a range of challenges to sustainability including climate change, air and water pollution, toxic contamination, energy demands, economic growth, agricultural production, and environmental injustice, the B.S. curriculum offers a comparative, interdisciplinary, transnational approach to the theories and practices of building a sustainable future. Courses in gender and sustainability, natural and earth sciences, engineering, health and medicine, cultural studies, policy,
Major Requirements

1. Lower-Division Requirement (4 courses, 14–16 units)
   a) GSST 101
   b) GSST 021
   c) Two courses from the following list of courses in natural, earth, and environmental sciences.
      (Cannot double count with the CHASS math and science 20 unit requirement): BIOL 003, BIOL 005C, BIOL 040, BPSC 011, ENTM 010, ENTM 020, ENTM 050/BSOC 050, GEO 002, GEO 004, GEO 009, GEO 010, GEO 011, GEO 012, CEE 010 (2 units), ENGR 096/NASC 096/HASS 096, ENSC 001, ENSC 002, ENSC 006/ECON 006, ME 004, PHYS 007, PHYS 010, PHYS 016, PHYS 024, PHYS 037

2. Quantitative Method Requirement (one course, 4 units)
   One of the following courses or sequences OR an additional science course with a lab: SOC 001/SOC 004/SOC 005, STAT 048, STAT 100A, PSYC 011, POSC 114, ECON 101, GEO 157

3. Upper-Division Requirements (9 courses, 36 units)
   a) GSST 100
   b) Two GSST courses, of which at least one is from the following courses on gender & sustainability: GSST 131, GSST 161, GSST 171, GSST 173, GSST 181, GSST 183
   c) Four courses from any of the following lists.
      (Students may concentrate in one or two areas or take courses from all areas. Up to two courses for this requirement may be replaced by any of the following CNAS courses. Students are responsible for fulfilling the relevant prerequisites: BIOL 100/ENTM 100, BIOL 165/BPSC 165, ECON 143A/ENSC 143A, ENSC 101, ENSC 102, ENSC 141, ENSC 174, ENTM 124, ENTM 125, ENTM 126, GEO 160, GEO 161, GEO 167, GEO 169.)
      (1) Environmental policy and politics:
         PBPL 129, POSC 106, POSC 127, POSC 137, POSC 139, POSC 160, POSC 180, POSC 189
      (2) Health & medicine:
         ANTH 143/GSST 185, ANTH 158, ANTH 160, ANTH 162, ANTH 166, ETST 116, HIST 107
      (3) Science, technology, and related topics
         ANTH 110, ANTH 132, ANTH 140T, AST 107, ETST 183, HIST 105, HIST 106, HIST 109/ENGR 109, MCS 122, PHIL 117, RLSR 164, SOC 137, SOC 161, SOC 184
      (4) Internship or Honors Thesis focusing on sustainability:
         GSST 195, GSST 198-I
   d) Capstone course sequence, required for all seniors:
      GSST 191A + GSST 191C

Minor

The minor in Gender and Sexuality Studies consists of six courses (at least 24 units) distributed as follows:

1. Lower-division requirements (two courses [at least 8 units])
   a) GSST 001 or GSST 001H or GSST 001S
   b) One GSST lower-division course

2. Upper-division requirements (four courses [at least 16 units])
   a) GSST 100
   b) Three upper-division GSST courses.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Lower-Division Courses

GSST 001 Gender and Sexuality (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GSST 001 and GSST 001S. An introduction to theories of sex and gender differences, the origins of patriarchy, and variations in sexual behavior and sexual norms. Credit is awarded for only one of the following: GSST 001, GSST 001H, GSST 001S. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 001H Honors Gender and Sexuality (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GSST 001 and GSST 001S. An introduction to theories of sex and gender differences, the origins of patriarchy, and variations in sexual behavior and sexual norms. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of GSST 001 or GSST 001H or GSST 001S. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 001S Gender and Sexuality (5) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. An introduction to theories of sex and gender differences, the origins of patriarchy, and variations in sexual behavior and sexual norms. Credit is awarded for only one of GSST 001, GSST 001H or GSST 001S. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 010 Women and Culture (5) Lecture, 3 hours; written work, 3 hours; individual study, 1 hour; outside research, 2 hours. Prerequisite(s): none. Topics include the roles of women in cultural creation and production; the relation of women artists to the societies of their time; and the images of women in the art and literature of the modern world. Themes and periods covered vary. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 011 Media Imagery of Women and Class (4) Lecture, 3 hours; discussion, 1 hour. Examines how mass media portray class as a gendered category. Utilizes a comparative and historical approach, integrating social sciences and humanities to analyze images of women portrayed as poor, working class, middle class, or wealthy. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 016 Sexuality and Religion in Global Perspective (4) Lecture, 3 hours; discussion, 1 hour. Introduces sexuality studies within the comparative study of religion, rooted in the theoretical frameworks of gender and sexuality studies. Transnationalism and global dynamics of power are central themes. Focus is on critical heterosexuality studies, with some LGBT studies and an underlying queer studies perspective. Cross-listed with RLSR 016. Credit awarded for only one of GSST 016/RSLR 016 or GSST 016H/RLSR 016H. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

GSST 016H Honors Sexuality and Religion in Global Perspective (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University's Honors Program or consent of instructor. Honors course corresponding to GSST 016/RSLR 016. Introduces sexuality studies within the comparative study of religion, rooted in the theoretical frameworks of gender and sexuality studies. Transnationalism and global dynamics of power are central themes. Focus is on critical heterosexuality studies, with some LGBT studies and an underlying queer studies perspective. Satisfactory (S) or No Credit (NC) grading is not available. Cross-listed with RLSR 016H. Credit awarded for only one of GSST 016/RSLR 016 or GSST 016H/RLSR 016H. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

GSST 020 Women, Feminism, and Society in a Global Perspective (4) Lecture, 3 hours; individual study, 3 hours. An introduction to the social, political, and legal concerns surrounding women’s issues and feminist movements worldwide. Examines topics such as abortion, contraception, and sexual violence within a comparative and international framework. Credit is awarded for only one of GSST 020, GSST 020H or GSST 020S. Fulfills either the Humanities or Social Sciences requirement.
GSST 020H Violence Against Women (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GSST 020. Also discusses state and gender-specific socialization for victimization and aggression. Topics include sexual and physical abuse, rape and sexual assault, battering, body mutilation, forced sterilization or reproduction, sex selection, medical “silences,” political torture, and gender-specific socialization for victimization and aggression. Also discusses state and legal concerns surrounding women’s issues and feminist movements worldwide. Examines topics such as abortion, contraception, and sexual violence within a comparative and international framework. Credit is awarded for only one of GSST 020, GSST 020H or GSST 020S. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 020S Women, Feminism, and Society in a Global Perspective (S) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. An introduction to the social, political, and legal concerns surrounding women’s issues and feminist movements worldwide. Examines topics such as abortion, contraception, and sexual violence within a comparative and international framework. Credit is awarded for only one of GSST 020, GSST 020H or GSST 020S. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 025A Women, Feminism, and Society (5) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours; extra reading, 1 hour; term paper, 2 hours; written work, 1 hour; research, 1 hour. Prerequisite(s): none. Introduction to the relationship between gender and sustainability in global context. Draws on science, political ecology, and feminism as analytical lenses. Topics may include gender mainstreaming, economic development, ethics, ecology, population management, water treatment, sanitation, air quality, renewable energy, agriculture, political participation, community development, gender and capitalism, and environmental health. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 022A Introduction to World Literature by Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduction to world literature by women across many centuries. Covers the creative work of women from pre-modern periods to present, examining both texts and the historical circumstances of the earliest women writers. Emphasizes texts written in languages other than English from around the globe. Cross-listed with CPLT 022A. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 022B Introduction to World Literature by Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduction to world literature by women in modern literature. Differentiates the increasingly powerful voices of women writers in modernity and postmodernity. Emphasizes texts originally written in languages other than English from around the globe. Topics include the question of feminine writing and feminist theories about literature by women. Cross-listed with CPLT 022B. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 030 Violence against Women (4) Lecture, 3 hours; individual study, 3 hours. Addresses structural and interpersonal forms of violence against women and girls. Topics include sexual and physical abuse, rape and sexual assault, battering, body mutilation, forced sterilization or reproduction, sex selection, medical “silences,” political torture, and gender-specific socialization for victimization and aggression. Also discusses state and economic policies. Credit is awarded for only one of GSST 030 or GSST 030H. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 030H Violence Against Women (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GSST 030. Also discusses state and gender-specific socialization for victimization and aggression. Also discusses state and legal concerns surrounding women’s issues and feminist movements worldwide. Examines topics such as abortion, contraception, and sexual violence within a comparative and international framework. Credit is awarded for only one of GSST 020, GSST 020H or GSST 020S. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 031H Latinas in Literature and Culture (4) Seminar, 3 hours; extra reading, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Analyzes the literatures and cultures of Latin American women and U.S. Latinas. Examines the roles of women in the contexts of colonial and national conditions of those roles to issues of power and authority. Utilizes texts that acknowledge a tradition of feminine or feminist expression. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of GSST 031H or GSST 031. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 040 Women, AIDS, and the Global Economy (4) Lecture, 3 hours; outside research, 2 hours; individual study, 1 hour. Examines the relationship between poverty, inequality, gender, and HIV/AIDS. Analyzes gender and other forms of social inequality that place women at higher risk for the virus. Explores how global structural inequalities impact the lives of women in the global south. Cross-listed with ANTH 109. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 040H Women, AIDS, and the Global Economy (4) Seminar, 3 hours; extra reading, 3 hours; extra research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the literatures and cultures of Latin American women and U.S. Latinas. Examines the roles of women in the contexts of colonial and national conditions of those roles to issues of power and authority. Utilizes texts that acknowledge a tradition of feminine or feminist expression. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of GSST 040H or GSST 040. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 050 Women, AIDS, and the Global Economy (4) Lecture, 3 hours; outside research, 2 hours; individual study, 1 hour. Examines the relationship between poverty, inequality, gender, and HIV/AIDS. Analyzes gender and other forms of social inequality that place women at higher risk for the virus. Explores how global structural inequalities impact the lives of women in the global south. Cross-listed with ANTH 109. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

Upper-Division Courses

GSST 100 Gender Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the aesthetic hallmarks, critiques and analyzes issues concerning race, antiracism, human rights, citizenship, empire, globalization, and social justice. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 105 Women, Race, and Violence: Intersectionalist and Transnational Perspectives (4) Lecture, 3 hours; screening, 8 hours per quarter; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces the theories of violence against women through intersectionalist feminist perspectives, analyzes the analysis of violence simultaneously marked by race, ethnicity, nation, class, and sexual orientation. Compares cross-cultural and transnational perspectives. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 106 Feminist Bioethics (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An exploration of the ways in which feminist theory provides insights on contemporary issues in bioethics. Topics include women in clinical research, cosmetic surgery, abortion, contract gestation, fetal protection policies, and genetic illness. Cross-listed with PHIL 171. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 107 Feminist, Race, and Antiracisms: Critical Theories and Intersectional Perspectives (4) Seminar, 3 hours; extra reading, 1 hour; individual study, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines how path-breaking scholarship by women of color in the United States and developing countries has been central to rethinking theoretical foundations and developing new ways of knowing, understanding, and practicing politics. Focuses on scholarship that critiques and analyzes path-breaking work on race, antiracism, human rights, citizenship, empire, globalization, and social justice. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 108 Philosophical Issues of Race and Gender (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Cross-listed with PHIL 173. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 109 Women, Politics, and Social Movements: Global Perspectives (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to Third World women’s politics. Covers women’s politics from a global perspective emphasizing South Asia, sub-Saharan Africa, and the Caribbean. Cross-listed with ANTH 109. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 112 History of Queer Cinema (4) Lecture, 3 hours; screening, 3 hours; activity, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the aesthetic hallmarks, political impulses, and theoretical responses that distinguish queer cinema as a unique, important tradition within film history. Provides a historical overview of global, independent, Hollywood, and alternative queer production from the 1900s to the present. Cross-listed with GBS 112 and MCS 112. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
GSST 128 Critical Approaches to Heterosexuality (4) Lecture, 3 hours; extra reading, 2 hours; written work, 3 hours. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S, LGBS 001. Examines the late nineteenth-century origins and twentieth-century evolution of the meaning of heterosexuality in the United States. Includes the medical, psychological, and political history of heterosexuality; the race and gender components of heterosexuality; and the intersection of privilege and oppression. Not credit for both GSST 128 and MUS 126. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences. Does not fulfill the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences. Cross-listed with ANTH 147. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 135 Love, Desire, and Lesbian Sexuality (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the tension between love and desire. Explores the complexity of female attraction to women in the United States and other societies. Cross-listed with LGBS 135. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 136 Women and Grassroots Organizing in the United States (4) Seminar, 3 hours, extra reading, 1 hour; extra individual study, 1 hour. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S; or consent of instructor. Cross-listed with LGBS 136. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 137 Critical Queer Politics (4) Lecture, 3 hours; individual study, 2 hours; written work, 1 hour. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S; or consent of instructor. Cross-listed with LGBS 137. Fulfills the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 138 Gender and the Sex Trade (4) Lecture, 3 hours; extra reading, 1 hour; individual study, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Addresses structural issues related to reproductive and sexual identities and their relationships to issues of identity, class, race, gender, and sexuality. Cross-listed with LGBS 138. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 140 Reproduction: Policies, Politics, and Practices (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines reproductive policies, politics, and practices from a cross-cultural and historical perspective. Discusses political and economic processes and sociocultural dynamics; population control; sex preference; infanticide and neonatal neglect; adoption and foster parenting; abortion; technologically assisted conception and gestation. Cross-listed with ANTH 140. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.
GSST 141 Ethics and Families (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines ethical issues with regard to families of different kinds such as gender relations in traditional marriages; the ethics of same-sex marriage; the morality of abortion, surrogate mothering, and cloning; the justice of school vouchers; the grounds for universal health care; and possible gender inequalities in divorce. Cross-listed with PHIL 16B. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 142 E-Z Women’s Writing in Modern Asia and Asian America (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes the ethical issues of modern literary movements, gender and immigration, autobiogaphy, translation, and subjectivity. Asian literature will be circulated in the original language to students with reading ability (not required). E. Chinese and Chinese American Writing; J. Japanese and Japanese American Writing; K. Korean and Korean American Writing; U. Vietnamese and Vietnamese American Writing. Cross-listed with CPLT 142 (E-Z). Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 143 The Sociology of Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): GSST 001 or GSST 001H or GSST 001S; LGBS 001 or SOC 002. Analyzes the social roles and literary constructs of early Native women as a result of the colonization of the New World and examines the complex imagery of Native women that developed from colonial contact. Cross-listed with SOC 140. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 145 Designing Ecotopia (4) Lecture, 3 hours; extra reading, 2 hours; outside research, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces theoretical underpinnings of ecological utopias and ecotopias. Examines practical aspects of designing these intentional communities focused on sustainability. Includes discussion and critique of proposed ecotopias, analysis of egalitarian economic systems, inclusive and participatory political institutions, social mores adopted by existing ecovillages and other sustainable intentional communities. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

GSST 146 History of Native American Women (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines selected important aspects of the lives of Native women in what is now the United States to present day. Combines critical and comparative religious studies approaches with historical methods and the analytical perspectives of intersectional gender, sexuality, and queer studies. Cross-listed with RLST 161. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

GSST 150 Gender and the State (4) Lecture, 3 hours; extra reading, 1 hour; outside research, 1 hour; writ- ten work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the various meanings of gender as it is represented in, recycled by, and shaped within the state. Discusses gender-state relations, the engendering of politics, state functions, policy, and politics in various historical, political, cultural, and social contexts. Cross-listed with ANTH 148. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 151 Islam, Women, and the State (4) Lecture, 3 hours; individual study, 2 hours, extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the links between women, Islamic practices, and the politics of state formation and nation building. Explores ways women constitute the terrain of struggle in, and beyond, modern, colonialism and nationalism, and religion and politics. Cross-listed with ANTH 188. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 155 Women’s Labor and the Economy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 003. Focuses on economic analyses of four hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the various meanings of gender in the economy; the roles that women play in the labor market; gender differences in occupations, earnings and income; marriage, divorce, and childbearing; and public policy regarding women’s work and standard of living. Explores differences among women by race, ethnicity, and gender, and their responsibilities. Cross-listed with ECON 150 and PBPL 155. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 156 Women and Citizenship (4) Lecture, 3 hours; extra reading, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines women’s citizenship in light of global movements of peoples, capital, and social formations. Describes what it means to be a citizen and the ways in which women are included or excluded from that category. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 161 Gender and Sexuality in U.S Religious History (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): one of the following: GSST 001, GSST 001H, GSST 001S, LRLST 001, LRLST 001H, LRLST 002, LRLST 002H, LRLST 003, LRLST 003H, LRLST 007, LRLST 007H, LRLST 009, LRLST 010, LRLST 010H, LRLST 012, LRLST 012H/ETST 012, LRLST 012/ETST 012, LRLST 013, LRLST 014, LRLST 015, LRLST 015H, LRLST 024/HIST 034, LRLST 039, LRLST 044/HIST 044, LRLST 044WHIST 044W, or consent of instructor. A comparative, thematic exploration of religion in the lives of contemporary same sex attracted and gender variant or gender nonconforming people around the world. Topics may include intersections of religion with: neoliberal economic and political strategies; globalization; global North/South inequities; settler colonialism; racial, economic, and gender inequalities; homonormativity/homonomization; queer activism. Cross-listed with RLST 159. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

GSST 160 Religion, Gender and Sexuality (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examination of attitudes toward and images of women in diverse religious traditions. Includes issues such as the presence and absence of women in leadership roles; women’s spiritual experiences; female founders of religious groups; and women’s movements in feminist religious thought. Cross-listed with RLST 160. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 161 Gender and Science (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): GSST 001 or GSST 001H or GSST 001S; GSST 020 or GSST 020H or GSST 020S or GSST 021 or consent of instructor. Focuses on the intersections of Western constructions of gender and scientific knowledge since the sixteenth century. Considers the cultural and political roles of the scientist in terms of gender; the structuring of objectivity and objects of study; the status of scientific knowledge and the entanglement of gender and science. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 162 Women’s Issues in Modern Muslim Thought (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one Religious Studies course or upper-division standing or consent of instructor. Introduces complex religious and social issues related to the role of women in modern Islamic societies ranging from North America to Southeast Asia. Examines Muslim writings produced during the past century. Cross-listed with RLST 162. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 163 The Women of Early Christianity (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the social roles and constructing of early Christian women as evidenced in the New Testament, patristic, and Apocryphal writings. Also considers the significance of those textual traditions for later Western ideas about women’s social roles including traditional and feminist theories. Cross-listed with RLST 163. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 165 E-Z Themes in Vietnamese Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of Vietnamese literature in
GSST 166 Chicana/o Cultural Studies and Gender Politics (4) Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the field of Chicana/o cultural studies and gender politics that attest to its intersectional approach. Considers how power and gendered politics have impacted the restructur- ing of the split subject in Chicana/o cultural studies. Cross-listed with MCS 127. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 167 Women and Gender in Postcolonial Africa (4) Lecture, 3 hours; extra reading, 1 hour; individual study, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores relations between Africa and the Western world. Examines systems of colonialism and globalization, women’s issues, gender identity, and the role of women in postcolonial Africa. Highlights the impact of these issues on African soci- ety and the struggle against systematic practices of oppression that persist at the axis of race, gender, and sexuality. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 168 Gender and Power in Muslim Societies (4) Lecture, 3 hours; extra reading, 1 hour; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the dynamics of gender relations within the context of the Muslim world. Analyzes processes of power which influence concepts of femininity, masculinity, the body, and sexuality. Explores heterogeneity of the Muslim world as well as its unifying cultural and social history. Cross-listed with ANTH 189. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 169 Gendering Revolution: Gender and Sexuality in “The Arab Spring” (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Addresses the gender politics of The Arab Spring and its revolutionary gender activism. Explores a world of dissent, chaos, and violence, but also one of beauty, ethics, and artistic expression as individuals come together to fight for _bread, freedom, and social justice_. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 170 Women Artists in Renaissance Europe, 1400-1600 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Survey the lives and work of women artists in Renaissance Europe. Considers circumstances under which it was possible for women to become artists; how they evolved from practitioners to professional artists and from variable to participating in the competitive public market space; what they painted; and who their patrons were. Cross-listed with AHS 165 and HISE 133. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 171 Environmental Health and Social Justice (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): GSST 001 or GSST 001H or GSST 001S; GSST 020 or GSST 020H or GSST 020S or GSST 021; or consent of instructor. Interdisciplinary examination of the relationship between environmental health and social justice emphasizing gender, race, class, and globalization as analytical lenses. Topics include urban pollution, workplace exposure, industrial catastrophe, invisible environmental hazards, community activism, reproductive health, global capitalism, and new health challenges imposed by climate change. Fulfills the Social Sciences requirement for the college of Humanities, Arts, and Social Sciences.

GSST 172 Contemporary Italian Women Writers in Translation (4) Lecture, 3 hours, extra reading, 3 hours. Prerequisite(s): upper-division standing and consent of instructor. Focuses on works by Italian women writers addressing issues of gender and sexuality in Italian historical and cultural contexts such as Fascism, the cultures of Sicily and Sardinia, and the North/South dualism within Italian intersect- alities of region, class, and gender with emphasis on the undoing of fascist and patriarchal aesthetics. Crosslisted with ITAL 162. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 173 Gender and Climate Change (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): GSST 001 or GSST 001H or GSST 001S; or consent of instructor. Investigates both gender and climate change as magnified based on existing inequalities. Focuses on the disparity between men and women in the workplace and cyberspace.

GSST 175 Gender, Ethnicity, and Borders (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): GSST 011 or GSST 010 or upper-division standing. Examines literary and visual texts written within the “in-between” space of border cultures is mapped. Ma- terials include autobiographies, testimonial literature, films, novels, performance scripts, and art. Focuses on the interplay of gender and ethnicity. Cross-listed with GSST 175. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 176 Gender, Human Rights, and Transnationalism (4) Lecture, 3 hours; individual study, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores dynamics of gender and power in human rights activism. Examines the history and evolution of human rights discourse, discourses of liberation, and critical responses to the strategy of framing women’s rights as human rights in a comparative, transnational framework. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 178 Gender and Archaeology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): one of the following courses: ANTH 001, ANTH 001H, ANTH 001W, ANTH 002; GSST 020; GSST 020H or GSST 020S or consent of instructor. Considers gender roles in ancient and historically recent human socie- ties, as well as how gender has shaped archaeological investigation. Cross-listed with ANTH 178. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 179 Gender, Media, and Latin America (5) Lec- ture, 3 hours; screening, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the way Latin Americans have thought of and represented gender across a variety of media including essays, film, novel, short story, and performance. Compares the possibilities and limiting factors represented by the media for representing gender in the Latin American context. Cross-listed with LNST 109, MCS 179, and SPN 179. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

GSST 181 Feminisms and Environmentalisms (4) Lec- ture, 3 hours; extra reading, 3 hours. Prerequisite(s): GSST 011 or GSST 010H or GSST 010S; GSST 020 or GSST 020H or GSST 020S or GSST 021; or consent of instructor. Explores women’s and feminist involvement in environmental movements. Examines how gender shapes our relationships with and approaches to envi- ronmental problems in the United States and globally. Investigates intersections between feminist concerns (health, reproduction, mothering, gender equity, and social justice) and environmental issues (conservation, pollution and global warming, and sustainability). Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 183 Feminist Politics of Food (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): GSST 001 or GSST 001H or GSST 001S or GSST 020H or GSST 020S or GSST 021; or consent of instructor. Explores politics of food using gender, race, class, and globalization as analytical lenses. Examines expressions of gender and sexuality in food consumption. Investigates relationships between diet and structural racism and between feminist politics and food movements. Topics include food and adver- tisement, industrial and sustainable agriculture, food security, health, and bioengineering. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 185 Gender, Race, and Medicine (4) Lecture, 3 hours; written work, 1 hour; extra reading, 1 hour; individual study, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the relationship between Western medicine and women, racial minorities, and non-Western cultures. Investigates how gender ideology, racial inequity, and colonialism shape the medical representation of bodies, sexuality, and pathology. Examines how patients have renegotiated their relationships with medicine through health move- ments and alternative healing practices. Cross-listed with ANTH 143. Fulfills either the Humanities or Social Sciences requirement for the College of Hu- manities, Arts, and Social Sciences, but not both.

GSST 186 Gender, Power, and Shifting Identities (4) Lecture, 3 hours; extra reading, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores construc- tions of various identities (racialized, gendered, sexual, and social) in contemporary contexts. Examines how gendered bodies have been represented in performance. A broad defi- nition of performance is applicable, and texts cover photographs, films, dance, performance art, drama, and current events. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 187 Women, Gender, and Technology (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): one of the following courses: GSST 001, GSST 001H, GSST 001S. Introduces historical and sociological studies of gender and technology. Examines how women have been affected by technological developments and how gender ideologies informed the design and implementation of these technologies. Cross-lists gender roles, discussions among gender, technology, material culture, sustainability, and power. Technologies covered include those in the household, the workplace, and cyberspace. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

GSST 188 Gender and Performance (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the possibilities of the media for representing gender in the Latin American context. Focuses on theoretical debates that construct and inform relations between the concepts of gender and performance. Considers the ways gendered bodies have been represented in performance. A broad defi- nition of performance is applicable, and texts cover photographs, films, dance, performance art, drama, and current events. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

GSST 189 Gender, Technology, and the Body (4) Lecture, 3 hours; individual study, 3 hours. Prerequi- site(s): one of the following courses: GSST 001, GSST 001H, GSST 001S. Cross-lists with MCS 127. Examines how technological interventions that alter the body, such as cosmetic, sex-reassignment,
and weight loss surgeries; reproductive, contraceptive, and medical technologies; anti-depressants; sex toys; and body piercing. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**GSST 190 Special Studies (1-4)** Individual study, 3-12 hours. Prerequisite(s): upper-division standing or consent of instructor. Independent study and research by qualified undergraduate students. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**GSST 191A Seminar in Gender and Sexuality Studies: Feminist Epistemologies (4)** Seminar, 3 hours; extra reading, 2 hours; outside research, 1 hour. Prerequisite(s): GSST 100; consent of instructor. Explores what constitutes knowledge in feminist research as well as knowledge production as a process. Examines the epistemological questions that feminist scholars and activists debate. Subject matter represents interdisciplinary feminist approaches. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**GSST 191B Seminar in Gender and Sexuality Studies: Feminist Research Methods (4)** Seminar, 3 hours; extra reading, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): GSST 100; consent of instructor. Explores the development and definitions of feminist research methodologies. Analyzes debates within quantitative and qualitative social science research methods from a feminist perspective. Investigates ethical dilemmas in feminist research. Considers how research and activism are joined. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**GSST 191C Seminar in Gender and Sexuality Studies: Research Practicum in Gender and Sustainability (4)** Seminar, 3 hours; practicum, 1 hour; outside research, 1.5 hours; activity .5 hours. Prerequisite(s): GSST 191A, or consent of instructor. Provides interdisciplinary theoretical and practical experience in framing, developing, and implementing projects pertaining to sustainability, gender, and sexuality. Investigates how gender and sexuality shape and are shaped by local, national, and transnational approaches to such issues as climate change, food and water security, species diversity, and renewable resources. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**GSST 195 Senior Thesis (4)** Thesis, 12 hours. Prerequisite(s): GSST 100; senior standing; consent of instructor. Thesis composition under the guidance of a faculty member. Course is repeatable to a maximum of 8 units. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**GSST 198-I Individual Internship in Gender & Sexuality Studies (1-12)** Seminar, 1 hour; written work, 1 hour; internship, 2-32 hours. Prerequisite(s): upper-division standing; consent of instructor. Examines gender issues in gender/sexuality advocacy organizations. Addresses methods of support for, outreach by, and practices of gender advocacy workplaces. Includes supervised experience in community settings such as a women’s advocacy organization, a sexuality advocacy organization, or a gender-oriented organization. Course is repeatable to a maximum of 16 units. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**Graduate Courses**

**GSST 290 Directed Studies (1-6)** Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and department chair. Addresses special curricular problems. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

**GSST 292 Concurrent Analytical Studies in Gender and Sexuality Studies (1-3)** Outside research, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Taken concurrently with a 100-series course. Focuses on research, criticism, and written work. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

**Professional Course**

**GSST 302 Teaching Practicum (2-4)** Seminar, 2 hours; outside research, 1 hour; practicum, 1-2 hours; extra reading, 2-3 hours. Prerequisite(s): appointment as a teaching assistant in the Department of Gender and Sexuality Studies. Supervised training for teaching in lower- and upper-division Gender and Sexuality Studies courses. Considers feminist pedagogy including gender and dynamics in the classroom; comparative and historical approaches to teaching about gender and sexuality; techniques for discussing sensitive topics; providing resource referrals for students facing gender or sexuality issues; preparation; grading written work; and student relations. Graded Satisfactory (S) or No Credit (NC).

**Genetics, Genomics, and Bioinformatics**

Subject abbreviation: GEN

**College of Natural and Agricultural Sciences**

Hailing Jin, Director
Program Office, 1140 Batchelor Hall
(800) 735-0717 or (951) 827-7378
ggb.ucr.edu

**Professors**

- Peter W. Atkinson, Ph.D. (Entomology)
- Julia N. Ballereau, Ph.D. (Botany and Plant Sciences)
- Katherine A. Borkovich, Ph.D. (Plant Pathology)
- James Borneman, Ph.D. (Plant Pathology)
- Xuerui Chen, Ph.D. (Botany and Plant Sciences)
- Timothy J. Close, Ph.D. (Botany and Plant Sciences)
- Donald A. Cooksey, Ph.D. (Plant Pathology)
- Shou-Wei Ding, Ph.D. (Plant Pathology)
- David A. Eastmond, Ph.D. (Cell Biology and Neuroscience)
- Norman C. Elstran, Ph.D. (Botany and Plant Sciences)
- Brian A. Federici, Ph.D. (Entomology)
- Theodore Garland, Ph.D. (Biology)
- Sarjeet S. Gill, Ph.D. (Cell Biology and Neuroscience)
- Cheryl Hayashi, Ph.D. (Biology)
- John M. Heraty, Ph.D. (Entomology)
- Jodie S. Holt, Ph.D. (Botany and Plant Sciences)
- Anthony H. C. Huang, Ph.D. (Botany and Plant Sciences)
- Bradley C. Hyman, Ph.D. (Biology)
- Tao Jiang, Ph.D. (President’s Chair (Computer Science))
- Hailing Jin, Ph.D. (Plant Pathology)
- Howard S. Judelson, Ph.D. (Plant Pathology)
- Isogou Kaloshian, Ph.D. (Nematology)
- Paul B. Larsen, Ph.D. (Biochemistry)
- Bai-Lian "Larry" Li, Ph.D. (Botany and Plant Sciences)
- Xuan Liu, Ph.D. (Biochemistry)
- Stefano Lonardi, Ph.D. (Computer Science and Engineering)
- Winfred Ma, Ph.D. (Plant Pathology)
- Morris F. Maduro, Ph.D. (Biology)
- Manuela Martins-Green, Ph.D. (Cell Biology and Neuroscience)
- Dmitri A. Maslov, Ph.D. (Biology)
- Leonard P. Nunney, Ph.D. (Biology)
- Alexander S. Raikher, Ph.D. (Entomology)
- A.L.N. Rao, Ph.D. (Plant Pathology)
- David Reznick, Ph.D. (Biology)
- Mikel L. Rose, Ph.D. (Botany and Plant Sciences)
- Neal L. Schiller, Ph.D. (School of Medicine)
- Frances M. Sladek, Ph.D. (Cell Biology and Neuroscience)
- Stephen R. Spindler, Ph.D. (Biochemistry)
- Linda L. Walling, Ph.D. (Botany and Plant Sciences)
- Susan R. Wessler, Ph.D., Distinguished Professor of Genetics (Botany and Plant Sciences)
- Shizhong Xu, Ph.D. (Botany and Plant Sciences)
- Zhenbiao Yang, Ph.D. (Botany and Plant Sciences)
- Raphael Zidovetsky, Ph.D. (Cell Biology and Neuroscience)

**Associate Professors**

- Jeffrey B. Bachant, Ph.D. (Cell Biology and Neuroscience)
- Chia-en Angelina Chang, Ph.D. (Chemistry)
- Xingping Cui, Ph.D. (Statistics)
- Sean Cutler, Ph.D. (Botany and Plant Sciences)
- Paul Deley, Ph.D. (Nematology)
- Thomas Eulgem, Ph.D. (Botany and Plant Sciences)
- Thomas Girke, Ph.D. (Botany and Plant Sciences)
- Venugopala R. Gonehal, Ph.D. (Botany and Plant Sciences)
- Karine G. Le Roch, Ph.D. (Cell Biology and Neuroscience)
- Ernest Martinez, Ph.D. (Biochemistry)
- David Nelson, Ph.D. (Botany and Plant Sciences)
- James Ng, Ph.D. (Plant Pathology)
- Constance I. Nugent, Ph.D. (Cell Biology and Neuroscience)
- Anandansankar Ray, Ph.D. (Entomology)
- Caroline Roper, Ph.D. (Plant Biology and Microbiology)
- Joel Sachs, Ph.D., (Biology)
- Patricia S. Springer, Ph.D. (Botany and Plant Sciences)
- Jason Stajich, Ph.D. (Plant Biology)

**Assistant Professors**

- Omor Akbari, Ph.D. (Entomology)
- Emma Aronson, Ph.D. (Plant Pathology and Microbiology)
- Holly Bick, Ph.D. (Nematology)
- Gregor Blaha, Ph.D. (Biochemistry)
- Alan Breiford, Ph.D. (Biology)
- Meng Chen, Ph.D. (Botany and Plant Sciences)
- Anupama Dahanukar, Ph.D. (Entomology)
- Adrian Dillman, Ph.D. (Nematology)
- Wefeng Gu, Ph.D. (Cell Biology and Neuroscience)
- Rong Hai, Ph.D. (Plant Pathology and Microbiology)
- Ansel Hsiao, Ph.D. (Plant Biology and Microbiology)
- Arthur Jia, Ph.D. (Botany and Plant Sciences)
- Ted Karginov, Ph.D. (Cell Biology and Neuroscience)
- Daniel Koenig, Ph.D. (Botany and Plant Sciences)
- Amy Litt, Ph.D. (Botany and Plant Sciences)
- Renyi Liu, Ph.D., (Botany and Plant Sciences)
- Julia Lyubovitsky, Ph.D. (Bioengineering)
- Wenzhu Ma, Ph.D. (Statistics)
- Patricia Monosalva, Ph.D. (Plant Biology and Microbiology)
- Dawn H. Nagel, Ph.D. (Botany and Plant Sciences)
- Meera G. Nair, Ph.D. (School of Medicine)
- Sean O’Leary, Ph.D. (Biochemistry)
- Jefferson Perry, Ph.D. (Biochemistry)
- Carolyn G. Rasmussen, Ph.D. (Plant Biology)
- Martin M. Riccomagno, Ph.D. (Cell Biology and Neuroscience)
- Jaime Van Norman, Ph.D. (Plant Biology)
- Bradley J. White, Ph.D. (Entomology)
- Naoki Yamanaka, Ph.D. (Entomology)
- Sika Zheng, Ph.D. (Biomedical Sciences)

**Graduate Program**
The Genetics, Genomics, and Bioinformatics Graduate Program (GGB) administers a program leading to the Ph.D. in Genetics, Genomics, and Bioinformatics. GGB is an interdepartmental program that includes faculty from the departments of Biochemistry, Biology, Botany and Plant Sciences, Cell Biology and Neurosciences, Computer Science and Engineering, Entomology, Environmental Sciences, Nematology, Plant Pathology and Microbiology, and Statistics, as well as the Division of Biomedical Sciences.

The program is structured to allow maximum flexibility in the design of an individual student course program and research goals. A primary objective is to allow students to develop a capability in research as rapidly as possible, consistent with the student’s initial preparation.

Students are expected to meet all general requirements of the Graduate Division as printed in the Graduate Studies section of this catalog.

**Admission** Submission of GRE scores (verbal, quantitative and analytical) is mandatory for admission. Applicants with any B.A. or B.S. degree and an adequate background in the biological and/or computational sciences will be considered. The specific entry requirements include courses in genetics, biology, chemistry, calculus, computer science, and statistics. Please refer to the Program Guidelines for details. GGB evaluates applications on a continual basis from October to May, however, it normally considers applications for teaching and research assistantships at the same time as fellowships; therefore, students are strongly encouraged to complete their applications for admission and support as early as possible. Normally, fellowships are awarded in January, for students entering the following fall quarter.

**Doctoral Degree** The program offers the Ph.D. degree in Genetics, Genomics, and Bioinformatics.

**Course Work** The course curriculum consists of three core classes and one or more elective classes. The core curriculum is composed of one genetics, one genomics and one bioinformatics course, while one or more elective classes can be chosen from an area of a student’s specialization.

**Core Classes** (breadth requirements) Students will take one course from each of the following three areas (A-C).

(A) Molecular Genetics
   GEN 203 - Advanced Genetic Analysis of Model Organisms (4) Lecture, 2 hours; discussion, 2 hours. Prerequisite(s): BIOL 102 or equivalent; graduate standing or consent of instructor. Focuses on the principles of genetic analysis in prokaryotic and eukaryotic microbes. Areas covered include two-component signal transduction pathways that regulate growth and development in plants and prokaryotic and eukaryotic microbes. Topics include small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPS 205, CMDB 205, MCB 205, and PLPA 205. Borkovich

(B) Genomics
   GEN 241 (former GEN240A) - Advances in Genomics

(C) Bioinformatics
   GEN 242 (former GEN240B) - Data Analysis in Genome Biology

**Elective Classes** (areas of specialization) Students must take one or more classes from the following areas. Students can also choose elective courses other than the ones listed below after approval by their guidance committee and graduate advisor.

**Genetics**
- CMDB 201 - Molecular Biology
- GEN 206 - Gene Silencing
- CMDB/GEN/BCH 209 – Ribonucleic Acid (RNA) Biology
- BPSC/BIOI 148 - Quantitative Genetics
- BPSC/BCH 231 - Plant Genome
- BIOL/MCBL 221 - Microbial Genetics
- EEOB 214 - Evolutionary Genetics
- ENTX 204 - Genome Maintenance and Stability
- EEOB 216 - Theory of Evolution

**Computational Biology and Statistics**
- BPSC 234 – Statistical Genomics
- CS 141 - Intermediate Data Structures and Algorithms
- CS 100: Software Construction
- CS 234: Computational Methods for Biomolecular Data
- CS 238: Algorithmic Techniques in Computational Biology
- GEN 220 - Computational Analysis of High Throughput Biological Data
- STAT 110 - Biostatistical Methods in Life Sciences
- STAT 155 – Probability and Statistics for Science and Engineering
- STAT 201A/B/C Theory of Probability and Statistics (replaces 160A/B)
- STAT 201A/B/C – Elements of Probability and Statistical Theory
- STAT 160B - Elements of Probability and Statistical Theory
- STAT 161 - Introduction to Probability Models

**Seminars**

The GEN 261 seminar (Seminar in Genetics, Genomics, and Bioinformatics) must be taken every quarter. It is strongly recommended that students enroll in an invited seminar series during the other quarters in residence as well.

**Supplemental Courses**

Students may wish to take additional courses to supplement their graduate training. These courses will be tailored to the specific student’s needs and decided upon in consultation with their major professors.

Classes that emphasize genetics, genomics, bioinformatics and other related areas are given in the List of Potential Courses in the GGB Graduate Student Handbook.

Students should consider some training in the ethics of use of genetically modified organisms, impact of patents on application of bioinformatics/genomics data, and/or use of databases with bioinformatics/genomics information in a clinical setting.

**Additional Units taken to maintain 12-unit course load**

Graduate students will register for 12 units per quarter to maintain full-time status. These units will include any lecture and seminar courses taken for the quarter. Typically students will also register for Directed Research (GEN 297) prior to advancement to candidacy or Research for Dissertation (GEN 299) after passing the Qualifying Exam.

The Ph.D. is a research degree, and, accordingly, the goal of the program is to train students in the theoretical and experimental foundations of modern genetics. Students are strongly encouraged to participate in lab rotations, select a major professor and begin research work early in their training (during the first year of residence).

**Written and Oral Qualifying Examinations**

Students are advanced to candidacy following successful completion of a written preliminary examination and an oral qualifying examination.

**Dissertation and Final Oral Examination**

Successful completion of a final oral dissertation defense is also required.

**Foreign Language Requirement** None

**Teaching Requirement** Each student must have at least one quarter of teaching experience. This requirement may be satisfied by serving as a teaching assistant in a genetics-related course.

**Normative Time to Degree** 15 quarters

**Graduate Courses**

**GEN 203 Advanced Genetic Analysis in Model Organisms (4)** Lecture, 2 hours; discussion, 2 hours. Prerequisite(s): BIOL 102 or equivalent; graduate standing or consent of instructor. Focuses on the principles of genetic analysis in prokaryotic and eukaryotic microbes. Topics include small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPS 205, CMDB 205, MCB 205, and PLPA 205. Borkovich

**GEN 206 Gene Silencing (3)** Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): graduate standing in the biological sciences, BIOL 107A or BIOL 113 or BIOL 114 or CBNS 101; or consent of instructor. Advanced topics in signal transduction pathways that regulate growth and development in plants and prokaryotic and eukaryotic microbes. Topics include small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPS 205, CMDB 205, MCB 205, and PLPA 205. Ding, Zhu

**GEN 209 Ribonucleic Acid (RNA) Biology (3)** Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 107A or CBNS 101 or equivalent; or consent of instructor. Focuses on the principles of genetic analysis in prokaryotic and eukaryotic microbes. Topics include small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPS 205, CMDB 205, and MCB 205. Borkovich

**GEN 220 Computational Analysis of High Throughput Biological Data (3)** Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): graduate students in a life sciences division or consent of instructor. Focuses on the principles of genetic analysis in prokaryotic and eukaryotic microbes. Topics include small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205 and CMDB 209.
program or consent of the instructors; previous coursework in genetics/genomics, molecular biology, or cell biology. Enables those with no computer science background to handle high-throughput biological data. Covers the Perl programming language; program design, implementation, and testing; relational databases; basic data structures and algorithms; and BioPerl. Includes skill building through analysis of real high-throughput biological data. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Liu, Stajich

**GEN 230 Molecular Plant-Microbial Interactions (3)**
Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BCH 100; BIOL 210; PLPA 120, or equivalents. A study of the physiology of host-pathogen interactions with emphasis on the metabolism of diseased plants, nature of pathogenicity, and defense mechanisms in plants. Cross-listed with BPS 230, CMDB 230, and PLPA 230. Eulgem, Jin, Kaloshian

**GEN 234 Statistical Genomics (4)**
Lecture, 4 hours; discussion, 1 hour. Prerequisite(s): BIOL 107A, BIOL 102. Strategies for genomic and bioinformatic studies with focus on the tools of the trade. Topics include the sequencing, assembly, and annotation of genomes, transcriptome analysis, similarity searching, pattern recognition, genome evolution, and phylogenetic analysis. Discusses papers from bacterial, fungal, plant, and metazoan systems. Judelson

**GEN 242 Data Analysis in Genome Biology (4)**
Lecture, 4 hours. Prerequisite(s): GEN 241. Introduction to algorithms and data analysis programming for high-throughput sequencing, phylogenetics, and network biology. Practices contain programming homeworks and challenge course projects using R language. No prior programming knowledge required. Girke

**GEN 261 Seminar in Genetics, Genomics, and Bioinformatics (1)**
Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports by visiting scholars, faculty, and students on current research topics in Genetics, Genomics, and Bioinformatics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BIOL 261, BPSC 261, ENT 261, ENTM 261, and PLPA 261.

**GEN 270 Introduction to Video Bioinformatics (3)**
Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to video bioinformatics. Includes microscopic techniques, live imaging, video computing, structure and function of cells, spatiotemporal dynamics, multi-scale analysis, disk and data storage, indexing and queries, image and video databases, and medical imaging and analysis techniques. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 270.

**GEN 271 Video Bioinformatics: Multi-scale Analysis of Biological Systems (2)**
Lecture, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the significant range for both the time and spatial scales of biological systems. Includes video imaging techniques, as well as how these spatial and time scales are analyzed for a better understanding of biological function. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BIEN 271 and EE 271.

**GEN 272 Introduction to Imaging Bioinstrumentation and Analysis (2)**
Lecture, 1 hour; laboratory, 3 hours; extra reading, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the instrumentation used to collect video images of cells and the methods used to analyze video data. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 272.

**GEN 273 Live Imaging and Analysis of Cellular and Molecular Behaviors (2)**
Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): EE 272 or consent of instructor. An introduction to video imaging methodologies used to capture the cellular and molecular dynamics and interactions in living cells. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 273.

**GEN 274 Introduction to Medical Imaging and Analysis (2)**
Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to medical imaging. Includes associated computational techniques for x-ray imaging, computed tomography, magnetic resonance imaging, proton emission tomography, ultrasound, radiotherapy, and molecular imaging. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 274.

**GEN 290 Directed Studies (1-6)**
Outside research, 3-18 hours. Prerequisite(s): graduate standing and consent of instructor and graduate advisor. Faculty-directed individual study on specially selected topics in genetics, genomics, and bioinformatics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**GEN 292 Concurrent Studies in Genetics, Genomics, and Bioinformatics (1-4)**
F, W. Outside research, 3-12 hours. Prerequisite(s): graduate standing, consent of instructor. Explores one or more graduate projects based on content related to an appropriate undergraduate course. Includes faculty guidance and evaluation. Taken concurrently with the undergraduate course. Course is repeatable.

**GEN 297 Directed Research (1-6)**
Outside research, 3-18 hours. Prerequisite(s): graduate standing. Direct research in genetics, genomics, and bioinformatics. Performed prior to advancement to candidacy in preparation for dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**GEN 299 Research for the Dissertation (1-12)**
Outside research. 3-36 hours. Prerequisite(s): graduate standing and consent of instructor. Explores one or more graduate projects based on content related to an appropriate undergraduate course. Includes faculty guidance and evaluation. Taken concurrently with the undergraduate course. Course is repeatable.

**Global Studies**
Subject abbreviation: GBST

**College of Humanities, Arts, and Social Sciences**
Bronwyn Leebaw, Ph.D., Director
Committee Office, 2218 Watkins Bronwyn.leebaw@ucr.edu globalstudies.ucr.edu

**Committee in Charge**
Muhammad Ali, Ph.D. (Religious Studies)
Jody Benjamin, Ph.D. (History)
Julianna Emmons Aliason, Ph.D. (Political Science)
Christopher Chase-Dunn, Ph.D. (Sociology)
Ariel Dinari, Ph.D. (Public Policy)
Farah Godrej, Ph.D. (Political Science)
Marian Bevel Lam, Ph.D. (Comparative Literature and Foreign Languages)
Bronwyn Leebaw, Ph.D. (Political Science)
Perry Link, Ph.D. (Comparative Literature and Foreign Languages)
Christina Schwenkel, Ph.D. (Anthropology)
Fariba Zarineneb, Ph.D. (History)

**Majors**
Global Studies is a broad-based study of processes and problems that transcend national boundaries, preparing students to become global thinkers and problem solvers for the twenty-first century. Global Studies crosses disciplines, drawing on the fine arts, social sciences, humanities, and sciences. The Global Studies major includes the study of global historical processes that have made the world more interconnected, as well as contemporary issues of global politics, violence, security, global migrations, travel, social movements, global literature, arts and media, the global economic system of trade, finance and labor, global health and disease, and environmental change and sustainability. Students are grounded in two disciplines, as well as a single geographic area of study and a foreign language.

Global Studies is a way to give powerful support to re-conceptualize the meaning of place in the contemporary world and to retool faculty and students to become global thinkers. It focuses on transnational processes rather than relations among nations.

**University Requirements**
See Undergraduate Studies section.

**College Requirements**
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

**Major Requirements**
The major requirements for the B.A. degree in Global Studies are as follows:

1. Lower-division requirements (7 courses [at least 24 units] plus foreign language):
   a) GBST 001, GBST 002
   b) Two introductory courses (courses numbered 001–099) in each of two different disciplines.
   c) Proficiency in a foreign language at the sixth-quarter level
   d) Two courses in world history chosen from HIST 010 or HIST 010W, HIST 015, HIST 020, or HIST 020W
2. Upper-division requirements (45 units)
   Students must select eight courses with significant global content in at least two different disciplines and two courses in a single area, and at least one 100-level GBST course.

1. Lower-division requirements (22 units)
   a) GBST 001, GBST 002
   b) Proficiency of a foreign language at the second-year level
   c) One additional course in world history, taken in consecutive sequence with the first world history course (can be used to satisfy college breadth)

2. Upper-division requirements (7 courses, 45 units)
   a) Seven Upper-division requirements (45 units). Students must select seven (7) courses with significant global content in at least two different disciplines and two (2) courses in a geographic area. Students may focus on the humanities or social science, but no more than seven (7) courses may be exclusively in either humanities or social science.

3. Capstone requirement (4 units)
   Students are required to complete their major with a capstone experience. The capstone must examine at least one global issue. Most students will satisfy this requirement by taking the Senior Thesis Seminar (GBST 193). Students may also conduct an individual project with the approval of the chair of Global Studies.

Minor

1. Lower-division requirements (22 units)
   a) GBST 001, GBST 002
   b) Proficiency of a foreign language at the second-year level
   c) One additional course in world history, taken in consecutive sequence with the first world history course (can be used to satisfy college breadth)

2. Upper-division requirements (7 courses, 45 units)
   a) Seven Upper-division requirements (45 units). Students must select seven (7) courses with significant global content in at least two different disciplines and two (2) courses in a geographic area. Students may focus on the humanities or social science, but no more than seven (7) courses may be exclusively in either humanities or social science.

Minor

1. Lower-division requirements (22 units)
   a) GBST 001, GBST 002
   b) Proficiency of a foreign language at the second-year level
   c) One additional course in world history, taken in consecutive sequence with the first world history course (can be used to satisfy college breadth)

2. Upper-division requirements (7 courses, 45 units)
   a) Seven Upper-division requirements (45 units). Students must select seven (7) courses with significant global content in at least two different disciplines and two (2) courses in a geographic area. Students may focus on the humanities or social science, but no more than seven (7) courses may be exclusively in either humanities or social science.
GBST 195C Senior Thesis (4) Thesis, 12 hours. Preparation of a substantial paper based on original research. The student works independently with a faculty member. May be undertaken as a one-, two-, or three-quarter course (GBST 195A, GBST 195B, GBST 195C). Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned.

GBST 195B Individual Internship in Global Studies (1-12) Internship, 2-24 hours; term paper, 1-12 hours. Prerequisite(s): consent of instructor. Internship in a public or quasi-public agency or business concern in global studies. Requires a summary paper. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

**Cooperating Faculty**
Freya Schiwi, Ph.D. (Media & Culture Studies)

**Lecturers**
Mari Carmen Ballester, M.A.
Liliana Guevara, M.A.
Martín Navarro, M.A.
Mirta Vargas, Ph.D.

Foreign Language Placement Examination
A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes and placementtest.ucr.edu for date and time. Transfer students who have taken a college-level language course cannot take the placement examination and should consult with their advisors. No college-level credit may be duplicated. See college placement examination policy.

Major
The Department of Hispanic Studies offers a B.A. degree in Spanish. A student may major in Spanish by specializing in one of three undergraduate areas.

The Literature Option is intended for students who are primarily interested in a liberal arts education in general and literary studies in Spanish specifically. Students who choose the Literature Option may pursue high school teaching, graduate study in Latin American Spanish language or Hispanic linguistics. Students follow the Literature Option course of study and classes of general education requirements in the Spanish major.

The Linguistics Option is designed for students who are especially interested in the Spanish language or Hispanic linguistics. Students follow the Linguistics Option course of study and classes of general education requirements in the Spanish major.

The Cultural Studies Option is intended for students with an interest in the intersections of society, power, and culture. It offers a unique opportunity to acquire critical interdisciplinary skills in cultural analysis from a Hispanic perspective. It explores numerous forms of Spanish, Latin American and transatlantic cultural practices including film, television, music, visual arts, performance, literature, testimonials, essays, and cultural critique. The Cultural Studies Option is relevant for students considering careers in high school teaching, media work, advertising, creative arts, multimedia projects, international studies, and graduate studies.

All of the above options can be considered with double majors, particularly majors such as Anthropology, Classics, English, History, Latin American Studies, Linguistics, or Media and Cultural Studies.
Upper-division requirements (11 courses at least 44 units):
1. SPN 101A and SPN 101B or SPN 109A and SPN 109B
2. SPN 110 (prerequisite for all upper-division literature courses)
3. SPN 180A or SPN 180B
4. SPN 181A or SPN 181B
5. Five upper-division elective courses in Spanish

Minor
Requirements for the minor in Spanish are as follows (24 units):
1. SPN 101A and SPN 101B or SPN 109A and SPN 109B
2. SPN 110
3. Three upper-division courses in Spanish

Graduate Program
The Department of Hispanic Studies offers the M.A. and Ph.D. degrees in Spanish. The graduate program in Spanish is designed to prepare scholars for teaching and research in Spanish and Latin American literature and cultural studies. It is organized primarily for students seeking the Ph.D. degree, although the M.A. degree is awarded in the course of a small number of students may fulfill their 48-unit requirement by taking courses approved by the graduate advisor in Linguistics or Comparative Literature.

M.A. Examination
Near the end of this two-year program, students take a four-hour written examination, followed by a one-hour oral examination administered one or two weeks after the written examination. This M.A. examination (written and oral) is based on the texts on the M.A. reading list and course work. The M.A. reading list consists of approximately 60 major works of Spanish and Latin American literatures.

Foreign Language Requirement
Candidates must demonstrate a reading knowledge of another foreign language by satisfactorily completing a graduate course in Brazilian literature offered in the Department of Hispanic Studies, an upper-division literature course in the target language or a departmental foreign language exam.

Doctoral Degree
The Department of Hispanic Studies offers the Ph.D. in Spanish to train students for academic positions as scholars and teachers.

Admission
Students admitted with the M.A. from other institutions must take an examina-
tion at the end of the first year for diagnostic purposes. Candidates who hold the M.A. from UCR must be recommended by the faculty to continue for the Ph.D.

Course Work There is a minimum course requirement of 24 units beyond the M.A. In practice, doctoral students usually find that more than the minimum is advisable for doctoral training. SPN 220 and SPN 301 are required professional development courses.

Long Paper As part of their preparation in their major area of specialization, students present a paper of 40 to 50 pages in length, representing scholarly research and analysis in their chosen field of study. The long paper forms the basis of the doctoral dissertation.

Written and Oral Qualifying Examinations Students choose two areas of concentration as examination areas. One area is the field of major emphasis; a second area or topic is selected in consultation with the chair of the guidance committee. The area of specialization is defined by the long paper and dissertation topic. The doctoral examination consists of a five-hour written examination (three hours in the major field and two hours in the secondary field or topic), followed by an oral examination of approximately two hours. The oral examination deals with the major and secondary examinations and the long paper. The written and oral examinations are conducted by the qualifying committee nominated by the graduate advisor in consultation with the student and appointed by the graduate dean. Upon the successful completion of the written and oral qualifying examinations, the student is recommended to the graduate dean for advancement to candidacy.

Language Requirements In addition to Spanish and English, the candidate must demonstrate a reading knowledge of one other language. Students specializing in Latin American literature must select Portuguese as this language. This requirement may be fulfilled by departmental examination or by satisfactory completion of one Brazilian literature class.

Dissertation and Final Oral Examination Students prepare a dissertation presented as prescribed by the Graduate Division under the direction of the candidate’s dissertation committee. After completion of the dissertation, the candidate is examined by the dissertation committee. This examination normally takes the form of a public presentation by the candidate followed by questions from the committee.

Normative Time to Degree 9 quarters (15 quarters for students without an M.A.)

### Spanish

#### Lower-Division Courses

**SPN 001 Elementary Spanish (4)** Lecture, 4 hours. Prerequisite(s): Student is required to take Spanish placement examination. An introduction to the sound system and grammar of Spanish, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Spanish insofar as possible. Audio-lingual and computer-based learning materials are available in the language laboratory.

**SPN 002 Elementary Spanish (4)** Lecture, 4 hours. Prerequisite(s): SPN 001 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Spanish, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Spanish insofar as possible. Audio-lingual and computer-based learning materials are available in the language laboratory.

**SPN 003 Elementary Spanish (4)** Lecture, 4 hours. Prerequisite(s): SPN 002 with a grade of “C-” or better or equivalent. An introduction to the sound system and grammar of Spanish, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Spanish insofar as possible. Audio-lingual and computer-based learning materials are available in the language laboratory.

**SPN 004 Intermediate Spanish (4)** Lecture, 4 hours. Prerequisite(s): SPN 003 with a grade of “C-” or better or equivalent. A comprehensive review of the basic grammatical structures of Spanish, vocabulary building, development of conversation and composition skills, and readings of literary and social interest. Classes conducted in Spanish.

**SPN 005 Intermediate Spanish (4)** Lecture, 4 hours. Prerequisite(s): SPN 004 or equivalent. A comprehensive review of the basic grammatical structures of Spanish, vocabulary building, development of conversation and composition skills, and readings of literary and social interest. Classes conducted in Spanish.

**SPN 006 Intermediate Spanish (4)** Lecture, 4 hours. Prerequisite(s): SPN 005 or equivalent. A comprehensive review of the basic grammatical structures of Spanish, vocabulary building, development of conversation and composition skills, and readings of literary and social interest. Classes conducted in Spanish.

**SPN 012 Myths and Cultures of Latin America, the Caribbean, and Spain: Transatlantic Currents (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Examines cultural themes from a transatlantic perspective, through study of literature, film, and visual arts. Topics include chronicles of the conquest, cultures of the baroque, religious traditions and conflicts, the incorporation of popular culture into the literary tradition, contemporary writers, and cinema. Course is conducted in English.

**SPN 046 Introduction to Latin American Film (5)** Lecture, 3 hours; screening, 3 hours; discussion, 1 hour. Provides an historical overview of Latin American film production. Introduces students to film industries, revolutionary cinema, the role of television, and recent international co-productions. Cross-listed with MCS 046.

**SPN 090 Special Studies (1-3)** To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems. Course is repeatable.

#### Upper-Division Courses

**SPN 101A Advanced Oral and Written Composition (4)** Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): SPN 005. Designed for nonnative speakers to practice speaking and writing in Spanish and to review basic grammar. Emphasis is on composition, editing, and conversation practice. Class is conducted in Spanish. Native speakers without knowledge of college-level grammar should take SPN 109A. Credit is awarded for only one of SPN 101A or SPN 109A.

**SPN 101B Advanced Oral and Written Composition (4)** Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): SPN 101A. Designed for nonnative speakers to practice speaking and writing in Spanish and to review basic grammar.

**SPN 102A Introduction to Spanish Culture (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 101B or SPN 109B. Introduction to Spanish culture and civilization from pre-Columbian times to the present. Emphasis is on the period from postcolonial independence to the present. Readings cover history, art, architecture, literature, and other aspects of culture and civilization. Provides background for courses on the literature of Latin America. Course is taught in Spanish.

**SPN 102B Introduction to Latin American Culture (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 101B or SPN 109B. Introduction to Latin American culture and civilization from pre-Columbian times to the present. Emphasis is on the period from postcolonial independence to the present. Readings cover history, art, architecture, literature, and other aspects of culture and civilization. Provides background for courses on the literature of Latin America. Course is taught in Spanish.

**SPN 103 Spanish Culture and Civilization in Spain (4)** Lecture, 60 hours per quarter; discussion, 20 hours per quarter. Prerequisite(s): SPN 101B or SPN 109B; consent of instructor. Provides intensive study of Spain within its European and New-World contexts. Emphasizes expansion and retraction, as well as the roles of religion and authority. Course taught in Spain in Spanish. Offered in summer only.

**SPN 105 The Phonology of the Spanish Language (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 101A and SPN 101B or SPN 109A and SPN 109B. Descriptive and normative analysis of the phonological system of the Spanish language, with attention given to the phonetic characteristics of contemporary peninsular and Hispano-American Spanish.

**SPN 106 Structure of the Spanish Language (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 105. An introduction to descriptive and applied techniques in the morphosyntax of the Spanish language as found in Spain and Spanish America.

**SPN 107 Spanish in the United States (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 106. A sociolinguistic study of the Spanish language in the United States.

**SPN 109A Spanish for the Native Speaker (4)** Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): a sufficiently high test score on the Spanish placement examination, as determined by the Hispanic Studies faculty. Designed for the native speaker with little or no experience with Spanish grammar and composition. Emphasis is on basic grammar, written accents, orthography, and composition. The class is conducted in Spanish. Credit is awarded for only one of SPN 109A or SPN 109B.

**SPN 109B Spanish for the Native Speaker (4)** Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): SPN 109A. Designed for the native speaker with little or no experience with Spanish grammar and composition. Emphasis is on basic grammar, written accents, orthography, and composition. The class is conducted in Spanish. Credit is awarded for only one of SPN 109B or SPN 109B.

**SPN 110 Introduction to Literary Criticism and Analysis (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 101A and SPN 101B or SPN 109A and SPN 109B. An introduction to the methods and techniques of literary analysis. Practice in textual explication, with regular writing assignments.

**SPN 111 (E-Z) Hispanic Literature in Translation (4)** Lecture, 3 hours; extra reading, 3 hours. Prereq-

SPN 155 The Generation of 1898 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): SPN 110. A study of the major writers constituting the generation emerging from the national conflict produced in Spain as a consequence of the defeat in the Spanish American War. Readings and discussion of essays, fiction, and poetry of writers such as Unamuno, Baroja, Valle-Inclán, Antonio Machado, Azorin, and Benavente.


SPN 165 Spanish and Latin American Cultural Studies: Violence and Representation (4) Lecture, 3 hours; screening, 1 hour, extra reading, 2 hours. Prerequisite(s): SPN 110. Focus on cultural studies approach to Latin American and Spanish texts and theorists. Covers the Southern Cone dictatorships, post-Franco Spain, and emerging urban imaginations. Involves readings and discussions of cultural criticism, films, urban chronicles, and literary texts.

SPN 170 (E-Z) Studies in Nineteenth- and Twentieth-Century Latin American Literature (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SPN 110. Study of Latin American literature as it articulates with contemporary history and current events. Cross-listed with MCS 171.

SPN 172 The Testimonio and Cultural History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 110. Explores the relation between the testimonial genre and the emergence of Latin American cultural production. Involves readings and discussions of a representative sample of testimonial literature and criticism.

SPN 179 Gender, Media, and Latin America (5) Lecture, 3 hours; screening, 3 hours; outside research, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Explores the way Latin Americans have thought of and represented women in fiction, film, poetry, and the press. Course is repeatable.

SPN 180A Survey of Spanish Literature, Middle Ages-1699 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): SPN 110. Survey of literary movements and trends and major writers of medieval and Golden Age Spanish literature. Covers writers such as Cervantes, Lope de Vega, Tirso de Molina, Quevedo, and Gongora.

SPN 180B Survey of Spanish Literature, 1700-Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 110. Survey of literary movements and trends and major writers of eighteenth-, nineteenth-, and twentieth-century Spanish literature. Readings in fiction, poetry, drama, and essay. Covers writers such as Moratón, Becquer, Galdós, Larra, Azorín, and García Lorca.

SPN 181A Survey of Spanish American Literature, Discovery to Modernismo (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 110. Survey of literary movements and trends and major Spanish American writers from the colonial period to <i>c</i>Modernismo. <i>c</i>Readings are in fiction, poetry, drama, and essay. Covers writers such as Sor Juana Inés de la Cruz, Echeverría, Sarmiento, and Martí.

SPN 181B Survey of Spanish American Literature, <i>c</i>Modernismo to the Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 110. Survey of literary movements and trends and major Spanish American writers from Modernismo to the present. Readings are in fiction, poetry, and essay. Covers writers such as Darío, Azuela, Vallejo, Huidobro, García Márquez, Fuentes, Paz, Buenaventura, and Elena Poniatowska.

SPN 185 Imagining the Nation: Film and Media in Latin America (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Study of the role of media and film in creating a national imaginary in Latin America. Focus is on one region or nation—such as the Andes, the Caribbean, Mexico, Argentina, or Chile—relating local history to the global context. Course is repeatable as topics change to a maximum of 8 units. Cross-listed with LNST 105 and MCS 185.

SPN 187 Latin American Science Fiction (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SPN 110. Focuses on intersections between literature and scientific discourse. Considers how popular notions of science inform the production and reading of the literary text. Topics may include the function of power in scientific discourse, the politics of alternative universes, and science and gender. Course is repeatable as content changes to a maximum of 8 units.

SPN 188 Interdisciplinary Studies: The Hispanic World (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): SPN 110. Includes reading, research, and discussion on particular topics related to Spain and Latin America that tend themselves to interdisciplinary analysis. Course is repeatable as topics change to a maximum of 8 units.

SPN 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): SPN 110; consent of Department Chair. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable.

SPN 192 Tutorial Activities (2) Activity, 6 hours. Prerequisite(s): SPN 110; senior standing; consent of Department Chair. Under faculty supervision, students conduct discussion sections of elementary Spanish courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

SPN 193 Senior Seminar in the Literatures and Cultures of the Hispanic World (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 110. Focus on one region or nation—such as the Andes, the Caribbean, Mexico, Argentina, or Chile—relating local history to the global context. Course is repeatable as topics change to a maximum of 8 units.

SPN 199H Senior Honors Research (1-5) Course is repeatable.

Graduate Courses

SPN 203 Problems in Spanish Linguistics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. An introduction to the historical and theoretical evolution of Spanish linguistics as a scholarly discipline. Major topics will include perennial
SPN 208 Linguistic Approaches to Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. Presentation and discussion of semantics, speech acts, and speech genres, and discourse analyses in the framework of contemporary linguistic studies. Topics of inquiry include speech act theory, fiction and nonfiction discourse, pragmatics, syntax, frames of reference, and narrative tenses. Other linguistic levels (i.e., phonology, morphology) are also discussed.

SPN 220 Criticism and Critical Documentation (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. Covers strategies of reading and analysis. Topics may include critical approaches such as formalism, new criticism, structuralism, deconstruction, and new historicism; psychoanalysis; gender studies; performance studies; and cultural studies. Also may include practice in Modern Language Association (MLA) documentation. Course is repeatable.

SPN 251 Seminar in the Literature of the Middle Ages and Early Renaissance (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. Intensive study of selected topics in Spanish literature through the fifteenth century. Topics may vary. May be repeated for credit.

SPN 257 Seminar in Hispanic Civilization (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Intensive study of special topics in Hispanic civilization. Topics vary. Course is repeatable to a maximum of 12 units.

SPN 258 (E-Z) Genres of Hispanic Literature (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing. Close reading, analysis, and discussion of the major Hispanic texts, plays, and poems. E. Hispanic Literature and the Art of Poetry; S. The Satric Tradition in Hispanic Letters.

SPN 261 (E-Z) Studies in Golden Age Literature (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. Intensive study of topics in Spanish literature of the sixteenth and seventeenth centuries. G. The Spanish Comedia; I. Spain and the Western Tradition.

SPN 262 Seminar in Don Quijote (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Critical and theoretical perspectives on Cervantes’ masterpiece; assumes prior close reading of the text. Emphasis on narratology and genre, pointing toward a deconstructive/reconstructive reading.

SPN 264 Seminar in Spanish Literature of the Nine- teenth Century (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. Study of a genre, movement, or outstanding author of this period. Topics may vary. May be repeated for credit.

SPN 269 (E-Z) Studies in Twentieth-Century Spanish Literature (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. Study of authors, movements, or genres from the Generation of ‘98 to the present. E. Spanish Literature of the Generation of ‘98; F. Spanish Poetry: The Avant-Garde and the Generation of ’27; P. Postwar Spanish Novel (1940 to Present); T. Theatre of the Postwar and Democratic Epoch (1940-2000). Course is repeatable to a maximum of 8 units.

SPN 270 (E-Z) Latin American Literature (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. Study of the main authors and schools in Latin American literature. F. Latin American Film; K. The Mexican Novel; O. The Modern Novel in Colombia; Q. The Postmodern Novel in Latin America (1968- Present); T. Latin American Theatre: Sixteenth through Twentieth Centuries; X. Twentieth-Century Spanish American Poetry; Y. The Latin American Avant-Garde. Segments are repeatable.

SPN 272 Seminar in the Literature of a Specific Latin American Country (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. In-depth study of the most important literary achievements of a single country such as Mexico, Argentina, Chile, or Peru, varying each time the course is offered. May be repeated for credit.

SPN 273A Literature and Culture of Colonial Latin America: The Colonial Period and Its Interpreters (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. A panoramic introduction to colonial literature from pre-Columbian times to the eighteenth century. Explores the major texts in their historical and literary contexts. Approaches specific passages from several theoretical perspectives. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SPN 273B Literature and Culture of Colonial Latin America: Spain and the New World (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Examines the interrelationship between key Golden Age and Spanish colonial texts and modern Latin American narrative and essay. Explores issues of literary genealogy, cultural identity, and the relationship of history. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SPN 273C Literature and Culture of Colonial Latin America: Foundational Narratives of Latin America (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Examines how narrative, history, and the formation of collective consciousness interweave in Latin America. Considers various periods and their respective mythologies, especially creating myths, with an eye towards teasing out the foundational archetypes and master narratives. Also addresses the purposes of such myths and archetypes. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SPN 275 Seminar in Literary Criticism (4) Seminar, 3 hours. Prerequisite(s): graduate standing.

SPN 277 Poetry and Translation (4) Workshop, 3 hours; extra reading, 1.5 hours; outside research, 1.5 hours. Prerequisite(s): graduate standing; reading proficiency in Spanish. Discusses the efficacy and difficulty of translating the Spanish language into English. Explores the works of twentieth- and twenty-first century major Spanish language poets. Provides a forum to render and compare translations. Cross-listed with CWPA 276.

SPN 278 Studies in Latin American Literature and Culture (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores a specific topic in Latin American literary and/or cultural studies. Topics vary. Course is repeatable as content changes.

SPN 279 Studies in Spanish Literature and Culture (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores a specific topic in Spanish literary and/or cultural studies. Topics vary. Course is repeatable as topics change.

SPN 290 Directed Studies (1-6) Prerequisite(s): graduate standing, Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SPN 291 Individual Studies in Coordinated Areas (1-6) Prerequisite(s): graduate standing. A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.A. and Ph.D. candidates. Does not count toward the unit requirement for the M.A. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SPN 292 Concurrent Analytical Studies (2) Outside research, 6 hours. Prerequisite(s): consent of instructor; concurrent enrollment in a SPN 100 course series. Completion of a graduate paper based on research related to the SPN 100 course series. Course is repeatable as topics change.

SPN 299 Research for Thesis or Dissertation (1-12) Prerequisite(s): graduate standing, Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

SPN 301 Teaching Spanish at the College Level (2) Seminar, 2 hours. Prerequisite(s): graduate standing. Theories of language and language acquisition which underlie modern methods of Spanish language teaching at the college level. Practical experience in grading, test construction, lesson planning, teaching techniques, effective aspects of teaching, and creativity in teaching. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SPN 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): SPN 301 or equivalent; graduate standing; employment as a teaching assistant or associate in. Supervised teaching in lower-division courses. Required of all teaching assistants in Spanish. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Portuguese

Lower-Division Course

PORT 90 Special Studies (1-3) Prerequisite(s): To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems. Course is repeatable.

Upper-Division Courses

PORT 101A Intensive Brazilian Portuguese for Speakers of Spanish (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SPN 101A or SPN 109A or equivalent. An introduction to Brazilian Portuguese for students knowing Spanish. Emphasizes comparing and contrasting grammatical constructions. Provides examples from Brazilian literature.

PORT 101B Intensive Brazilian Portuguese for Speakers of Spanish (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): PORT 101A or equivalent. Continuation of PORT 101A. Covers advanced language through conversation, composition, and readings.

Megenny

PORT 101C Intensive Brazilian Portuguese for Speakers of Spanish (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): PORT 101B or equivalent. Completes the study of structures of oral and written Portuguese, builds vocabulary, and hones the skills necessary to read Brazilian literature, discuss its content and importance, and write short essays explaining its nature.

PORT 162 (E-Z) Survey in Brazilian Fiction (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PORT 101B or consent of instructor. Reading and analysis of selected works of major Brazilian prose writers. Topics may vary each time course is offered. E. Jorge Amado and Machado de Assis; F. graciliano Ramos, Reog, Queiroz, Azevedo, Amado; G. Verissimo, Amado. Course to be taught in the original language.

PORT 190 Special Studies (1-5) variable hours. Prerequisite(s): consent of chair of the department. Course is repeatable.
Graduate Courses

PORT 201 Brazilian Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. A survey of Brazilian literature from the colonial period to present, including chronicles, poetry, the short story, and the novel. Selected works from the several historical literary periods are read and analyzed. All readings and lectures are done in Portuguese; class discussion and examinations may be done in Portuguese, Spanish, or English.

PORT 202 The Brazilian Novel (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing. Reading and discussion of selected Brazilian novels from the nineteenth and twentieth centuries, with emphasis on the most important authors (e.g., Joaquin Manuel de Macedo, Aluisio Azevedo, Machado de Assis). Reading and lectures are in Portuguese; class discussion is in Portuguese, Spanish, or English.

History

Subject abbreviations: HISA, HISE, HIST

College of Humanities, Arts, and Social Sciences

Kirk Tomoff, Ph.D., Chair Department Office, 1212 Humanities and Social Sciences (951) 827-5401; history.ucr.edu

Professors

James P. Brennan, Ph.D.
Lucille Chia, Ph.D.
Thomas Cogswell, Ph.D.
Ann E. Goldberg, Ph.D.
Piotr S. Gorecki, Ph.D.
Steven W. Hackel, Ph.D.
Randolph C. Head, Ph.D.
Georg B. Michels, Ph.D.
Robert W. Patch, Ph.D.
Michele E. Salzman, Ph.D.
Kiri Tomoff, Ph.D.
Clifford E. Trauger, Ph.D. Rupert Costa Chair in American Indian Affairs

Professors Emeriti

Kenneth D. Barkin, Ph.D.
Carlos E. Cortés, Ph.D.
VP Franklin, Ph.D.
Ray A. Kea, Ph.D.
Dale W. Kent, Ph.D.
Van L. Perkins, Ph.D.
Roger L. Ransom, Ph.D.
Norman Ravitch, Ph.D.
P. Sterling Stuecky, Ph.D.
Mack E. Thompson, Ph.D.
Ronald C. Tobey, Ph.D.
Irwin M. Wall, Ph.D.
Charles Wetherell, Ph.D.

Associate Professors

Lynda S. Bell, Ph.D.
David A. Biggs, Ph.D.
Charles Denver Graninger, Ph.D.
Jonathan P. Eacott, Ph.D.
Catherine Gudis, Ph.D.
Alexander B. Hankel, Ph.D.
Jennifer Hughes, Ph.D.
Rebecca Kugel, Ph.D.
Juliette Levy, Ph.D.
Brian D. Lloyd, Ph.D.
Molly McGarry, Ph.D.
Dana Simmons, Ph.D.
Devra A. Weber, Ph.D.
Fariba Zanenef, Ph.D.

Assistant Professor

Ademide Adelusi-Adeleyi, Ph.D.
Megan Asaka, Ph.D.
Jody A. Benjamin, Ph.D.
Alexandra Dubovskov, Ph.D.
Natasha McPherson, Ph.D.

**

Lecturer Emeritus

Robert B. Herschler, M.A.

Majors

History plays a central role in general education for all undergraduate students. History stresses an understanding of changes that take place in society over time. It also provides a meaning to the past that has many implications for the future. Since we learn from experience, through history we can greatly broaden our learning through the experience of others, removed in time and distant in space from our immediate world. The study of history is as useful as it is fascinating. History majors develop an ability to communicate well, both orally and in writing, and the capacity to think clearly and analytically. Whatever one’s goals, it makes good sense to include history in any degree program.

History/Administrative Studies Major

The History/Administrative Studies major is designed to combine the discipline of History, with its emphasis on changes in society over time, with the study of administrative behavior, the development of public policy, and the tools of decision making. The addition of an Administrative Studies component provides History majors with analytical administrative skills as well as familiarity with the theories and policies of public administration. The concepts of organizational behavior and decision making, when combined with the perspectives provided through the History major, ought to be of particular value to those planning to enter careers in business; federal, state, or local levels of public or private administration; government work or to those planning to attend a professional school of administration or to those utilizing the major in a variety of positions in the public or private sector. (See also the Public History Program, which outlines public sector careers in History.)

History/Law and Society Major

The History/Law and Society major is designed to offer students the opportunity to combine the study of history, with its emphasis on the changes over time in society, politics, the economy, and culture, with the study of legal and law-like relationships and institutions. The coherent series of courses included in this major ought to be of particular value to those intending to study law or to enter other graduate fields as well as to those planning professional careers in government, public administration, business, or other areas where the relationship between history and the law is of significance.

Career Opportunities

Many students planning graduate work find history an excellent preparation for professional schools such as law and business administration. For those planning a legal career, a strong background in Western institutions and values can be obtained in a variety of courses in the department. And, of course, a major in history prepares the student for graduate study in this field as well as a broad range of general careers in business, government work and foreign affairs that ask for written and verbal skills developed in the major.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The History Department offers B.A. degrees in History, History/Administrative Studies, and History/Law and Society.

Change of Major

Students switching to the History Major must have completed two History courses with a grade of “C” or better. Students switching to the History/Administrative Studies, or the History/Law and Society Major must have completed three History courses with a grade of “C” or better. Advanced Placement units earned can be applied towards one course when determining major change eligibility.

History Major

The major requirements for the B.A. degree in History are as follows:

1. Lower-division requirements (12 units)
   a) one world history course
   b) HIST 99W (with at least a grade of “C”)
   c) one elective History course

2. Upper-division requirements (40 units)
   a) Twenty-eight (28) units of upper-division history courses, with at least three courses in one area of concentration from the following fields:
      Ancient and Medieval
      Europe
      United States
      Latin America
      Asia, Africa, and the Middle East
   b) Twelve (12) units of HIST 197, Research for Undergraduates, with at least one course in the student's area of concentration.

   Students must take at least one course in three fields outside the area of concentration.

   Students who choose United States as their area of concentration are strongly advised to take HIST 017A, HIST 017B as preparation for upper-division courses in American history.

   Lower-division courses taken elsewhere may be counted toward the lower-division requirement, and advance placement units earned in high school may count toward its fulfillment as well. Please consult with the academic advisors for further details.

   Each History major is urged to consult with the academic advisors for quarterly advising and to meet with the Undergraduate Advisor at least one time each year. Appointments can be made through the academic advisors.

History/Administrative Studies Major

The major requirements for the B.A. degree in History/Administrative Studies are as follows:

History requirements (52 units):
All requirements for the B.A. in History
Administrative Studies requirements (37 units)
1. Lower-division courses (17 units)
   a) BUS 010, BUS 020
   b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   c) CS 008 (may be used to satisfy breadth requirements)
2. Upper-division requirements (20 units)
   a) Two courses (8 units) from the list below:
      1) ECON 102 or ECON 104A or ECON 130 or ECON 162/BUS 162
      2) PSYC 140 or PSYC 142
      3) SOC 150 or SOC 151 or SOC 171
      4) POSC 181 or POSC 182 or POSC 183
      5) ANTH 127 or ANTH 131
   b) A three-course track (12 units) in Business Administration courses from one of the following:
      1) Organizations (General): BUS 100, BUS 107, BUS 176/SOC 176, BUS 158/ANTH 105, SOC 150, SOC 151
      2) Human Resources Management/Labor Relations: BUS 100, BUS 107, BUS 152/ECON 152, BUS 153/ECON 153, BUS 155, BUS 157, PSYC 142
      3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, POSC 186
      4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114, BUS 117
      5) Managerial Accounting/Taxation: BUS 108, and two from BUS 166, BUS 168A, BUS 168B
      7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
      8) Management Information Systems: BUS 101, BUS 171, BUS 173
      9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127
   Note: In filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (History requirements and Administrative Studies requirements).
History/Law and Society Major
The Law and Society major is open to undergraduate students with junior standing who have completed LWSO 100 with a grade of “C” or higher. The major requirements for the B.A. degree in History/Law and Society are as follows:
1. History requirements (52 units):
   a. All requirements for the B.A. in History
2. Law and Society requirements (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100 (with a grade of "C" or better)
   c) One course chosen from POSC 114, PSYC 012, SOC 004 (or equivalent course in research methods)
   d) Three courses chosen from ANTH 127, ECON 119, HISE 153, PHIL 165, POSC 167, PSYC 175, SOC 159
   e) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, LWSO 175 (E-Z), PHIL 164, POSC 111, POSC 166, POSC 168, POSC 186, SOC 147, SOC 149, SOC 180
   f) LWSO 193, Senior Seminar

Note: For sections 2.d) and 2.e) combined, not more than two courses may be taken from the same department. In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (History requirements and Law and Society requirements). The History courses that may fill the dual requirements include HISE 153 (History of the Common Law), and HISA 120A and HISA 120B (The Supreme Court and the Constitution).

Minor
The History Department also offers a minor in History. In order to receive a minor, students must take 28 units (seven courses), including 1. At least one World History course and at least one other lower-division course.
2. At least three courses in one of the following areas of concentration:
   a) Ancient and Medieval
   b) Europe
   c) United States
   d) Latin America
   e) Asia, Africa, and the Middle East
   f) History of Science and Technology
3. At least two courses from two of the above fields, one in each.

Students who choose United States as their area of concentration are strongly advised to take HIST 017A, HIST 017B as preparation for upper-division courses in American history.
Lower-division courses taken elsewhere may not be used to satisfy breadth requirements, and advance placement units earned in high school may count toward its fulfillment as well. Please consult with the academic advisors for further details.

Recommended Prelaw Courses
The History major has long been considered an ideal major for students planning to study law since it meets the three goals that law schools recommend for undergraduate applicants:
1. That they achieve an understanding of the development of social, political, and economic institutions
2. That they develop an ability to communicate well, both orally and in writing
3. That they possess the capacity to think clearly and analytically.
The History Department especially recommends the following upper-division courses to prelaw students:
- HISE 150 (Ancient/Medieval England)
- HISE 153 (History of the Common Law)
- HISA 120A, HISA 120B (The Supreme Court and the Constitution)

Education Abroad Program
The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program
The Department of History offers the M.A. and the Ph.D. in History. Students may choose a concentration in Public History in conjunction with the M.A. in History or as a field for the Ph.D. in History.

Admission
The department accepts applications from students intending to earn each of these degrees. Applicants must have either the B.A. in History or the baccalaureate in another field and be able to demonstrate a satisfactory knowledge of history. Applications for admission to the graduate programs in History are normally accepted for the fall quarter only. Scores for the GRE are required of all applicants, and applicants must submit a writing sample. Students entering the Ph.D. program without an M.A. may also earn the M.A. in History, as described below. Students admitted to the M.A. program may later request admission to the Ph.D. program.

Entering students choose a faculty advisor,
Students prepare a substantial M.A. thesis. The thesis and orals committee consists of three faculty members.

**Plan II (Comprehensive Examination)**
Candidates must complete 40 units of required course work beyond the baccalaureate, of which must be at the graduate level. The curriculum must include the following:

1. At least one reading seminar in the student’s area of specialization (Two-quarter research seminars consist of two faculty members. The thesis and orals committee discusses the thesis and future research agenda. The thesis and orals committee consists of three faculty members.

2. At least one two-quarter research seminar, preferably in the student’s area of specialization. The two-quarter research seminars include 265AB, 272AB, 273AB, 274AB, 275AB, 251AB, 253AB, 255AB, 256AB, 258AB, 285AB, 225AB, 251AB, Tri-Campus Classics seminars in related departments with approval from Graduate Advisor)

3. At least 16 units in courses outside the student’s area of specialization.

Candidates prepare a portfolio selected by the student and advisor, and must pass a comprehensive oral examination based on the submitted material. The examination committee consists of two faculty members.

**Language Requirement**
Candidates must demonstrate an ability to read one foreign language.

**Public History Program**
This program provides historical training in academic research and historiography as well as preparation for careers outside of the academy, in archives, historic preservation, museums, oral history and other realms of public engagement with the humanities, including the digital.

Students prepare in two areas:

1. A historical field outside of Public History
2. Public History

**Course Work**
Candidates must complete a minimum of 40 units of courses as follows:

1. One two-quarter graduate history research seminar. The two-quarter research seminars include 265AB, 272AB, 273AB, 274AB, 275AB, 251AB, 253AB, 255AB, 256AB, 258AB, 285AB, 225AB, 243AB or courses in related departments with approval from the Graduate Advisor)

2. Two graduate reading seminars in the historical field (selected from Areas of Specialization listed above. Reading seminars include 265AB, 272AB, 273AB, 274AB, 275AB, 251AB, 253AB, 255AB, 256AB, 258AB, 225AB, 243AB or courses in related departments with approval from Graduate Advisor)

3. At least one of the following: HIST 260, HIST 262, HIST 263, HIST238 or additional courses approved by the Public History advisor.

4. At least one practicum from 260L, 262L, 263L, 238L or additional courses approved by the Public History advisor.

5. Four upper-division undergraduate or graduate courses related to Public History. Two should be outside the History department; courses outside the department require approval of the Public History advisor.

6. Four units of thesis preparation HIST299. All students must also complete HIST 398-I, which does not count toward the 40-unit requirement.

**Internship**
The candidate must complete a ten-week internship, coincident with an academic quarter or summer session, at a cooperating institution, for training under professional supervision in a field of the candidate’s choice. The internship is registered with a History Department faculty advisor as HIST 398-I. The internship culminates in work towards the M.A. thesis.

**M.A. Thesis and Oral Examination**

**Normative Time to Degree**
6 quarters. M.A. students who wish to transfer to the Ph.D. program must apply for a sixth-quarter review as described in the Ph.D. program. No student may enroll in these M.A. programs for more than 9 quarters.

**Doctoral Degree**
The Department of History offers the Ph.D. in History. The Ph.D. program in History prepares graduates for careers as university teachers, public historians, and professional researchers and analysts.

**Admission**
Students may prepare for entry into the Ph.D. program by earning a B.A. or an M.A. degree in History or by earning a degree in a closely related field that involves significant study of history. Students holding a degree in another field are evaluated by the graduate studies committee on a case-by-case basis to determine the level of the graduate program at which they should commence their studies.

**Course Work**
Candidates for the Ph.D. degree entering with a baccalaureate degree complete a minimum of 56 units of required course work, 44 of which must be at the graduate level. Students who enter with an M.A. degree complete a minimum of 28 units, 20 of which must be at the graduate level, and may be able to waive certain course requirements listed below. The student’s curriculum during the entire graduate career must include the following:

1. At least two two-quarter graduate research seminars. One two-quarter research seminar may be waived by petition for students completing a MA in Public History at UCR.
2. At least six reading seminars or equivalent courses, chosen from the student’s fields.
3. At least three courses approved by the graduate advisor for the teaching field requirement, of which two must be at the graduate level.
M.A. in History degree for Ph.D. Students

Students enrolled in the Ph.D. program may apply for the M.A. degree in History once they have completed the requirements for the degree.

Requirements for completing the Ph.D. degree

Examinations Students are examined in their research and complementary fields by a single written examination and at the Ph.D. oral examination. To take the Ph.D. oral qualifying examination, the student must submit a preliminary draft of the dissertation proposal. The teaching field is satisfied by course work.

Language Requirement Students must demonstrate reading proficiency in at least one language other than English. In certain research fields, students may be required to demonstrate a higher level of proficiency or to demonstrate proficiency in additional languages. Consult the departmental protocols for specific requirements.

Candidacy Students advance to candidacy after completing all examinations, the teaching field, and the language requirement. By the end of the following academic quarter, each student must submit to the graduate study committee a dissertation proposal approved by the student’s faculty advisor.

Dissertation Candidates must submit a dissertation that demonstrates scholarly, original, and independent investigation of a subject in the student’s research field chosen with the advice and approval of the dissertation committee.

Normative Time to Degree 17 quarters (including M.A. work).

Lower-Division Courses

The History Department offers these lower-division courses for the benefit of the entire campus, not specifically for History majors. HIST 010, HIST 015, HIST 017A, HIST 017B, and HIST 020 are appropriate preparation for upper-division work in the department.

HIST 001 The Historian as Detective (4) Lecture, 3 hours; discussion, 1 hour. Introduces several approaches to the methods and processes historians use to reach conclusions about the past. Provides the student with an opportunity to work creatively with historical materials and become the historian as detective. 3 hours; discussion, 1 hour. Prerequisite(s): none. Emphasis on the unique characteristics of world cultures as they entered into a critical period of increasing interaction, a process that led to the shaping of the modern world order. Specific themes include religious, economic, and political revolution; the development of modern science; continuity and change in agrarian societies; industrialism; imperialism; and changes in the patterns of everyday life. Credit is awarded for only one of HIST 015 or HIST 015H.

HIST 017A Introduction to United States History (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the major themes and issues in the history of the United States from colonization to the middle of the nineteenth century.

HIST 017B Introduction to United States History (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the major themes and issues in the history of the United States from the middle of the nineteenth century to the present.

HIST 020 World History: Twentieth Century (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to world cultures, political systems, war and revolution in the twentieth century. Topics include the rise and fall of the superpowers, colonization and decolonization, boom and bust, fascism and communism, world wars, and contemporary history. Credit is awarded for only one of HIST 020 or HIST 020H or HIST 020W.

HIST 020H Honors World History: Twentieth Century (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to HIST 020W. A comparative introduction to the development of cultures in Europe, the Americas, Africa, and Asia. Addresses the origins of world civilizations; the ancient and classical periods from a global perspective; and the evolution of complex political systems throughout the post-Classical world. Includes a comparative discussion of Western and Eastern world religions. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of HIST 010, HIST 010H, or HIST 010W.
HIST 020. An introduction to world cultures, political systems, war, and revolution in the twentieth century. Topics include the rise and fall of the superpowers, colonization and decolonization, boom and bust, fascism and communism, world wars, and contemporary history. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of HIST 020, HIST 020H, or HIST 020W.

HIST 020W World History: Twentieth Century (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. A writing-intensive introduction to world cultures, political systems, war, and revolution in the twentieth century. Focuses on the rise and fall of the superpowers, colonization and decolonization, boom and bust, fascism and communism, world wars, and contemporary history. Offers training in writing comparable to that of English 001C. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student's college permits as alternatives to English 001C. Credit is awarded for only one of HIST 020 or HIST 020H or HIST 020W.

HIST 025 The Ancient Mediterranean (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): none. An introduction to the history of the ancient Mediterranean world from the Bronze Age (3000 B.C.) to the beginning of the Common Era. Fulfills the requirement for courses that the Academic Senate designates, and that the student's college permits as alternatives to English 001C. Credit is awarded for only one of HIST 025 or HIST 025H or HIST 025W.

HIST 026 Civilization before Greece and Rome (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): none. An introduction to the civilization of early human societies, starting in the region of the Tigris and Euphrates rivers. Fulfills the requirement for courses that the Academic Senate designates, and that the student's college permits as alternatives to English 001C. Credit is awarded for only one of HIST 026 or HIST 026H or HIST 026W.

HIST 027 Rome: The Ancient City (4) Lecture, 3 hours; extra reading, 3 hours. Traces the development of the city of ancient Rome. By studying the literary and historical evidence along with the physical remains of the city, students will develop an appreciation for the Once the Roman Empire expanded beyond the Mediterranean Sea, historians have had to develop new methods of understanding ancient cultures.

HIST 030 Themes and Personalities in History (4) Lecture, 3 hours; extra reading, 3 hours. Enduring themes and great personalities in history selected from Western and non-Western traditions. Concentrates on particular subtopics to be announced in the "Schedule of Classes." Course is repeatable as topics change to a maximum of 24 units.

HIST 033 Witchcraft in Colonial America (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces the politics, magical practices, and cultural beliefs of witchcraft in colonial America. Explores witchcraft in its many dimensions: religious, cultural, psychological, political, legal, social, and economic. Students read original documents and study recent scholarly interpretations of early American events and attitudes.

HIST 034 Introduction to Native American Culture and Religion (4) Lecture, 3 hours; discussion, 1 hour. Interdisciplinary study of contemporary and historic Native American efforts to resist colonialism, with a strong emphasis on land matters, identity issues, and religious forms. Promotes critical reflection on historic and contemporary culture and politics. Cross-listed with RLST 024.

HIST 035 History of North American Indians, 1491-1799 (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Examines North American Indian history from 1491 through Handsome Lake's Revivalization Movement, highlighting the experiences of selected Native groups during the colonial and contemporary periods. Special attention is given to the importance of Native American perspectives of historical issues and events.

HIST 036 History of North American Indians, 1800-1899 (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Examines North American Indian history during the nineteenth century from Jefferson's administration to McKinley's administration. Explores government policies, native agency, and the evolution of multiple cultures. Also includes Native American cultural interpretations.

HIST 037 History of North American Indians, 1900-Present (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Examines North American Indian history during the twentieth century and early twenty-first century. Topics include allotment, the New Indian New Deal, World War II, termination, self-determination, and tribal sovereignty. Students read original documents, study new interpretations, and learn about contemporary Native people.

HIST 039 Introduction to Asian History (4) Lecture, 3 hours; research, 1 hour; term paper, 2 hours. Introduces the history of Asian Americans from the mid-nineteenth century to the present. Explores the migrations and lives of East, South, and Southeast Asian Americans within local, national, and global contexts. Major themes include imperialism, labor, race and racism, citizenship, and resistance.

HIST 040 Literary Response to Disaster and Repression (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An examination of how literature (e.g., memoir, fiction, and poetry) can be utilized in the recovery from disaster or repression. Students read works from Asia, Africa, and Europe that address the issues of looking squarely, coming to terms, commemoration, and apology. Cross-listed with CPLT 040. Credit is awarded for only one of CPTL 040/ HIST 040 or CPTL 040H/ HIST 040W.

HIST 040W Literary Response to Disaster and Repression (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. Examines how literature is utilized in the recovery from major disasters. Includes examples from Asia, Africa, and Europe that address the issues of looking squarely, coming to terms, commemoration, and apology. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student's college permits as alternatives to English 001C. Cross-listed with CPTL 040W. Credit is awarded for only one of CPTL 040/ HIST 040 or CPTL 040W/ HIST 040W.

HIST 044 Gods, Ghosts, and Grandparents (4) Lecture, 3 hours; discussion, 1 hour. Introduction to the rich diversity of Chinese beliefs and practices concerning ghosts, gods, and ancestors through primary and secondary sources. Includes oracle bone inscriptions, philosophical arguments on the existence of spirits, tomb contracts, sutra promoting the goddess Guanyin as Giver of Sons, ghost stories, and eyewitness accounts of funeral rituals. Explores the rich diversity of Chinese beliefs and practices concerning ghosts, gods, and ancestors through primary and secondary sources. Includes oracle bone inscriptions, philosophical arguments on the existence of spirits, tomb contracts, sutra promoting the goddess Guanyin as Giver of Sons, and eyewitness accounts of funeral rituals. Explores the rich diversity of Chinese beliefs and practices concerning ghosts, gods, and ancestors through primary and secondary sources. Includes oracle bone inscriptions, philosophical arguments on the existence of spirits, tomb contracts, sutra promoting the goddess Guanyin as Giver of Sons, and eyewitness accounts of funeral rituals.
that the student's college permits, as alternatives to English 001C.

**Upper-Division Courses**

**HIST 104 The Scientific Revolution (4)** Lecture, 3 hours; online discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. History of the scientific revolution of the sixteenth and seventeenth centuries from Copernicus through Newton, stressing the cultural interaction of science, philosophy, and religion, with secondary attention to the historical sociology of science.

**HIST 105 Science in the Modern World (4)** Lecture, 3 hours; online discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. History of science in the nineteenth and early twentieth centuries, stressing the rise of the Darwinian view, the genetic revolution and its social consequences, and the romantic rejection of science.

**HIST 106 Science in Triumph and Crisis (4)** Lecture, 3 hours; online discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. History of science in the twentieth century with attention to the revolutions in physics and biology, the role of scientists in the world wars, the social responsibility debate, and the rise of the United States as a scientific power.

**HIST 107 Disease and Society (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers a world history of disease and how it relates to massive population change, cultural shocks, and globalization. Evaluates the complex and reciprocal relationship between illness and society. Analyzes how cultures, states, and individuals spread the contagions of disease, as well as how disease affects societies.

**HIST 108 Technology in Premodern Civilizations (4)** Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the social, cultural, and economic causes of changing settlement patterns in Africa's changing landscapes. Also explores connections between urbanization and disease cultures.

**HIST 110 History of Ancient Astronomy (4)** Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the origins and history of ancient astronomy from Mesopotamia to the Greco-Roman world. Topics include the problems of the calendar and planetary motion, and the relation between astronomy and astrology in the ancient world. Focuses on readings from primary texts. Cross-listed with CPAC 134.

**HIST 111 Public History and Community Voices (4)** Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the study of public history and the use of oral history, narratives, written sources, photographs, material culture, and other documentary evidence important to presenting historical information and interpretation to a large audience. Analysis of archives, museums, government agencies, familial sources, special collections, and other repositories that hold community voices. Students present public history by producing an exhibit, published work, or community project.

**HIST 121 Middle Eastern History, 1200 to 1800 (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing. Explores the history of the Middle East from 1200 to 1800. Includes the Mongol conquests, as well as the rise and expansion of the Ottoman empire.

**HIST 124 Women in Middle Eastern and Islamic History (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the history of women in the Middle East from the medieval to the modern period. Focuses on the legal status of women, their social and economic position, the rise and development of the feminist movement, and the impact of various Islamic movements.

**HIST 125 Islam and Revolution in Iran (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the historical background to the Iranian revolution of 1978-1979. Offers a critical assessment of the existing scholarship. Includes the rise of Shi’ism as Iran’s state religion; the relationship between religion, state, and society; and the role of Shi’i Islam versus other ideologies with social movements.

**HIST 126 Istanbul in History and Fiction (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores urbanization in Middle Eastern and Ottoman history. Includes the history of Istanbul from the Ottoman conquest to the end of that empire. Addresses questions of urban transformation, imperial cities, Islamization, urban institutions, cosmopolitanism, and modernity.

**HIST 127 Israel: The Jewish State (4)** Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines Zionism and the state of Israel in the period from the first Zionist Congress in 1896 to the present. Addresses religious, social, economic, and political aspects of the Jewish state. Cross-listed with RLS 126.

**HIST 130A History of Christianity: Origins to the Reformation (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Surveys the history of Christianity from its origins through the Reformation. Includes the development of Christian beliefs, practices, and institutions in historical contexts. Cross-listed with RLS 135A.

**HIST 130B History of Christianity: Modern Era (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Surveys the history of Christianity since 1500. Emphasizes the Christianization of Asia, Africa, and the Americas in the long colonial era. Follows developments in Chris- tianity and the relation between religion and the political order of the present. Topics include Reformation, mission, colonialism, empire, conversion, syncretism, modernity, Vatican II, and the rise of evangelical Christianity. Cross-listed with RLS 135B.

**HIST 137 (E-Z) Themes and Topics in African History (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A thematic and topical approach to the study of African history from the early-Nile Valley civilizations to the twentieth century. Examines the temporal and spatial development of African societies—including their social, political, economic, and ideological systems—during the precolonial, colonial, and postcolonial periods. Topics include: African History to 1800; I. Nineteenth- and Twentieth-Century Africa; II. European Imperialism; J. Ancient Africa; K. Africa from 1800; L. Nineteenth- and Twentieth-Century Africa; M. Twentieth-Century Africa. Cross-listed with ETST 117 (E-Z).

**HIST 138 African Cities in Modern History (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A history of African cities and the challenges they present. Examines the range of settlement patterns in Africa's changing landscape. Also explores connections between urban and social change, gender, culture, architecture, colonialism, and the effects of rural-urban migration.

**HIST 139 Africa: Fiction, Film and Science Fiction (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the use of fiction, film and science fiction in the study of African history. Examines themes including gender, colonialism, sexuality, nationalism, urbanization and disease cultures.

**HIST 140 Africa and the French Atlantic (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces historical debates about the French Atlantic expansion from the 17th century through the final French abolition of slavery in 1848 with a special focus on Africa. Explores distinctions between French and other European (especially British) imperial trajectories.

**HIST 179 Introduction to Modern Japanese History (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical examination of key moments in the history of Japan from the Tokugawa period through the late twentieth century.

**HIST 180 Early Traditional China (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the rise of the United States as a scientific power. Also explores connections between urbanization and disease cultures.

**HIST 181 Late Traditional China (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor; at least one lower-division history course recommended. The history of China from Neolithic times to the end of the Tang Dynasty (early tenth century, C.E.) with emphasis on social, economic, and political history.

**HIST 182 Modern China (4)** Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor; HIST 180 and HIST 181 are recommended. Examines the history of China from the Opium War to the early Communist period (1842-1960). The emphasis is on reaction to the Western impact and modernization.

**HIST 184 The Vietnam Wars (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1986) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticlanical movements; periods of French and American military involvement up to 1975; the postwar society; and the post-do-i-moi society. Cross-listed with AST 160, SEAS 184, and VNM 184. Credit is awarded for only one of the following: AST 160/HIST 184/SEAS 184/VNM 184 or AST 160/184/SEAS 184/VNM 184.

**HIST 185 The Vietnam Wars (5)** Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1986) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticlanical movements; periods of French and American military involvement up to 1975; the postwar society; and the post-do-i-moi society. Cross-listed with AST 160S, SEAS 184S, and VNM 184S. Credit is awarded for only one of the following: AST 160S/HIST 184S/SEAS 184S/VNM 184S or AST 160S/SEAS 184S/VNM 184S.

**HIST 186 Southeast Asia, Prehistory to 1800 (4)** Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor.
Covers the major Southeast Asian historical periods and cultures. Includes prehistory, classical kingdoms, and early modern trading states. Considers the role of ancient stones, religious systems, technologies, and art forms in forming traditional Southeast Asian identities, as well as the influences on these identities from outside the region. Cross-listed with AST 126 and SEAS 185.

HIST 186 Modern Southeast Asia, 1800 to Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the formation of modern Southeast Asian nations and cultures since 1800. Compares colonial and postcolonial experiences in the region. Studies the formation of nationalistic movements and the relationship of nationalist history with traditional and local histories. Considers the role of the individual, modern media, and global trade in the near-present. Cross-listed with AST 129 and SEAS 186.

HIST 187 Vietnamese Literary History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing. A historical analysis of Vietnamese literature from its oral tradition to contemporary fiction. Follows the formation of the nation-state and the subsequent struggles with the Chinese, French, Japanese, and Americans. No knowledge of Vietnamese required. Materials are in translation or bilingual editions. Classes are conducted in English. Cross-listed with AST 162, SEAS 162, and VNM 162.

HIST 188 (E-Z) Topics in Chinese History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing; HIST 180 or HIST 181 or HIST 182; or consent of instructor. An in-depth look at important topics in Chinese history. E: Chinese Food Culture; F: Four Great Inventions of Imperial China; G: Environmental History of China. Cross-listed with AST 188 (E-Z).

HIST 189 Encountering Vietnam (5) Lecture, 6 hours; tutorial, 6 hours; project, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on literary and historical accounts of Vietnam. Utilizes bilingual editions. Classes are conducted in English. Taught in Vietnamese not required. Taught in Vietnamese. Cross-listed with AST 189, SEAS 189, and VNM 189.

HIST 190 Special Studies (1-5) To be taken with the consent of the chair of the department to meet special curricular problems. Course is repeatable to a maximum of 16 units.

HIST 191 (E-Z) Seminar in History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A topic in the period or subject matter of the topic, or consent of instructor. Requires a substantial research paper or project, the result of carefully guided independent work. E: Medieval History; F: Renaissance and Reformation; G: Seventeenth- and Eighteenth-Century Europe; I: Nineteenth-Century Europe; J: Nineteenth- and Twentieth-Century England; K: Twentieth-Century Europe; L: Modern Russia; M: European Thought and Culture; N: Mexican Migration to the United States; P: Colonial American History; Q: Nineteenth-Century American History; R: The American West; S: Twentieth-Century American History; T: Mexican Migration to the United States; U: Recent Latin America; W: Chinese History; X: Mass Media; Y: African History; Z: Ancient History.

HIST 195A Senior Thesis (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): HIST 197; a major in History or History/Law and Society or History/ Administrative Studies, standing as an instructor. Original research and senior thesis writing under close faculty supervision. Included formulating an individual research question, evaluating competing narratives in both primary and secondary sources, and developing an original argument based on primary and secondary sources. Graded in Progress (IP) until HIST 195A and HIST 195B are completed, at which time a final grade is assigned. After completing both HIST 195A and HIST 195B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 195B Senior Thesis (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): HIST 195A. Completion of a senior thesis under close faculty supervision. After completing both HIST 195A and HIST 195B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 197 Research for Undergraduates (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): HIST 199W or HIST 099W; upper-division standing; major in History or History/Law and Society or History/Administrative Studies; or consent of instructor. Introduces advanced historical research on specific topics using primary and secondary source materials. Analyzes historical questions related to the selected topics and develops historical arguments to be explored further. Topics vary based upon the research focus of the instructor. Course is repeatable as topics change to a maximum of 16 units.

HIST 198 R’Course - Variable Topics (1) activity hours vary per R’Course proposal. Prerequisite(s): permission granted from department. An upper-division undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental courses. Prerequisite(s): upper-division standing or consent of student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

HIST 198G Public History Practicum (1-12) Seminar, 1-2 hours; outside research, 1-6 hours; internship, 3-24 hours. Prerequisite(s): upper-division standing or consent of instructor. Provides practical experience and project-based research in public history. Work with public history faculty an appropriate professional organization to gain skills related to museum exhibitions, interpreting historic sites, archives and libraries, oral and digital history projects, historic preservation, and other forms of public history. Course is repeatable to a maximum of 16 units.

HIST 198H Senior Honors Research (1-5) Seminar, 4-36 hours. Prerequisite(s): consent of instructor. Explores European history from 1789 to the present, of cooperating agencies, such as museums, archives, professional associations, clinics, hospitals, churches, businesses. Students will become familiar with on-going student researching and organization. and will research and write their histories under faculty supervision. Course is repeatable to a maximum of 16 units.

HIST 199I Individual Internship in History (1-12) laboratory, 4-36 hours. Prerequisite(s): consent of instructor. Offers the opportunity for designed individual research. Students will learn about the policies and operations, present and past, of cooperating agencies, such as museums, archives, professional associations, clinics, hospitals, churches, businesses. Students will become familiar with on-going student researching and organization. and will research and write their histories under faculty supervision. Course is repeatable to a maximum of 16 units.

HIST 199J Senior Research (1-4) Outside research, 3-12 hours. Prerequisite(s): HIST 197; not open to students in the University Honors Program. Individual work with an instructor to continue and expand a research project or paper began in a HIST 197. Course is repeatable to a maximum of 8 units.

HIST 199H Senior Honors Research (1-5) Outside research, 3-15 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Offers the opportunity for directed research at honors level. Satisfactory (S) or No Credit (NC) grading is not available.

Graduate Courses

Consent of the instructor is required for enrollment in all graduate courses.

HIST 200 Reading Seminar in European History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces advanced study of major themes and areas in British, European, and Russian history. Concentrates on recent scholarship illustrating current methods and questions in European history. Covers all three major geographical areas, although emphasis may vary. Course is repeatable to a maximum of 8 units.

HIST 201A Reading Seminar in American History: Colonial North America (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores colonial North American history as presented by primary and secondary sources. Course is repeatable as content changes to a maximum of 12 units.

HIST 201B Reading Seminar in American History: United States, 1789-1877 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores American history from 1789 to 1877 as presented by primary and secondary sources. Course is repeatable as content changes to a maximum of 12 units.

HIST 201C Reading Seminar in American History: United States, 1877 to the Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores American history from 1877 to the present as presented by primary and secondary sources. Course is repeatable as content changes to a maximum of 12 units.

HIST 202A Reading Seminar in European History: Early Modern Europe (1400-1789) (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores early modern European history from 1400 to 1789 as presented through primary and secondary sources. Course is repeatable as content changes to a maximum of 12 units.

HIST 202B Reading Seminar in European History: 1789-Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores European history from 1789 to the present as presented through primary and secondary sources. Course is repeatable as content changes to a maximum of 12 units.

HIST 202C Reading Seminar in Native American History: Early America, Fifteenth through Eighteenth Centuries (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the theoretical approaches, central historical problems, and historiographical debates related to the study of Native American history. Covers the fifteenth through the eighteenth centuries. Course is repeatable as content changes to a maximum of 12 units.

HIST 203B Reading Seminar in Native American History: Nineteenth Century (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the theoretical approaches, central historical problems, and historiographical debates related to the study of nineteenth-century Native American history. Course is repeatable as content changes to a maximum of 12 units.

HIST 203C Reading Seminar in Native American History: Twentieth Century (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the theoretical approaches, central historical problems, and historiographical debates related to the study of twentieth-century Native American history. Course is repeatable as content changes to a maximum of 12 units.

HIST 204 Materials for Modern French and Latin European History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores modern European history from the 1789 revolution. Also explores selected themes related to the histories of Italy and Spain. Course is repeatable as content changes to a maximum of 12 units.
HIST 205A Reading Seminar in English History: 1485-1820 (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An examination of selected primary materials related to English history. Also includes assessment of secondary accounts. Course is repeatable as content changes to a maximum of 12 units.

HIST 205B Reading Seminar in English History: 1760 to the Present (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores advanced scholarship in selected areas of English history. Topics include political, social, and cultural approaches developed in other fields of concentration. Explores preexisting institutions. Topics include political, social, religious, and intellectual developments. Course is repeatable as content changes to a maximum of 12 units.

HIST 206A Reading Seminar in Latin American History: Colonial Period to 1820 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores Latin American history from 1820 to the present. Topics include preexisting institutions. Course is repeatable as content changes to a maximum of 12 units.

HIST 206B Reading Seminar in Latin American History: 1820 to the Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores Latin American history from 1820 to the present. Topics include preexisting institutions. Course is repeatable as content changes to a maximum of 12 units.

HIST 207A Reading Seminar in the Early Modern World (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the major concepts, categories, methodological approaches, and historiography in recent scholarship on the early modern world (circa 1400-1750). Focuses on interregional and interdisciplinary analysis. Course is repeatable as content changes to a maximum of 12 units.

HIST 207B Reading Seminar in the Modern World (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the major concepts, categories, methodological approaches, and historiography in recent scholarship on the modern world (circa 1800 to the present). Focuses on interregional and interdisciplinary analysis. Course is repeatable as content changes to a maximum of 12 units.

HIST 209A Reading Seminar in Modern Russia: 1801 to 1917 (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the historiography of Russian history. Topics include social development, cultural and religious history, peasants, industrialization, revolutionary movements, Bolshevism, ideology, and the Russian Civil War. Course is repeatable as content changes to a maximum of 12 units.

HIST 209B Reading Seminar in Modern Russia: Soviet History (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the historiography of Russian history. Topics include social development, cultural and religious history, peasants, industrialization, revolutionary movements, Bolshevism, ideology, and the Russian Civil War. Course is repeatable as content changes to a maximum of 12 units.

HIST 210 Introduction to Economic History (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Analysis of selected problems on economic history with an emphasis on methodological approaches to those issues.

HIST 211 Reading Seminar in the Roman Empire (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the theories and practices of recent research into key issues of the history of Rome. Covers the late Republic and continues into the high Empire. Introduces the key historicographic texts as well as the primary ancient sources relevant to key topics in Roman history. Course is repeatable as content changes to a maximum of 12 units.

HIST 215 (E-Z) Topics in American History (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Analysis of selected specific topics in American history. E. Slave Folklore and the Historical Process; F. Culture and Politics in Twentieth-Century Latin America; G. Transnational Migrations; I. Populism, the Progressive Movement, and the New Deal; J. The World of c>bLittle Women;c>b. K. History of Workers and Workers’ Organizations in the United States; L. History of Slavery and Race in the United States.

HIST 216 (E-Z) Themes in the History of the Americas (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Addresses intranational and international histories of the countries and peoples of the Americas. E. Mexican Cross-Border Labor, Organizing, and Internationalism, 1900-1975; F. Borders and Borderlands.

HIST 217 (E-Z) Topics in Asian History (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to a set of major research monographs in Asian history. Introduces the agrarian China from the Ming Dynasty to the Present.

HIST 218 Africa in the Era of the Transatlantic Slave Trade (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the political economies and the social and cultural histories of Atlantic Africa between 1500 and 1800 within the wider framework of the Atlantic world. Emphasis is on methodological and theoretical issues and questions. Readings are based on primary historical sources as well as on recent research in the field.

HIST 220 Reading Seminar in Women's History (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An exploration of the major methodological and historiographical issues in women's history. Focuses primarily but not exclusively on women in the United States.

HIST 221 Reading Seminar in the Hellenistic World, East and West (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces a new approach to the Hellenistic East and Western Mediterranean. Examines how new currents of thought merged with preexisting institutions. Topics include political, social, religious, and intellectual developments.

HIST 222 Reading Seminar in Late Antiquity (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the central historiographical debates in the field of Late Antiquity. Course is repeatable as content changes to a maximum of 12 units.

HIST 223 Reading Seminar in Early Medieval History (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces advanced scholarship in selected areas of early medieval historiography. Focuses on independent historiographical research. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

HIST 224 Research Seminar in Later Medieval History (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces advanced scholarship in selected areas of later medieval historiography. Focuses on independent historiographical research. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

HIST 225A Research Seminar in Ancient and Medieval History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines a historical theme or issue in ancient and medieval history. Includes readings in primary sources and analysis of research methods. First of a two-semester sequence in which work begins on a major research paper. Graded In Progress (IP) until HIST 225A and HIST 225B are completed, at which time a final grade is assigned. After completing both HIST 225A and HIST 225B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 225B Research Seminar in Ancient and Medieval History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 225A. Examines a historical theme or issue in ancient and medieval history. Includes readings in primary sources and analysis of research methods. Second of a two-semester sequence in which a major research paper is completed. After completing both HIST 225A and HIST 225B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 228 (E-Z) Special Topics in Latin American History (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): HIST 207A. An examination of selected specific historical issues in Latin American history. Explores the major methodological and theoretical issues raised by recent historiography. Topics include political, social, religious, and intellectual developments.

HIST 229 The American Other: Apparitions and Appropriations (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): HIST 201A and consent of instructor. An examination of selected specific topics in American history. Examines the major methodological and theoretical issues raised by Native American history. Critiques theoretical approaches and assumptions currently shaping Native American history and adds the potential contributions to Native American history of theoretical approaches developed in other fields of concentration.

HIST 230 The American Frontier: Ideas and Interpretations (4) Lecture, 3 hours; consultation and extra reading, 3 hours. Prerequisite(s): HISAA 137. The broad themes and historical interpretations regarding the frontier as a factor in the American character and in American institutions.

HIST 237 Reading Seminar in Native American Historical Theory (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the major methodological and theoretical issues raised by Native American history. Critiques theoretical approaches and assumptions currently shaping Native American history and adds the potential contributions to Native American history of theoretical approaches developed in other fields of concentration.

HIST 238 Reading Seminar in Oral History (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the field of oral history. Explores the theoretical foundations, ethical issues, and new directions in oral history research.

HIST 238L Oral History Practicum (4) Lecture, 2 hours; outside research, 6 hours. Prerequisite(s): graduate standing or consent of instructor. A study of oral history methods, theory, and practice. Students conduct interviews, transcribe, and produce a paper which utilizes the oral history interviews. Includes discussion of final interviews, transcripts, analysis, and the final paper. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 8 units.

HIST 240 (E-Z) Reading Seminar in Documentary Source Practices (4) Lecture, 3 hours; individual study,
3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the scholarly handling of texts including inscriptions, manuscripts, archival documents, and electronic material. Instruction in methodologies, tools, sources, and in the editing and use of texts in history. Analysis of archival structure and organization, textual authorship, provenance, paleography, language, internal structure, and variants. E. Russian; F. Early Modern Europe. Each segment is repeatable to a maximum of 12 units.

HIST 241 Reading Seminar in Asian History (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores major concepts, categories, methodological approaches, and historiographical issues in the study of a region or country in Asia. Course is repeatable to a maximum of 36 units.

HIST 241 Seminar in Southeast Asian History (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces students to central historical problems, historiographical debates, materials, and theoretical approaches in Southeast Asian history. Readings each week focus on a different theme. Course is repeatable to a maximum of 8 units. Cross-listed with SEAS 204.

HIST 243A Research Seminar in Southeast Asian History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Discusses Southeast Asian topics from regional, comparative, and local perspectives. May be taken as a one-quarter or two-quarter course (HIST 243A/SEAS 243A, HIST 243B/SEAS 243B). Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned. After completing both HIST 243A/SEAS 243A and HIST 243B/SEAS 243B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units. Cross-listed with SEAS 243A.

HIST 243B Research Seminar in Southeast Asian History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 243A/SEAS 243A. Discusses South-east Asian topics from regional, comparative, and local perspectives. Students produce a substantial research paper that continues their work from HIST 243A/SEAS 243A. May be taken as a one- or two-quarter course (HIST 243A/SEAS 243A, HIST 243B/SEAS 243B). After completing both HIST 243A/SEAS 243A and HIST 243B/SEAS 243B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units. Cross-listed with SEAS 243B.

HIST 250 New Directions in Historical Research (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 243A/243B. Seminar intended to follow HIST 263.

HIST 250A Research Seminar in Modern Russia (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A research seminar on modern Russian history. After completing both HIST 250A and HIST 250B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 251A General Research Seminar in History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A general research seminar in history including European, continental European, British, Russian, ancient, and Latin American history. Each segment is repeatable to a maximum of 12 units.

HIST 251B Research Seminar in Modern Russia (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): UC Riverside graduate standing or consent of one instructor; HIST 250A. A research seminar on modern Russian history (1801 to present). Covers appropriate primary sources and secondary literature. Topics include but are not limited to social history, labor, ideology, politics, and revolutions from the Imperial and/or Soviet periods. An intercampus course taught jointly by faculty from UC Riverside, Irvine, San Diego, and Los Angeles. Graded In Progress (IP) until HIST 255A and HIST 255B are completed, at which time a final grade is assigned. After completing both HIST 255A and HIST 255B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.
HIST 265A Seminar in Latin American and Early National History (4) Seminar, 3 hours. Grade is assigned. After completing both HIST 265A and HIST 265B are completed, at which time a final grade is assigned. Course is repeatable to a maximum of 8 units.

HIST 272B Seminar in American Colonial and Early National History (4) Seminar, 3 hours. Grade is assigned. After completing both HIST 272A and HIST 272B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 278A Seminar in Latin American History (4) Seminar, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Includes primary materials for public history and its central historical problems and historiography. Also discusses debates within the field. Course is repeatable as content changes to a maximum of 12 units.

HIST 275A Seminar in Twentieth-Century United States History (4) Seminar, 3 hours. Graded In Progress (IP) until HIST 275A and HIST 275B are completed, at which time a final grade is assigned. Course is repeatable to a maximum of 8 units.

HIST 276A Research Seminar in Native American History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines Native American historical research. Explores philosophy, methodology, historiography, and sources relative to American Indians. Students study a variety of sources and documents, compile an annotated bibliography, conceptualize and design a research project, and work on an original historical paper. Graded In Progress (IP) until HIST 276A and HIST 276B are completed, at which time a final grade is assigned. After completing both HIST 276A and HIST 276B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 276B Research Seminar in Native American History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 276A. A continuation of HIST 276A. Students conduct research on the topics selected in HIST 276A. Additional readigs may be assigned at the discretion of the instructor. At the term's end, students present their findings through an oral historical research paper. Instructors may also assign oral presentations of research findings. After completing both HIST 276A and HIST 276B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 278A Seminar in Latin American History (4) Seminar, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 273A and HIST 273B are completed, at which time a final grade is assigned. A research seminar focusing on themes in the study of the American West from the colonial era to the present. Explores migration, expansion, and modern urban development. Includes historical interpretations, readings, discussions, and research. Students begin a paper based on archival, oral history, and material culture. Graded In Progress (IP) until HIST 273A and HIST 273B are completed, at which time a final grade is assigned. After completing both HIST 273A and HIST 273B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 278B Seminar in Latin American History (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines early modern empires in the Middle East: The Ottomans and Safavids in a comparative framework. Focuses on such issues as slavery and conquest, state formation, confessional empires and toleration, commerce, and culture. Cross-listed with MEIS 278.

HIST 285A Seminar in Latin American History (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 273A and HIST 273B are completed, at which time a final grade is assigned. Course is repeatable to a maximum of 12 units with consent of advisor.

HIST 285B Seminar in Latin American History (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 273A and HIST 273B are completed, at which time a final grade is assigned. A seminar focused on themes in the study of the American West from the colonial era to the present. Explores migration, expansion, and modern urban development. Includes historical interpretations, readings, discussions, and research. Students complete a paper based on archival research, oral history, and material culture. Graded In Progress (IP) until HIST 273A and HIST 273B are completed, at which time a final grade is assigned. After completing both HIST 273A and HIST 273B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units.

HIST 287A Research Seminar in Nature, Place, and Space: Environmental and Spatial Approaches to History (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 287A. Surveys historical literature and methodologies involved in spatial and environmental analyses of the past. Examines technical and methodological issues involved in using spatial documents (maps). Discusses applications of historical research to environmental remediation. Students discuss and critique each other's research. After completing both HIST 287A and HIST 287B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units. Course is repeatable to a maximum of 8 units.

HIST 290 Directed Studies (1-6) Prerequisite(s): consent of the chair of the department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

HIST 291 Individual Study in History (1-12) A program of study designed to advise and assist graduate candidates who are preparing for examinations. Does not count toward the unit requirement for the master's degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

HIST 292 Concurrent Analytical Studies (1-4) Outside research, 3-12 hours. Prerequisite(s): consent of instructor. Taken concurrently with some 100-series course, but on an individual basis. Devoted to completion of a graduate paper based on research or criticism related to the 100-series course, the program of study is worked out with the instructor. Graded Satisfactory (S) or No Credit (NC). May be repeated for up to 8 units.

HIST 2996 Public History Group Internship (1-12) Seminar, 2-30 hours; term paper, 1-6 hours; outside research, 1-6 hours; internship, 3-18 hours. Prerequisite(s): graduate standing or consent of instructor. Provides practical experience and project-based research in public history. Work with public history faculty or appropriate professional organization to gain skills related to the following areas: museum exhibitions, interpreting historic sites, archives and libraries, oral and digital history projects, historic preservation, and other forms of public history. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 16 units.

HIST 2997 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

HIST 301 The Teaching of History at the College Level (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing. Normally required of all doctoral candidates and teaching assistants in the department, open to terminal M.A. students with consent of instructor. Credit not applicable to graduate unit requirements. Graded Satisfactory (S) or No Credit (NC).

HIST 302 Teaching Practicum (1-4) Clinic, 1-4 hours; seminar, 1 hour. Prerequisite(s): limited to departmental teaching assistants; graduate standing. Supervised teaching in upper- and lower-division history courses. Required of all History teaching assistants. Fulfills teaching portion of Ph.D. teaching requirement. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
History of the Americas
Upper-Division Courses

HISA 110A Colonial America (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of early American society from settlement through the mid-eighteenth century. Topics include the convergence of Native American, European, and African cultures; the origins of slavery; religious diversity; and the growth and development of the colonies.

HISA 110B Revolutionary America (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of the political, social, and cultural movements that led to the American revolution and the formation of the Republic. Topics include crowd activity, imperial conflict, and the creation of the constitution.

HISA 110C The Early Republic: The United States, 1789-1848 (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes social, economic, political, and intellectual forces that transformed the United States from a fledgling preindustrial nation into a sprawling, exuberant, capitalist society. Topics include industrialism, capitalism, Christianity, democratic politics, slavery and racial structures, abolitionism, and American radicalism and nationalism.

HISA 113 Slavery and the Old South (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An investigation of slavery in the antebellum South. Topics include: the emergence of the self-conscious South, the romanticized plantation, American historians and slavery, etc.

HISA 114 The American Civil War (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of the American Civil War. Topics include slavery as a cause of the war as well as the impact of emancipation and of the war on both North and South. Credit is awarded for only one of HISA 114 or HISA 114S.

HISA 114S The American Civil War (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the intellectual and political sources of the Constitution in English, colonial, and revolutionary war literature; the American Revolution and the debate over ratification; the formative impact of the Marshall court, and the crisis of American empire and the nature of the Union. Discusses the role of the court in protecting U.S. capitalism and then examines the court's role in legitimizing the New Deal by 1935. The main materials of the course are the actual opinions of the court.

HISA 120A The Supreme Court and the Constitution (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of the United States in global affairs through specific historical themes and topics. Topics may include intervention and expansion in the 19th and 20th centuries; America as an economic, cultural, and diplomatic influence; U.S. immigration policies and patterns; and the influence of foreign nations and peoples. Course is repeatable as topics change to a maximum of 8 units.

HISA 120B The Supreme Court and the Constitution (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines constitutional history after the New Deal settlement of issues concerning the powers of the national government. Explores the court's jurisdiction; the growth of constitutional interpretation; and the expansion and protection of individual liberties contained in the Bill of Rights. The main materials of the course are the major court opinions from the Warren to the Rehnquist courts, 1953-2001.

HISA 122A Religious Cultures in Early America (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines historical and political developments in the United States between the end of Reconstruction and the beginning of World War I. Prerequisite(s): upper-division standing or consent of instructor. An analysis of political, social, economic, and cultural developments in the United States between the end of Reconstruction and the beginning of World War I. Topics include: the emergence of a global power, the second industrial revolution, the development of a consumer culture, and the creation of a regulatory state.

HISA 122B Religious Cultures in Modern America (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor; HIST 017A is recommended. An introduction to religious beliefs and practices during the seventeenth and eighteenth centuries in the colonies that became the United States. Cross-listed with RLST 137A.

HISA 132 U.S. Women, Gender, and Sexuality: 1620-1850 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of the United States in global affairs through specific historical themes and topics. Topics may include intervention and expansion in the 19th and 20th centuries; America as an economic, cultural, and diplomatic influence; U.S. immigration policies and patterns; and the influence of foreign nations and peoples. Course is repeatable as topics change to a maximum of 8 units.

HISA 133 Women, Gender, and Sexuality in U.S. History / 318 (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to a variety of religious traditions, movements, and cultures from 1800 to the present in the United States. Cross-listed with RLST 137B.

HISA 134 Black Feminist Theory and Activism (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers the writings and collective organizational strategies of African American women intellectuals and activists developed in response to the ways racial, sexual, and economic oppression work interde- pendently and are institutionalized. Follows black
women’s agendas for social change from the early women’s slave narratives to the present. Cross-listed with ETST 113.

Lecture, 3 hours; term paper, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. The Civil Rights Movement of the 1950s and 1960s. The main focus will be on the "grass roots." African American aspects of "The Movement," as it was popularly known, from school desegregation to voting rights and beyond. Cross-listed with ETST 112.

**HISA 136 Historical Perspectives on Mass Incarceration (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Historical perspectives on U.S. mass incarceration. Explores historic roots of conquest, colonialism, racial subjugation, capitalism, and labor systems linking current mass incarceration, deportations of unauthorized immigrant classes. Examines critical historic turning points and current social, economic, and political dynamics. Course meetings alternate between historic and contemporary issues.

**HISA 137 Frontier History of the United States (4)**
Lecture, 3 hours; journal, 1 hour; term paper, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the frontier in U.S. history, with special attention to the Western frontier and borderlands.

**HISA 138 California (4)**
Lecture, 3 hours; journal, 1 hour; term paper, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. A historical and cultural overview of California from pre-colonial Native cultures to the present. Cross-listed with MUS 140.

**HISA 140 California Indian History (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Provides students with a broad understanding of the rich and varied heritage and history of California Indians from the invasion of the Spanish to the twentieth century. Examines geographically and culturally diverse groups as a means of understanding California Indian policies that affected native Californians. Course is comparative and thematic. Cross-listed with ETST 180.

**HISA 141 Southwestern Indian History (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Presents a historical examination of selected Native American groups in the Southwest. Examines the relationship of Southwest Indian, Mexican, and United States governments. Focuses on Quichuan, Tohono O’odham, Yavapai, Chiricahua, Navajo, Zunis, Hopis, Comanches, and selected Pueblos along the Rio Grande. Cross-listed with ETST 181.

**HISA 142 Northwestern Indian History (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines selected aspects of Northwestern Indian History, from approximately the 1750s to the twentieth century. Deals with several native groups along the Northwest coast from Alaska to Oregon. Compares policies of the Russian, Spanish, English, and United States governments. Particular emphasis on the 1850s when the U.S. negotiated a number of treaties with Native Americans in the Washington and Oregon territories. Cross-listed with ETST 182.

**HISA 143 Native American Oral Literature (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): ETST 007; upper-division standing or consent of instructor. Comparative examination of Native American oral literature of tribes in the United States, Canada, and Mexico. Enhances the student’s understanding of Native American language, literature, drama, geography, geology, biology, history, and culture. Cross-listed with ETST 183.

**HISA 144 (E-Z) Topics in Native American History (4)**
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Selecting the issue of the Native American. Includes reading, research, and discussion on the Native American experience. F. Early America: Emerging Interpretations. Cross-listed with ETST 115 (E-Z).

**HISA 146 History of Native American Women (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines selected important aspects of the lives of Native North American women including their political, economic, and religious participation in their societies. Further traces historic changes in Native women’s lives as a result of the colonization of the New World and examines the complex imagery of Native women that originated from colonial contact. Cross-listed with GSST 146.

**HISA 147 Medicine Ways of Native Americans (4)**
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the medical history of Native Americans. Focuses on traditional Native American medicine and how Western diseases, medical practices, health care, and policies influenced American Indian health. Topics include medicine people, rituals, ceremonies, smallpox, measles, influenza, anomy, accidents, diabetes, suicides, mental illness, and murders. Cross-listed with ETST 116.

**HISA 160 Colonial Latin America (4)**
Lecture, 3 hours; extra reading, 2 hours, term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A history of Latin America from pre-Columbian times to independence with an emphasis upon selected themes concerning the social, economic, and cultural aspects of colonialism. Cross-listed with LNST 170.

**HISA 161 Nineteenth-Century Latin America (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the breakdown of political order and the problem of the nation-state, liberalism and conservatism, and the emergence of illusory foreign interventions and capital investment, the reemergence of political order in the Age of Liberalism (1860-1900), and social and cultural change. Cross-listed with LNST 171.

**HISA 162 Twentieth-Century Latin America (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the Mexican Revolution, the Great Depression, populism, industrialization, revolution, and the emergence of conservative regimes in the age of neoliberalism. Cross-listed with LNST 172.

**HISA 163A Colonial Mexico (4)**
Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. The history of Mexico to independence.

**HISA 163B Modern Mexico (4)**
Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. The history of Mexico since independence.

**HISA 164A The United States and Latin America to 1930 (4)**
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of United States-Latin American relations from 1776 to the Good Neighbor Policy. Topics include the Monroe Doctrine; United States expansionism and the Latin American response; the United States-Mexican War; and the age of imperialism, 1895-1928.

**HISA 164B The United States and Latin America since 1930 (4)**
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of United States-Latin American relations from the Good Neighbor Policy to the present. Topics include United States intervention after 1945; the Cold War and counterrevolution; crises in Guatemala, Cuba, Brazil, Chile, Nicaragua, and El Salvador; and defining the new enemy after the Cold War.

**HISA 165 Modern Brazil: State and Society (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes power and resistance in Brazilian history with emphasis on the social and political movements challenging state power. Topics include slave rebellions, banditry, millenarian uprisings, the industrial working class, the urban poor, social Catholicism, feminism, and “Black Power.”

**HISA 166 Modern Argentina: Democracy and Dictatorship (4)**
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the major issues in modern Argentine history. Topics include industrialization and trade union politics, Peronism, the rise of the revolutionary left, militarism, state terrorism, political culture and the cultural dimensions of violence, and state and society during the democratic transition.

**HISA 167 Environmental History of the Americas (4)**
Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour per quarter. Prerequisite(s): upper-division standing or consent of instructor. Examines the interaction of the natural world with human society from the colonial period through the twentieth century. Focuses on how the environment, human beings, and other species have lived, changed, and generally influenced one another over time in the Americas.

**HISA 168 History of the Church in Latin America (4)**
Lecture, 3 hours; term paper, 3 hours per paper. Prerequisite(s): upper-division standing or consent of instructor. A survey of the history of the church (e.g. Catholic, Protestant) in Latin America. Includes conquest and mission, indigenous responses to Christian conversion, the long colonial period, independence, revolution, and liberation theology movements. Explores the dynamics of church and culture, church and state, and church and social transformation. Cross-listed with RLST 177.

**History of Europe**

**Upper-Division Courses**

**HISE 110 Ancient Historians (4)**
Lecture, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. The historical development of historiography as evidenced in ancient and medieval texts. Survey of Eastern king lists and biblical histories to the narrative histories of Greece and Rome. Focuses on the ideas of history in the various cultures of the ancient Near East and Mediterranean and their relation to modern historical thought. Cross-listed with CLA 100.

**HISE 111 Ancient Greece from the Bronze Age to the Persian Wars (4)**
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The historical development of historiography as evidenced in ancient and medieval texts. Survey of the history of Greece from the late Bronze Age to the end of the Persian Wars. Focuses on the Mycenaean civilization; the rise of the polis in Athens and Sparta; the Ionian Enlightenment; and the Persian Wars.

**HISE 112 Ancient Greece from Classical Athens to the...
Death of Alexander (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the history of Greece from the Persian Wars to the death of Alexander the Great. Focuses on Athens, its empire and democracy, and on the Macedonian Empire of Philip and Alexander. Special attention is given to the Greek cultural achievement within the context of changing political and social conditions.

HISE 113 Comparative Ancient Historical Writing (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of historical writing in ancient cultures, with some comparison of the ancient contribution to later authors of the genre. Cross-listed with CLA 113 and CPAC 112.

HISE 114 Ancient Writing and Literacy (4) Lecture, 3 hours, extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Uses cross-cultural comparison to survey writing and literacy in ancient civilizations and how they are related in the origin and development of selected ancient cultures. Cross-listed with CPAC 133.

HISE 115 The Roman Republic (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the political, economic, institutional, social, and cultural history of Rome from its foundation until the end of the Roman Republic (27 B.C.). Focuses on prominent figures and moments of crisis as it examines the forces that brought Rome to the forefront of the Mediterranean world.

HISE 116 The Roman Empire (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the weaknesses in the Roman Empire that led to its demise, as well as the circumstances in which new kinds of empires came into existence, through a study of the period from the third to the seventh centuries A.D.

HISE 118 Ancient Greece: The Hellenistic Age from Alexander to Cleopatra, 336-31 B.C. (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the history of Greece and the Eastern Mediterranean from Alexander the Great to the death of Cleopatra (336-31 B.C.). Explores the dramatic political, social, economic, and cultural changes that took place during the Hellenistic Age until the conquest by Rome.

HISE 119 E-Z Topics in Ancient History (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on selected topics in the history of the Ancient Mediterranean region.

HISE 119W War in the Ancient Greek World (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing; HIST 010 or HISE 110 or HISE 111 or HISE 112 or HISE 118; or consent of instructor. Examines the relationship between war and society in Greece from the Bronze Age to Alexander the Great. Topics include the organization of Greek states and their military forces, conduct on the battlefield, and the impact of war on Greek communities and their members.

HISE 119F War in the Ancient Roman World (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing; HIST 010 or HISE 110 or HISE 111 or HISE 112; or consent of instructor. Examines the relationship between war and society in Rome from the city’s founding to the fall of the Roman Empire. Topics include the development of Rome’s army in relation to Roman society, struggles to control the military, conduct on the battlefield, and the impact of war on Rome and its neighbors.

HISE 120 Early Middle Ages (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics in medieval history, from the end of classical antiquity to the 11th Century, including Christianity, Islam, the Byzantine Empire, and the barbarians.

HISE 121 The High Middle Ages (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics in medieval history, from the 11th to the 14th century, including the development of medieval institutions, the 12th century Renaissance, and the rise of European universities.

HISE 123 Law and Society in Medieval Europe (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the political, legal, social, economic, institutional, and cultural history of medieval Europe from the late crisis of the Roman Empire to the late fourteenth century. Explores the premedieval legal heritage of Europe (Roman law, early canon law, customary laws of various peoples), transformations of that heritage in the central Middle Ages (revel of Roman and canon law, customs and legislation, use and abandonment of the ordeal), and the relationship between the resulting legal systems and royal authority. Primary sources are the central component of the course materials.

HISE 131 The Renaissance (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Western Europe from 1400-1527 with special attention to Italy.

HISE 132 The Reformation (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Europe from 1517 to 1618, with special attention to the key events of the continental reformation.

HISE 133 Women Artists in Renaissance Europe, 1400-1600 (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the lives and work of women artists in Renaissance Europe. Considers circumstances under which it was possible for women to become artists; how they evolved from practicing in the cloistered lives of nuns; to working in the competitive public market space; what they painted; and who their patrons were. Cross-listed with AHS 165 and GSST 170.

HISE 134 Art and Society: Patrons and Museums (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the social, economic, and cultural impact of the political changes that took place during the High Middle Ages. Topics include the development of the papacy, the growth of cities, the formation of the wine trade, and the development of the medieval universities.

HISE 135 Absolutism and Enlightenment (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the development of absolutist monarchies in Europe from the 17th to the 18th centuries and the intellectual and cultural developments of the Scientific Revolution and the Enlightenment.

HISE 140 Nineteenth-Century Europe (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Europe from 1815 to 1914. Topics include the industrial revolution, the revolutions of 1848, Bismarck, and the unification of Germany, the rise of mass politics, imperialism, and the origins of World War I.

HISE 141 Europe, 1814-1945 (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Europe from 1814 to the end of the Second World War. Topics include World War I, the rise of fascism and communism, the crisis of the Western democracies, the diplomacy of appeasement, World War II, and the Holocaust.

HISE 142 Europe Since 1945 (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. The comparative social and political history of Europe from 1945 to the present. Topics include the cold war; decolonization; the emergence of the neoliberal welfare state; the Common Market; de Gaulle, Communism and detente; technology and new forms of social protest.

HISE 145 World War I (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the origins of the conflict and its development into the world’s first war and the first total war. Focuses on the role of technology in the war and on the social consequences of the conflict. Credit is awarded for only one of HISE 145 or HISE 145S.

HISE 145S World War I (5) Lecture, 3 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the diplomacy of war, the fighting in Europe, Asia, and Africa; Nazi oppression in conquered Europe and the destruction of the Jews; the social, economic, and technological impact of the conflict, and the origins of the Cold War. Credit is awarded for only one of HISE 145 or HISE 145S.

HISE 146 The Second World War (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the diplomacy of war, the fighting in Europe, Asia, and Africa; Nazi oppression in conquered Europe and the destruction of the Jews; the social, economic, and technological impact of the conflict, and the origins of the Cold War. Credit is awarded for only one of HISE 146 or HISE 146S.

HISE 146S The Second World War (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the diplomacy of war, the fighting in Europe, Asia, and Africa; Nazi oppression in conquered Europe and the destruction of the Jews; the social, economic, and technological impact of the conflict, and the origins of the Cold War. Credit is awarded for only one of HISE 146 or HISE 146S.

HISE 147 The Holocaust (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the extermination of European Jews during World War II. Surveys the history of the "Jewish Question"; Jewish-Christian relations; the systematic persecution and genocide of the Jews; and the history of the Holocaust. Addresses religious, philosophical, and political implications of the Holocaust, as well as continuing anti-Semitic trends. Cross-listed with RLIST 127.

HISE 148A Women and Gender in Early Modern Europe, 1348-1800 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introductory survey of women and gender relations in early modern Europe. Topics include the role of women in the Italian Renaissance, the Protestant and Catholic reforms, the witchcraft persecutions, the Enlightenment, and the French Revolution.

HISE 148B Women and Gender in Europe, 1800-present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the external history of European Jewry during World War II. Surveys the history of the "Jewish Question"; Jewish-Christian relations; the systematic persecution and genocide of the Jews; and the history of the Holocaust. Addresses religious, philosophical, and political implications of the Holocaust, as well as continuing anti-Semitic trends. Cross-listed with RLIST 127.
HISE 160 India and the British Empire (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the trends and consequences of the relationship between Britain and India from initial trading contacts in the seventeenth century, through colonization, and on to political independence and migration flows in the late twentieth century. Focuses on cultural interactions.

HISE 162 Germany from Bismarck to Hitler (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Germany from Bismarck’s accession as chancellor in 1862 to Hitler’s defeat in 1945, with special attention to the economic underpinnings of the period and the process of social and economic modernization.

HISE 163 Modern German History through Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores twentieth-century German history through film. Includes World Wars I and II, inflation and polarization of classes, Nazi Germany, representations of the Holocaust, and a divided and reunited Germany. Cross-listed with CPTL 115, GER 163, and MCS 115.

HISE 168 (E-Z) Topics in European History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Selected topics addressing the issues of European history F.

HISE 171 Early Russia (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Russia from pre-history to the establishment of the Romanov dynasty. Deals with the Slavic, Norse, and Asian origins of the Kievan state, the impact of the Mongol conquest, the rise of Moscow, and the Time of Troubles in the seventeenth century. Special attention to European vs. Asian influences.

HISE 172 Imperial Russia (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Russia under the Romanov dynasty, 1650-1917. Using the twin themes of absolute monarchy and the rise of revolutionary movements, the course details with the origins of the Romanov dynasty. Deals with the Slavic, Norse, and Asian origins of the Kievan state, the impact of the Mongol conquest, the rise of Moscow, and the Time of Troubles in the seventeenth century. Special attention to European vs. Asian influences.

HISE 173 Religion and Nationality in Imperial Russia (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to the great religious, national, and ethnic diversity inside the Russian Empire (1552-1917). Topics include colonial expansion and frontiers; attitudes and policies toward non-Russians; discovery and defense of ethnoracial identities; nation-building and nationalism; nationality conflicts, violence, and revolution.

HISE 174 Russia Since 1917 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Russia from 1917 to the present, with emphasis on the Russian Revolution, the Communist Party, Stalinism, the Great Purges, World War II, and the Khrushchev, Brezhnev, and Gorbachev years. Revolutionary change in a traditional society will be a central theme.

HISE 175 (E-Z) Topics in Russian History (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): HISE 172 or HISE 174 or consent of instructor. Selected topics addressing the issues of Russian history E. The Stalin Period.

HISE 176 Serbia, Bosnia, and Kosovo: The Contempora- ry Crisis and Its Historical Roots (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores historical precedents for the current Yugoslav crisis. Examines the tragic events of the 1990s and South Slavic history from the Ottoman conquest to World War II. Focus is on the national histories and mythologies of Serbs, Bosnians, and Albanians.
Honors Program / Humanities, Arts, and Social Sciences / 322

Humanities, Arts, and Social Sciences courses are supervised by the committee and are open to major as well as nonmajor students.

Interdisciplinary Option The interdisciplinary option is built around a central concept in humanities and social sciences. The concept might be a specific culture, country or ethnic group such as Italian civilization and culture; an age or period such as the Renaissance or the industrial revolution; a great social issue or human problem such as war, revolution, communication; or any other topic which receives significant attention from several disciplines.

Two-Field Option In special circumstances the committee sponsors a two-field option for the major designed to allow students to combine studies in two disciplines. Such majors are approved only if they cannot be accommodated within a dual major or within the Liberal Studies Program.

University Requirements See Undergraduate Studies section.

College Requirements See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements The major requirements for the B.A. degree in Humanities, Arts, and Social Sciences are as follows: Students may choose either an interdisciplinary or a two-field option.

Interdisciplinary Option

1. Upper-division requirements (38-unit minimum)
   a. A minimum of 32 units directly related to the chosen central concept
   b. At least 6 units (but not more than 8 units) HASS 195 and/or HASS 196

2. The committee may require upper-division courses beyond those indicated above if the topic of study requires specific language, quantitative, or methodological proficiency.

Note The senior thesis or research paper is the culmination of the major and represents an interdisciplinary approach to the central concept of the major. HASS 195 (Senior Thesis) and HASS 196 (Senior Research Paper) are supervised by a faculty advisor and designed to bring into focus a substantial portion of the major.

The following are sample interdisciplinary programs:


Renaissance AHS 161, CPTL 150J, ENGL 153, ENGL 154, HIST 131, MUS 101A, SPN 140 (E-Z), HASS 195 (8 units).

Two-Field Option

1. Upper-division requirements (56 units) Twenty-eight (28) units in each of two fields, supervised by a faculty advisor

2. The committee may require upper-division courses beyond those indicated above if the topic of study requires specific language, quantitative, or methodological proficiency.

Lower-Division Courses

HASS 001 Step-by-Step to College Success for First Year Students (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): none. Involves weekly readings, writing assignments, and class discussions dealing with factors relating to academic success. Addresses the social and psychological adjustment to college life. Investigates a wide range of academic disciplines and campus student support services. Graded Satisfactory (S) or No Credit (NC). Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

HASS 010 Arts and Ideas Experience (2) Workshop, 2 hours per quarter; individual study, 3 hours; written work, 2.5 hours. Prerequisite(s): none. Explores lectures, performances, and visual arts on the UC Riverside campus. Activities include attending at least one university- or faculty-sponsored performance, lecture, exhibition, or concert each week and writing a one-page review. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 24 units. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

HASS 082 Major Themes in Contemporary Research and Thinking (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. Presents major themes in contemporary thinking and research in an area of the humanities, arts, or social sciences. Discussion sections focus on study of smaller topics and utilize source materials, selected intensive readings, etc. Emphasizes research and writing skills. Rotates among College of Humanities, Arts, and Social Sciences faculty and departments every year. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable as topics change to a maximum of 10 units. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

HASS 090 Special Studies (1-3) Individual study, 3-9 hours. Prerequisite(s): consent of the chair of the Humanities, Arts, and Social Sciences Interdisciplinary Program. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable to a maximum of 8 units.

HASS 92 First-Year Seminar in the Humanities, Arts, and Social Sciences (1) Seminar, 10-15 hours per quarter. Prerequisite(s): freshman standing; sophomores may enroll on a space-available basis with consent of instructor. Introduction to one of the many areas of study explored by the faculty of the College of Humanities, Arts, and Social Sciences in a small-group, highly interactive format. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 3 units of any combination of ENGR 092, HASS 092, and NASC 092; students may enroll in only 1 unit of ENGR 092, HASS 092, or NASC 092 per quarter. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences.

HASS 096 Environment and Society (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): lower-division standing or consent of instructor. Presents major environmental issues facing society from an interdisciplinary perspective. Topics may include water, energy, climate change, and urbanization. Cross-listed with ENGR 096 and NASC 096. Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

Upper-Division Courses

HASS 100 Studies in Leadership and Organizational Effectiveness (5) Lecture, 3 hours; consultation, 3 hours per quarter; practicum, 3 hours; written work, 21 hours per quarter. Prerequisite(s): consent of the instructor. Introduces social science literature on leadership studies. Includes planning and producing a campus event or research project and interaction with several California leaders. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

HASS 102 The McSweeny-McCauley Seminar (4) Seminar, 3 hours, extra reading, 3 hours. Prerequisite(s): consent of instructor. Presents a topic selected by the current McSweeny-McCauley Chair in Teaching Excellence. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable as topics change to a maximum of 16 units. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

HASS 190 Special Studies (1-5) Conference. Prerequisite(s): consent of the Humanities, Arts, and Social Sciences Interdisciplinary Committee. Directed interdisciplinary study.

HASS 191S Seminar in Sacramento (4) Seminar, 3 hours, outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor; admission to the UCR Center at Sacramento Program. Examines aspects of the Sacramento area, including cultural, political, and governmental institutions and the sciences, arts, and media. Requires a substantial research paper or project, the result of guided independent work drawing on the unique aspects of Sacramento. Required of participants in the UCR Center at Sacramento Program. Cross-listed with ENGR 191S and NASC 191S. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

HASS 195 Senior Thesis (1-8) Prerequisite(s): enrollment by request of student with approval of the advisor and the Humanities, Arts, and Social Sciences Interdisciplinary Committee. For honors students who may need one or more quarters to complete the research and writing of a senior thesis. Course is repeatable to a maximum of 12 units.

HASS 196 Senior Research Paper (1-4) Prerequisite(s): consent of advisor.

HASS 198-I Internship (1-12) Internship, 10 hours per week for each 4 units. Prerequisite(s): upper-division standing and approval of Committee on Independent Student Projects. A student-defined project, the major portion of which is taken off campus. May be supervised by an off-campus instructor and/or UCR advisor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.
Inflammation and Infectious Disease Designated Emphasis

Subject abbreviation: IID
School of Medicine

Monica Carson (Biomedical Sciences), Co-Director
Emma Wilson (Biomedical Sciences), Co-Director
monica.carson@ucr.edu; emma.wilson@ucr.edu

Advisory Committee & Participating Faculty
Monica Carson (Biomedical Sciences)
Djurdjica Coss (Biomedical Sciences)
Nicholas DiPatrizio (Biomedical Sciences)
Innya Ehteli (Biomedical Sciences)
Marcus Kaul (Biomedical Sciences)
David Lo (Biomedical Sciences)
Christian Lytle (Biomedical Sciences)
Declan McCole (Biomedical Sciences)
Meera Nair (Biomedical Sciences)
Tara Nordgren (Biomedical Sciences)
Neal Scholler (Biomedical Sciences)
Andrew Tapper (Biomedical Sciences)
Amae Walker (Biomedical Sciences)
Emma Wilson (Biomedical Sciences)
Seema Tiwari-Woodruff (Biomedical Sciences)
Sika Zheng (Biomedical Sciences)
Dimtrios Monikis (Bioengineering)
JamesBorneman (Microbiology)
Katherine Borkovich (Microbiology)
Shou-Wei Ding (Microbiology)
Kanine LeRoch (Microbiology)
Huinan Liu (Microbiology)
Wenbo Ma (Microbiology)
Huinan Liu (Microbiology)
Karine LeRoch (Microbiology)
Katherine Borkovich (Microbiology)
Seema Tiwari-Woodruff (Biomedical Sciences)
Sika Zheng (Biomedical Sciences)
Dimtrios Monikis (Bioengineering)
James Borneman (Microbiology)
Katherine Borkovich (Microbiology)
Shou-Wei Ding (Microbiology)
Kanine LeRoch (Microbiology)
Huinan Liu (Microbiology)
Wenbo Ma (Microbiology)
Rong Hai (Plant Pathology and Microbiology)
Ansel Hsiao (Plant Pathology and Microbiology)

Designated Emphasis Requirements

The Designate Emphasis is an interdisciplinary graduate program of study to enhance student training in the field through a focused coursework across at least two departments. The program is optional and the courses used for the DE may not be counted toward MS or PhD requirements.

1. Three (3) courses (12-14 units) with a focus in the basic principles of immunology and infectious disease will be selected from:
   - MCCL 124 Pathogenic Microbiology
   - BMSC 236 Foundations of Medicine II
   - MCCL 202 Microbial Pathogenesis
   - MCCL 221 Microbial Genetics
   - BMSC 223E Inflammation, Autoimmunity and Pathogen Defense

*If taking BMSC 236 (10 units) only two courses are required for completion.

Students must select courses with relevant content as approved by the Designated Emphasis Advisory Committee comprising of three participating faculty including the student’s major professor. Students must select courses from at least two different departments. Undergraduate course taken to fulfill the requirement must be accompanied by a 292 course taken in the same quarter with extra work agreed upon by the professor and student.

2. BMSC 222 (2 units): Special Topics in Biomedical Sciences with emphasis in infectious diseases. The course will address the research pertaining to the student’s interest and prepare trainees in applying the knowledge of basic principles of immunology to the pathophysiology of infectious disease. Graded Satisfactory (S) or No Credit (NC)

3. Research Project: students will write a research article on a selected inflammation or infectious disease topic. The review will be evaluated by the Designated Emphasis Advisory Committee. It is the committee’s expectation that student will fulfill this component by submitting the review article for the journal publication. Successful completion of this requirement is reviewed for the Designated Emphasis completion.

All requirements for the Designated Emphasis must be satisfied no later than one calendar year from the quarter in which candidate advances to candidacy in their PhD field; a minimum GPA of 3.0 is required for the Designated Emphasis completion.

Interdisciplinary Studies

College of Humanities, Arts, and Social Sciences

Tamara Ho, Chair
Office: 2005 CHASS INTN; tamara.ho@ucr.edu
(951) 827-4843; lsnid.ucr.edu

Committee in Charge
Christopher Chase-Dunn (Sociology)
Dean, College of Humanities, Arts and Social Sciences, ex officio

The Interdisciplinary Studies major is not currently accepting new students. For more information, contact CHASS Student Academic Affairs, 3400 Humanities and Social Sciences Building, (951) 827-3683.

International Relations Minor

College of Humanities, Arts, and Social Sciences

Bronwyn A. Leebaw, Ph.D., Chair
Office, 2230 Watkins Hall
(951) 827-5509 or 5312 internationalrelations.ucr.edu

Committee in Charge
Steven Helfand (Economics)
Irwin Wall (History/Religious Studies)
Milagros Peña Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

Offered by the Department of Political Science, the International Relations minor offers a basic examination of the major approaches, disciplines, and perspectives of international relations. The study of international relations is necessarily interdisciplinary, focusing on economic, geographic, historical, and political issues and questions.

The International Relations minor is helpful in preparing students for the many careers in the international arena.

Requirements for the minor (28 units)

1. Eight (8) units from HISA 117B, HISE 142, HISE 146, HISA 164B, HISE 174, HIST 182
2. Eight (8) units from ECON 171, ECON 175, ECON 178/BUS 178, ECON 181, ECON 182, ECON 185/LNST 185
3. POSC 124 or POSC 124S
4. Eight (8) units from POSC 123, POSC 125, POSC 126, POSC 127, POSC 128, POSC 129, POSC 130, POSC 155 or POSC 155S, POSC 160 or POSC 160S

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Journalism Minor

College of Humanities, Arts, and Social Sciences

Andrew Winer, M.F.A., Chair
Department Office, ARTS 129
(951) 827-5424; creativewriting.ucr.edu

Committee in Charge
Mike Davis, M.A. (Creative Writing)
Martin Johnson, Ph.D. (Political Science)
Milagros Peña Ph.D.
Dean, College of Humanities, Arts and Social Sciences, ex officio

Offered by the Department of Creative Writing, the minor offers basic examination of the theory, practice and ethics of contemporary journalism, with an emphasis on reporting and editing. Coupled with work on student publications and internships, the minor serves as an entryway to professional writing in news media or to graduate study in journalism.

Lower-division requirements (9 Units)

1. ART 003
2. CRWT 057C

Upper-division requirements (20 units)

1. Eight (8) units:
   a) CRWT 165
   b) CRWT 175
2. Eight (8) units:
   a) CRWT 174
   b) One (1) course either from an approved list of media-related upper-division courses, or, with the approval of the academic advisor for journalism minors, an upper-division course relevant to an area of journalism specialization.
3. Either CRWT 195: Senior Thesis (4), or CRWT 198: Internship (4). Students electing a thesis will complete a series of news features or an investigative article or series requiring significant endeavor in reporting and writing and demonstrating an understanding of sound
journalistic principles. CRWT 195 is open to seniors only. Students completing CRWT 198I must complete 4 units of internship with a journalism organization.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

**Labor Studies Minor**

**Subject abbreviation:** LABR

**College of Humanities, Arts, and Social Sciences**

Ellen Reese, Ph.D., Chair
Office, 1217 Watkins Hall
(951) 827-2930; ellen.reese@ucr.edu
laborstudies.ucr.edu

Committee in Charge

James Brennan (History)
Marissa Brooks (Political Science)
Amalia Cabezas (Gender and Sexuality & Media and Cultural Studies)
Christopher Chase-Dunn (Sociology)
Alessandro Fornazzari (Hispanic Studies)
John N. Medearis (Political Science)
Dylan Rodriguez (Media and Cultural Studies)
Devra A. Weber (History)
Miguel Perafi Peria Ph.D.

Dean, College of Humanities, Arts and Social Sciences, ex officio

Labor studies is an interdisciplinary minor that focuses on the conditions, activities, and struggles of workers and other members of the working class from an international, contemporary, comparative and historical perspective. Although trade unions are the primary focus, students will also examine other forms of working class organizing, including community organizing, and organizing by women and people of color. Courses focus on work in formal workplaces, including service, industrial, clerical, professional, and managerial work, and may also address other forms of work, such as unpaid housework, prison labor, or work in the informal economy. The minor addresses issues affecting workers, including governmental policies, technological change, globalization, neoliberalism, and alternative models for organizing for social justice. In addition to taking academic courses, students gain hands-on experience through a one-quarter internship with a union or related organization. This minor helps to prepare students for careers in labor and community organizing, labor law, or labor regulatory agencies.

Requirements for labor studies minor are as follows:

1. Five courses (at least 20 units) from the approved list of courses
2. One of the following ‘core’ courses: LABR 001, HISA 124, ETST 102, SOC 112, SOC 135, GSTST 101
3. A labor internship course (at least 4 units or the equivalent) completed through the following course: LABR 198-I
4. One course (at least 4 units) that deals with inequality based on gender, race, and/or sexual orientation: ANTH 109/GSTST 109, ANTH 122, ANTH 138, ANTH 139, ANTH 147/GSTST 140, ANTH 148/GSTST 150
6. Students can also petition to the chair of the program to count towards the minor an independent study or regular course not listed above that is relevant to labor studies. See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

**Lower-Division Course**

LABR 001 Introduction to Labor Studies (4) Lecture, 3 hours; extra reading, 3 hours. Through comparative and historical perspective, examines the social forces shaping labor conditions and workers’ struggles for justice. Covers the changing nature of work under capitalism, race and gender discrimination in the labor market, the impact of economic globalization, and unions’ successes and limitations.

**Upper-Division Course**

LABR 198-I Individual Internship in Labor Studies (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): upper-division standing; consent of instructor. Supervised experience in a labor union or related community organization. Focuses on the issues affecting workers and/or low-income people, as well as the prospects and challenges for achieving social justice for working-class people in the contemporary United States. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**Latin American and Latino Studies Designated Emphasis**

**Subject abbreviation:** LAS

**College of Humanities, Arts, and Social Sciences**

Jonathan Ritter, Ritter, Chair
Office, INTN 4020
jonathan.ritter@ucr.edu

Curriculum Committee

Jennifer Hughes (History)
Marta Hernández Saldivar (Hispanic Studies)
Jennifer Nájera (Ethnic Studies)

**Designated Emphasis Requirements**

The Designated Emphasis is a rigorous course of study, requiring students to demonstrate focused coursework and research in the field with three core requirements:

1. Four (4) graduate courses (16 units) with at least one of these courses emphasizing U.S.-Latinx experience and at least two with a primary axis of Mexico, Central America, South America, or the Caribbean. These courses must be taken in at least two different departments: AHS 260, ANTH 209, ANTH 218, ANTH 251, ANTH 264, ECON 260, ECON 261, ECON 262, ECON 264, ECON 265, ETST 223, ETST 244, ETST 245, ETST 246, HIST 206A, HIST 206B, HIST 205A, HIST 205B, MUS 271, MUS 263, POSC 278, PORT 201, SOC 243 (E-Z), SOC 261, SOC 265 (E-Z), SOC 282, SPN 257, SPN 258, SPN 270, SPN 272, SPN 273A, SPN 278, SPN 279, SPN 301.
2. Submission of a research portfolio within one year after the quarter in which the student advances to candidacy. The portfolio, to be reviewed by a standing committee of LAS faculty, will demonstrate significant research in the field, include two research papers and syllabi from the four courses accompanied by an introductory self-statement (of no more than 1000 words) articulating the particular research emphasis and its depth and breadth of engagement with the field along with an explanation of specific expertise and emphases.

3. Language certification is required through examination or coursework in a Latin American language: Spanish, Portuguese, Kreyol, or an indigenous language. Evidence of language certification must be included in the research portfolio (passing of a written translation exam, a full length (15pp+) research paper written in the language, or two or more years of language courses at the college or university level).

**Latin American Studies**

**Subject abbreviation:** LNST

**College of Humanities, Arts, and Social Sciences**

- Jonathan Ritter, Chair Office, INTN 4020, (951) 827-6097; jonathan.ritter@ucr.edu
- Marta Hernández Salván, Ph.D., Vice Chair Office, 2420 HMNSS, (951) 827-1423; marta.hernandez@ucr.edu
- Advising Office, 3111 INTS (Lobby), (951) 827-6427; latinamericanstudies.ucr.edu

**Committee in Charge**
- Alicia Arritz (Gender and Sexuality Studies)
- Wendy Ashmore (Anthropology)
- Sara Becker (Anthropology)
- James Brennan (History)
- Rogério Budasz (Music)
- Amalia Cabezás (Music and Cultural Studies)
- Miguel Carreras (Political Science)
- Paulo Chagas (Music)
- Christopher Chase-Dunn (Sociology, Emeritus)
- Marcelle Chauvet (Economics)
- Xochilt Chávez (Music)
- Ronald Chilcote (Economics and Political Science, Emeritus)
- Walter Clark (Music)
- Luciana Dar (Education)
- David Fairris (Economics, Emeritus)
- Scott Fedick (Anthropology)
- Alessandro Fornazari (Hispanic Studies)
- Paul Green (Ethnic Studies)
- Steven Hackel (History)
- Laura Harris (Media and Cultural Studies)
- T. S. Harvey (Anthropology)
- Steven Heifetz (Economics)
- Robbi Hernandez (Anthropology)
- Marta Hernández Salván (Hispanic Studies)
- David Herzberger (Hispanic Studies)
- Jennifer Hughes (History)
- Covadonga Lamar Prieto (Hispanic Studies)
- Aleca Le Blanc (Art History)
- Juliette Levy (History)
- Haejin Nah (Anthropology)

**Major**

Latin American Studies is an interdisciplinary, area studies major that allows students to combine insights from many related disciplines. The interdisciplinary focus permits students to study the anthropology, economics, geography, history, sociology, languages and cultures of the region to gain a broad understanding of a complex world area.

The Latin American Studies major provides great flexibility to explore a wide range of subjects of particular interest—from religious cults in the Caribbean to indigenous video in the Andes or the dynamics of agrarian reform in rural Mexico.

The flexibility of the major allows the possibility of completing a double major with other departments such as History, Anthropology, or Political Science.

UCR has a strong faculty in Latin American Studies, with more than 45 members drawn from departments across the campus. More than 125 courses taught at UCR have a significant focus on the region. The strength and breadth of the offerings at UCR permit each student to specialize in the particular country or discipline of greatest interest. Students have many opportunities to get involved in research projects with Latin American Studies professors. Students are encouraged to spend time living and studying in Latin America through, for example, the University of California Education Abroad Program (EAP).

**Career Opportunities**

The Latin American Studies major presents numerous opportunities after graduation. The interdisciplinary nature of the program prepares the student for further study in any number of academic fields at the graduate level, including anthropology, geography, history, sociology, Spanish and Portuguese, law, and journalism.

The B.A. degree itself is valuable preparation for many careers, including the U.S. foreign service, nongovernmental development and aid organizations, international organizations, large overseas corporations, banking, foreign missions, journalism and the media, and teaching.

**University Requirements**

See Undergraduate Studies section.

**College Requirements**

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

**Major Requirements**

The major requirements for the B.A. degree in Latin American Studies fall into three major groups. First, students must take Introduction to Latin American Studies (LNST 001) and satisfy a language requirement in either Spanish or Portuguese. Second, students choose three disciplinary areas in which to focus their upper-division work. They must take a total of 24 required units in these three areas. Finally, students take an additional 12 units of elective courses in Latin American Studies. Latin American Studies students are encouraged to take additional coursework at the lower and upper division levels.

The specific requirements for the major are as follows:

1. **Lower-division requirements (5 units)**
   a) Introduction to Latin American Studies (LNST 001) or an equivalent course from the following list of lower-division courses:

   - LNST 015/ MUS 015, LNST 016/ MUS 016, LNST 017/ MUS 017, LNST 073A/ DANCE 073A, LNST 073B/ DANCE 073B, ANTH 010, ANTH 027A/ AHS 027, AHS 028, ETST 002, ETST 004/ HIST 004, ETST 008, MCS 025/ ENGL 021/FDP 021, MCS 046/ SPN 046, HASS 022A, GBST 001, GBST 002, HIST 075, POSC 020, RLST 009, RLST 011, SPN 012, GSST 031H, GSST 020

   b) Proficiency in Spanish to the SPN 005 level or in Portuguese to a comparable level

**Note** Additional course work in Spanish and/or Portuguese recommended for students interested in careers in Latin American fields.

2. **Upper-division requirements (at least 36 units)**
   a) At least two courses in three of the following groups (at least 24 units total):

   2. Economics and Business: BUS 114, BUS 138, BUS 185, ECON 122E, ECON 178, ECON 181, ECON 182, ECON 185/LNST 185, ECON 187/LNST 187
   3. Education/Language: EDUC 114, ETST 146, ETST 165/SOC 165, ETST 166, PORT 101A, PORT 101B, PORT


(5) Literature and Cultural Studies: ENGL 121E, ENGL 136, ENGL 136T, ENGL 137T, ETST 114, ETST 170/WRLT 170, LNST 120/SPN 120C, LNST 153/ETST 153, SPN 102B, SPN 111F, SPN 111W, SPN 121E, SPN 122A, SPN 145, SPN 165, SPN 170(E-Z), SPN 172, SPN 188(E-Z), PORT 162(E-Z), RLST 138


(7) Politics: ETST 111, ETST 123, ETST 156, POSC 157, POSC 159, POSC 160, LNST 142/POSC 162, LNST 148/POSC 158, SOC 181


See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Program

The Ph.D. Designated Emphasis (DE) in Latin American Studies fosters communication, collaboration, and exchange with scholars across many departments within the university, and at the national and international levels. Our faculty are active researchers in the social sciences, humanities and natural sciences. Students pursuing the D.E. will benefit from the prominence of the faculty combined with a range of courses and research opportunities.

Requirements

The Designated Emphasis is a rigorous course of study requiring students to demonstrate focused coursework and research in the field with three core requirements:

1. The program requires the completion of 4 graduate courses or 16 units (with at least one of these courses emphasizing U.S.- Latinx experience and at least two with a primary axis of Mexico, Central America, South America, or the Caribbean). These courses must be taken in at least two different department and will be selected from the list below. Courses used to satisfy departmental Ph.D. requirements may not be applied to the D.E. (although courses taken within the student’s home department not required for the Ph.D. may be applied). The GPA for coursework cannot be below a 3.0.

2. The program also requires the submission of a research portfolio within one year after the quarter in which the student files for candidacy. The portfolio, to be reviewed by a standing committee of LAS faculty, will demonstrate significant research in the field, include two research papers and syllabi from the four courses accompanied by an introductory self-statement of no more than 1000 words articulating the particular research emphasis and its depth and breadth of engagement with the field along with an explanation of specific expertise and emphases.

3. Finally, the program requires language certification through examination or coursework in a Latin American language: Spanish, Portuguese, Kreyol, or an indigenous language. Evidence of language certification must be included in the research portfolio (passing of a written translation exam, a full length (15pp+) research paper written in the language, or two or more years of language courses at the college or university level).

Lower-Division Courses

LNST 001 Introduction to Latin American Studies (5) Lecture, 3 hours; screencast, 1.5 hours; individual study, 3 hours; term paper, 1.5 hours. Introduces key issues in Latin American Studies and how scholars from diverse fields address them. Topics include indigenous cultures; colonial history; poverty, race, gender, and class inequalities; democracy and dictatorship; revolution; and civil war. Integrates film, literature, and music into the course.

LNST 015 Latin American Folk and Popular Styles (4) Lecture, 2 hours; discussion, 1 hour; assigned listening, 3 hours. Prerequisite(s): none. Introduction to the vast array of folk and popular styles of music in Latin America, with an emphasis on cultural and ethnic interaction and exchange in the context of Latin American history, politics, and society. Cross-listed with MUS 015.

LNST 016 Latin American Classical Heritage (4) Lecture, 2 hours; discussion, 1 hour; assigned listening, 3 hours. Prerequisite(s): none. Survey of the rich heritage of Latin American classical music from Renaissance sacred polyphony to contemporary styles. Emphasis on the gradual emergence of Latin American music from European domination and the establishment of distinctive national traditions in the post-colonial era. Cross-listed with MUS 016.

LNST 017 Music of Mexico (4) Lecture, 3 hours; discussion, 1 hour; assigned listening, 1 hour. Prerequisite(s): musical training and knowledge of Spanish is useful, but not required. Covers music from 1521 to the present day. Explores the rich musical tradition of Mexico, as well as the relationship between its art and popular music. Cross-listed with MUS 017.

LNST 027 Art of Pre-Columbian America (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. A survey course that provides a background to the ancient art of Mexico, Central America, and the Andean region of western South America. Discusses art of pre-Columbian America according to the three broad cultural regions of Mesoamerica, the lower part of central and northwestern South America, and the Andean area. Cross-listed with AHS 027 and ANTH 027.

LNST 028 Art and Architecture of Latin America (4) Lecture, 3 hours; discussion, 1 hour; individual study, 2 hours. Introduces Latin American art and architecture from the European conquest to the present. Topics include religious and secular art and architecture; hybridization of indigenous and imported styles; national styles after independence; Mexican murals; women artists; Latin American modernismo; and Chicano and Border art. Cross-listed with AHS 028.

LNST 073A Dance of Mexico (2) Studio, 3 hours; extra
LNST 073B Dance of Mexico (2) Studio, 3 hours; extra reading, 1 hour; screening, 1 hour; individual studio, 1 hour. Prerequisite(s): LNST 073A/UMUS 073A is recommended. Covers the traditional dances of Mexico at the beginning level. Includes attendance at dance concerts outside of class. Recommended for both non-dancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with MUS 073A.

LNST 105 Imagining the Nation: Film and Media in Latin America (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. A survey of contemporary Latin American cinema. Covers the survival, revival, and invention of religious traditions in ancient and contemporary Mesoamerica. Examines indigenous and immigrant religions through halcyon and rituals. Also of pre-Columbian peoples; sexuality and exoticism in religion; Indian theology and theology; Counter Reformation Catholicism; and growing religious syncretisms. Cross-listed with RLST 136.

LNST 107SA Introduction to Latin American Studies (2) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours. Prerequisite(s): none. Covers the traditional dances of Mexico at the beginning level. Includes attendance at dance concerts outside of class. Recommended for both non-dancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with MUS 073A.

Upper-Division Courses

LNST 105 Imagining the Nation: Film and Media in Latin America (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. A survey of contemporary Latin American cinema. Covers the survival, revival, and invention of religious traditions in ancient and contemporary Mesoamerica. Examines indigenous and immigrant religions through halcyon and rituals. Also of pre-Columbian peoples; sexuality and exoticism in religion; Indian theology and theology; Counter Reformation Catholicism; and growing religious syncretisms. Cross-listed with RLST 136.

LNST 109 Gender, Media, and Latin America (5) Lecture, 3 hours; screening, 3 hours; outside research, 3 hours. Prerequisite(s): AHS 027/ANTH 027/LNST 027 or upper-division standing or consent of instructor. An introduction to the art of the Aztec Empire. Studies architecture, sculpture, ceramics, paintings, printmaking, goldwork, and feather work. Explores the relationship between ritual and the imperial state. Cross-listed with AHS 112 and ANTH 151.

LNST 110 History of Brazilian Art & Architecture (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; written work, 1 hour. Prerequisite(s): sophomore, junior, or senior standing or consent of instructor. The history of Brazilian art and architecture from the nineteenth century to the present. Explores visual culture including sculpture, prints, textiles, architecture, urbanism, landscape design, and installation art. Studies artworks and buildings through a social historical framework, taking into consideration topics like colonialism, modernization, underdevelopment, race, nationalism, globalism, and globalization. Cross-listed with AHS 114.

LNST 115 Modern and Contemporary Art of Latin America (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): sophomore, junior, or senior standing or consent of instructor. A survey of Latin American art from circa 1900 to the present. Considers national and regional histories and artistic trajectories beginning with the advent of modernism. Investigates the relationships between European and Latin American developments. Cross-listed with AHS 115.

LNST 116 Architecture and Arts of the Andes (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): sophomore, junior, or senior standing or consent of instructor. An introduction to architecture, urbanism, and related material culture of the Andes from ancient times to the present. Focuses on the diverse and rich architectural heritage of an important building center in the Americas. Addresses architecture’s relationship to artistic and cultural production such as painting, pottery, sculpture, material culture, and city planning, and textiles. Cross-listed with AHS 116.

LNST 117 Visual Culture of the Incas (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the art, architecture, and urban form of the Inca civilization. Examines how these elements influenced state formation, conquest, and resistance. Includes studies of urban plans, buildings, paintings, textiles, prints, sculpture, metalwork, and ceramics. Cross-listed with AHS 117 and ANTH 157.

LNST 120 Major Topics in Music and Latin America (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): SPN 110. Reading and analysis of major texts of authors from Latin America. Cross-listed with SPN 120C.

LNST 125 (E-Z) Topics in Latin American Film and Media (5) Lecture, 3 hours; screening, 3 hours; extra reading, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Intensive historical, formal, and theoretical analysis of a broad range of films and texts from Mexico, Central America, and Latin America. Cross-listed with MCS 125 (E-Z) and SPN 125 (E-Z).

LNST 127E Colonialism and Religions in Mexico (5) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the way Latin Americans have thought of and represented gender as topics change to a maximum of 8 units. Cross-listed with MCS 185 and SPN 185.

LNST 151 Major Topics in Hispanic Literature: Latin America (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the breakdown of political order and the problem of the nation-state, liberalism and conservatism, slavery and abolition, foreign investment and capital investment, the reemergence of political order in the Age of Liberalism (1860-1900), and social and cultural change. Cross-listed with HISA 161.

LNST 171 Nineteenth-Century Latin America (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the breakdown of political order and the problem of the nation-state, liberalism and conserva-

LNST 172 Twentieth-Century Latin America (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the Mexican Revolution, the Great Depression, populism, industrialization, revolution, and the emergence of conservative regimes in the age of neoliberalism. Cross-listed with HISA 162.

LNST 185 Economic Development in Latin America (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 104A or ECON 105A or ECON 105A. A comparative analysis of the major trends in Latin American economies in the twenty-first century. Includes historical legacies, primary export economies, the theory and practice of import substitution industrialization and the debt crisis. Also covers stabilization and structural adjustment, poverty and income distribution, the informal and agricultural sectors, and the environment. Cross-listed with ECON 185.

LNST 187 Contemporary Public Policy Challenges in Latin America (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 002 or ECON 003 or consent of instructor. A survey of the wide-ranging policy reforms since the 1980s and of contemporary public policy challenges in Latin America. Challenges discussed include extremely high levels of poverty and inequality; inadequate educational and healthcare systems; pressures for land reform; problems of trade competitiveness, and recurring currency crises. Cross-listed with ECON 187.

LNST 190 U.S.-Latin American Relations (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores international relations between the United States and the nations of Latin America. Examines different theories for explaining changes in the conduct of U.S.-Latin American relations over time. Topics include democracy and empire, revolution and counter-insurgency, economic integration and trade, petroleum politics, drug trafficking, and migration flows. Cross-listed with POSC 161.

LNST 191 Economic Development in Brazil (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A or ECON 105A. A comparative analysis of the major trends in Latin American economies in the twenty-first century. Includes historical legacies, primary export economies, the theory and practice of import substitution industrialization and the debt crisis. Also covers stabilization and structural adjustment, poverty and income distribution, the informal and agricultural sectors, and the environment. Cross-listed with ECON 189.

LNST 192 Bilingual Studies (1-5) Consent of the instructor and the Latin American Studies Committee required.
2. Law and Society requirements (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100 (with a grade of "C" or better)
   c) One course chosen from POSC 114, PSYC 012, SOC 004 (or equivalent course in research methods)
   d) Three courses chosen from ANTH 127, ECON 119, PHIL 165, POSC 167, PSYC 175, SOC 159
   e) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, LWSO 175 (E-Z), PHIL 164, POSC 111, POSC 166, POSC 168, POSC 186, SOC 147, SOC 149, SOC 180
   f) LWSO 193, Senior Seminar

Note: For sections 2.d) and 2.e) combined, not more than two courses may be taken from the same department. In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (specified departmental requirements and Law and Society requirements).

Minor

The minor in Law and Society has the following requirements.

1. Upper Division (six courses at least 24 units)
   a) LWSO 100
   b) Three courses chosen from ANTH 127, ECON 119, PHIL 165, POSC 167, PSYC 175, SOC 159
   c) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, PHIL 164, LWSO 175 (E-Z), POSC 111, POSC 166, POSC 168, POSC 186, SOC 147, SOC 149, SOC 180

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Upper-Division Courses

LWSO 100 Introduction to the Study of Law and Society (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the interdisciplinary study of the role of law and legal institutions in society. Examines the role of criminal, tort, contract, constitutional, or other areas of the law in society from different disciplinary perspectives. Credit is awarded for only one of LWSO 100 or LWSO 100H.

LWSO 100H Honors Introduction to the Study of Law and Society (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Honors course corresponding to LWSO 100. An introduction to the interdisciplinary study of the role of law and legal institutions in society. Examines the role of criminal, tort, contract, constitutional, or other areas of the law in society from different disciplinary perspectives. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of LWSO 100 or LWSO 100H.

LWSO 175 (E-Z) Topics in Law and Society (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): LWSO 100 or LWSO 100H, upper-division standing. Addresses current topics in law and society.

LWSO 180A Symposium in the Law (1) Seminar, 10 hours per quarter. Prerequisite(s): upper-division standing; consent of instructor in the preceding quarter. A discussion of legal matters of common interest, in conjunction with experts from outside the university. Graded In Progress (IP) until LWSO 180A, LWSO 180B, and LWSO 180C are completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. After completing LWSO 180A, LWSO 180B, and LWSO 180C, students may repeat the sequence once for credit; total credit for each course may not exceed 2 units.

LWSO 180B Symposium in the Law (1) Seminar, 10 hours per quarter. Prerequisite(s): LWSO 180A. A discussion of legal matters of common interest, in conjunction with experts from outside the university. Graded In Progress (IP) until LWSO 180A, LWSO 180B, and LWSO 180C are completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. After completing LWSO 180A, LWSO 180B, and LWSO 180C, students may repeat the sequence once for credit; total credit for each course may not exceed 2 units.

LWSO 180C Symposium in the Law (1) Seminar, 10 hours per quarter. Prerequisite(s): LWSO 180B. A discussion of legal matters of common interest, in conjunction with experts from outside the university. Graded In Progress (IP) until LWSO 180A, LWSO 180B, and LWSO 180C are completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. After completing LWSO 180A, LWSO 180B, and LWSO 180C, students may repeat the sequence once for credit; total credit for each course may not exceed 2 units.

LWSO 192 Science and Law (4) Lecture, 3 hours; extra reading, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): LWSO 100 or LWSO 100H. Discusses the intersection between science and law. Also compares legal and scientific procedures and decision making.

LWSO 193 Senior Seminar in Law and Society (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): LWSO 100 or LWSO 100H. A discussion of legal matters of common interest, in conjunction with experts from outside the university. Satisfactory (S) or No Credit (NC) grading is not available.

LWSO 198-I Individual Internship in Law and Society (8-16) Internship, 8-16 hours. Prerequisite(s): LWSO 100 or LWSO 100H. Internship, 8-16 hours. Prerequisite(s): LWSO 100 or LWSO 100H; consent of instructor and department chair; upper-division standing. An individual internship in the professional legal or policy-making community. Requires a substantive paper relating the internship to the student’s area of study. Course is repeatable to a maximum of 16 units.
Lesbian, Gay, Bisexual, Intersex, and Transgender Studies Minor

Subject abbreviation: LGBS
College of Humanities, Arts, and Social Sciences

Jane Ward, Ph.D., Chair
Department Office, 2025 INTN
(951) 827-4843
jane.ward@ucr.edu

lgbstudie. ucr.edu

Committee in Charge
Byron Adams (Music)
Alicia Arrizón (Gender and Sexuality Studies)
Amalia Cabezas (Media and Cultural Studies)
Jennifer Doyle (English)
Erica Edwards (English)
Katja Guenther (Sociology)
George Haggerty (English)
Tamara Ho (Gender and Sexuality Studies)
Nalo Hopkinson (Creative Writing)
Anthonia Kalu (Comparative Literature and Foreign Language)
Mariam Beee Larr (Comparative Literature)
Molly McGarry (History)
Eric Stanley (Gender and Sexuality Studies)
Erika Suderberg (Media and Cultural Studies)
James Tobias (English)
Carole-Anne Tyler (English)
Deborah Vargas (Ethnic Studies)
Jane Ward (Gender and Sexuality Studies)
Traise Yamamot (English)
Milagros Peña Ph.D.

Dean, College of Humanities, Arts and Social Sciences, ex officio

The program reflects current critical, theoretical, and methodological developments across several disciplines that focus on lesbian, gay, and bisexual issues, Lesbian, Gay, Bisexual, Intersex, and Transgender Studies are by nature interdisciplinary, and this program is meant to encourage new cross-disciplinary research in the field for interested students in the College of Humanities, Arts, and Social Sciences. The curriculum addresses such issues as sexual identity and orientation; gay, lesbian, and bisexual representation; gay, lesbian, and bisexual perspectives on the arts; retheorizations of gender; sexuality and cultural diversity, intersections of sexualities and ethnic identities.

Requirements for the minor (24 units)

1. Lower-division requirements (4 units) chosen from LGBS 001 or GSST 001
2. Upper-division requirements (5 courses [at least 20 units]) chosen from the approved list of the courses:
   a. Humanities: at least one of the five from ENGL 122 (E-Z)/LGBS 122 (E-Z), ENGL 143 (E-Z)/LGBS 143 (E-Z)/MCS 143 (E-Z), LGBS 105, LGBS 139/ GSST 139
   b. Fine Arts: at least one of the five from DNCE 135, ENGL 143 (E-Z)/LGBS 143 (E-Z)/MCS 143 (E-Z), LGBS 153/MUS 153
   c. Social Sciences: at least one of the five from ANTH 145/GSST 103, ETST 175/GSST 175, LGBS 128/GSST 128, LGBS 134/GSST 134, LGBS 135/GSST 135, LGBS 137/GSST 137, LGBS 139/GSST 139, LGBS 152/GSST 152, GSST 100

Students may petition to have a course not on the approved list counted towards the five upper division requirements provided they can demonstrate that LGBIT issues play a significant role in the course and that they will focus their own work for the course (amounting to 30% of the final grade) on an LGBIT topic.

Note
Students may satisfy an upper-division requirement by completing 4 units of LGBS 198-I (Internship).

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for information on minors.

Lower-Division Course

LGBS 001 Introduction to Lesbian, Gay, Bisexual, and Transgender Studies (4) Lecture, 3 hours, extra reading, 3 hours. Introduces students to basic issues of lesbian, gay, bisexual, and transgender studies. Topics include the history of sexuality, identity politics and community activism, the relation between sexuality and gender, the theories of sexual identity, and the globalization of lesbian, gay, bisexual, intersexual, and transgender issues.

Students may petition to have a course not on the approved list counted towards the five upper division requirements provided they can demonstrate that LGBIT issues play a significant role in the course and that they will focus their own work for the course (amounting to 30% of the final grade) on an LGBIT topic.

Upper-Division Courses

LGBS 105 Topics in Queer Art, Culture, and Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to topics of contemporary importance in the field of Lesbian, Gay, Bisexual, Intersex, and Transgender Studies. Emphasizes different areas of study in the humanities, arts, and social sciences. Course is repeatable as topics change to a maximum of 8 units. Credit is awarded for only one of LGBS 105 or LGBS 105W.

LGBS 105W Topics in Queer Art, Culture, and Literature (4) Lecture, 3 hours; written work, 1.5 hours; extra reading, 1.5 hours. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. An introduction to topics of contemporary importance in the field of Lesbian, Gay, Bisexual, Intersex, and Transgender Studies. Emphasizes different areas of study in the humanities, arts, and social sciences. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits, as alternatives to English 001C. Credit is awarded for only one of LGBS 105 or LGBS 105W.

LGBS 112 History of Queer Cinema (4) Lecture, 3 hours; screening, 3 hours; activity, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the aesthetic hallmarks, political impulses, and theoretical responses that distinguish queer cinema as a unique, important tradition within film history. Provides a historical overview of global, independent, Hollywood, and alternative queer production from the 1990s to the present. Cross-listed with GSST 112 and MCS 112.

LGBS 122 (E-Z) Queer Texts and Bodies (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of English and American literature from the perspective of sexuality and sexual identity. Covers issues such as gay and lesbian texts and contexts; sexual ideologies and literature; marginalized writers and texts; and the uses of theories of sexualities in the study of literature. Cross-listed with ENGL 122 (E-Z).

LGBS 122F Gothic Fiction and the History of Sexuality (4) Lecture, 3 hours, extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Explores the literary and cultural implications of “Unauthorized sexual behavior” (homo-, heterosexual, incest, necrophilia, pedophilia, sadism, masochism) in British Gothic fiction. Cross-listed with ENGL 122F.

LGBS 122G New Queer Brit Lit (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Studies recent lesbian, gay, and bisexual literature from England. Explores novels, poetry, and films. Cross-listed with ENGL 122G.

LGBS 122-I British Literature and the History of Sexuality (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Examines specific literary works implicated in the history of sexuality in eighteenth- and nineteenth-century England. Focuses on the expression of sexual excess in these works. May consider issues of gender, class, race, colonialism, and other topics germane to the history of sexuality. Cross-listed with ENGL 122I.

LGBS 122J (Queer & Asian): Gay and Lesbian Asian American Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. An exploration of the writing in and of gay and lesbian Asian America. Examines the term “queer” and its relationship to gay and lesbian studies and to Asian American studies. Readings include theory, fiction, poetry, and drama. Cross-listed with ENGL 122J.

LGBS 122K Sex and Popular Culture in the Postwar United States (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Surveys American popular culture of the 1950s and 1960s from a sexuality studies perspective. Covers multimedia ranging from pulp novels and comic books to drive-in movies, television sitcoms, rock-and-roll music, and magazine advertisements. Includes relevant historical, critical, and theoretical readings. Cross-listed with ENGL 122K.

LGBS 122N Queer Aesthetics (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Survey of writings on art, aesthetics, and sexuality associated with gay, lesbian, transgender, bisexual, or queer aesthetic movements. Focuses on reflexive, performative, interdisciplinary, or critical strategies exhibited in queer aesthetic writings, which allows queer writing on aesthetics to move beyond contemporary constraints on expression. Cross-listed with ENGL 122N.

LGBS 122-Q Queer American Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of American literature from the 1990s to the present. Covers issues such as gay and lesbian texts and contexts; sexual ideologies and literature; marginalized writers and texts; and the uses of theories of sexualities in the study of literature. Cross-listed with ENGL 122-Q.
Lesbian, Gay, Bisexual, Intersex, and Transgender Studies Minor / Liberal Studies / 330

1. Lower-division requirements (12 courses [at least 48 units]). Courses can be used to fulfill college breadth requirements.
   a) Science and Mathematics (4 courses [at least 16 units]) from: BIOL, CHEM, CS, GEO, MATH, or PHYS.
   b) Humanities and Fine Arts (4 courses [at least 16 units]) from: ART, AHS, CPTL, CRWT, DNCE, ENGL, LING, MUS, PHIL, or TFDP.
   c) History and Social Science (4 courses [at least 16 units]) from: ANTH, ECON, ETST, GBST, GSS, MCS, POSC, PSYC, RLST, or SOC.

2. Upper-division requirements: 10 courses (at least 40 units).
   a) One writing course from: ENGL 103 or CRWT 130.
   b) One course in American/European Literature or Arts, not to include language study, from: ART, AHS, CLA, CPAC, CPTL, DNCE, ECON, EUR, FREN, GER, ITAL, LATN, LNST, MUS, MCS, PHIL, PORT, RUSN, SPN, or TFDP.
   c) One course in Norwestern Literature or Arts or Gender Studies, not to include language study, from: ART, AHS, ARLC, AS, CHN, CPTL, DNCE, ETST, GSS, JPN, KOR, MCS, MUS, PHIL, SEAS, TFDP, or VNM.
   d) One course in U.S. History or Government/Politics, Economics, or Society from: ANTH, ECON, POSC, or SOC.
   e) One course in Communications or Technology from: ANTH, AHS, ART, CPTL, CS, ECON, ENGL, ETST, GSS, MCS, PHIL, SOC, or TFDP.
   f) One course with a Global Perspective from: AHS, ANTH, ECON, ETST, GBST, GSS, LNST, PHIL, POSC, RLST, or SOC.

Major

Liberal Studies is the major of choice for students interested in a major with broad interdisciplinary scope. The Liberal Studies major includes a core of lower-division courses designed to provide students with broad subject matter coverage to give them the foundation for a wide variety of careers and advanced degrees in professional schools of education, law, business or medicine or academic programs toward doctoral study in the humanities and social sciences.

For Information about undergraduate requirements, contact the Undergraduate Academic Advising Center for the Office of Interdisciplinary Programs, 3111 Humanities and Social Sciences, mdu.ucr.edu. Information about UCR’s credential programs can be found at the Graduate School of Education Web site, education.ucr.edu or at 1124 Sproul Hall.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The major requirements for the B.A. degree in Liberal Studies are as follows:

1. Lower-division requirements (12 courses [at least 48 units]). Courses can be used to fulfill college breadth requirements.
   a) Science and Mathematics (4 courses [at least 16 units]) from: BIOL, CHEM, CS, GEO, MATH, or PHYS.
   b) Humanities and Fine Arts (4 courses [at least 16 units]) from: ART, AHS, CPTL, CRWT, DNCE, ENGL, LING, MUS, PHIL, or TFDP.
   c) History and Social Science (4 courses [at least 16 units]) from: ANTH, ECON, ETST, GBST, GSS, MCS, POSC, PSYC, RLST, or SOC.

2. Upper-division requirements: 10 courses (at least 40 units).
   a) One writing course from: ENGL 103 or CRWT 130.
   b) One course in American/European Literature or Arts, not to include language study, from: ART, AHS, CLA, CPAC, CPTL, DNCE, ECON, EUR, FREN, GER, ITAL, LATN, LNST, MUS, MCS, PHIL, PORT, RUSN, SPN, or TFDP.
   c) One course in Norwestern Literature or Arts or Gender Studies, not to include language study, from: ART, AHS, ARLC, AS, CHN, CPTL, DNCE, ETST, GSS, JPN, KOR, MCS, MUS, PHIL, SEAS, TFDP, or VNM.
   d) One course in U.S. History or Government/Politics, Economics, or Society from: ANTH, ECON, POSC, or SOC.
   e) One course in Communications or Technology from: ANTH, AHS, ART, CPTL, CS, ECON, ENGL, ETST, GSS, MCS, PHIL, SOC, or TFDP.
   f) One course with a Global Perspective from: AHS, ANTH, ECON, ETST, GBST, GSS, LNST, PHIL, POSC, RLST, or SOC.

Liberal Studies

Subject abbreviation: LBST
College of Humanities, Arts, and Social Sciences
Tamura Ho, Ph.D., Chair
Office: 2005 CHASS INTN (951) 827-4843; tamara.ho@ucr.edu
Lsnid.ucr.edu

Committee in Charge
Darrel Jenerette (Botany and Plant Sciences)
Margaret Nash (Education)
Paul Ryer (Anthropology)
Milagros Peta P.D., Dean, College of Humanities, Arts and Social Sciences, ex officio

Major

Liberal Studies is the major of choice for students interested in a major with broad interdisciplinary scope. The Liberal Studies major includes a core of lower-division courses designed to provide students with broad subject
g) Three additional upper-division courses offered in the College of Arts and Social Sciences OR for pre-teaching credential students, three from the following: EDUC 109/S, EDUC 110/S, EDUC 116/S, EDUC 172/S, EDUC 174/S, EDUC 175/S.

h) Liberal Studies Capstone Course: LBST 191 or LBST 190

3. E-exit Portfolio: Students will compile at least three pieces of written work from upper-division courses, one of which must specifically address research methodology, broadly understood and evidence of applied research or work experience — e.g., a fourth paper, journal/report from an internship or experiential learning exercise, or, for pre-teaching credential students, a record of classroom experience.

Upper-Division Courses

 LBST 190 Special Studies (1-5) Individual study, 2-10 hours; written work, 5-2.5 hours; tutorial, 5-2.5 hours. Prerequisite(s): upper-division standing or consent of instructor. Facilitates student efforts to bring together the knowledge, means of meeting individual curricular needs.

 LBST 191 Seminar in Liberal Studies (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Facilitates student efforts to bring together the knowledge, skills, and interests developed to this point through all aspects of their education. Includes a paper or project and completion of an e-portfolio.

Management

Subject abbreviation: MGT

The A. Gary Anderson Graduate School of Management

Yunzeng Wang, Ph.D., Dean;
Birenda Mishra, Ph.D., Associate Dean for the Academic Graduate Programs
School Office, 162 Anderson Hall
(951) 827-6329; agsm.ucr.edu

Professors

Subramanian ‘Bala’ Balachander, Ph.D. - Albert O. Staley Chair (Marketing)
Y. Peter Chung, Ph.D. (Finance)
Mohsen El-Hafsi, Ph.D. (Operations and Supply Chain Management)
Jeray ‘John’ Halebian, Ph.D. - Associate Dean and Department Chair (Management)
Jean Helwege, Ph.D. (Finance)
Woodie M. Liao, Ph.D. (Accounting and Information Systems)
Birenda Mishra, Ph.D. (Accounting and Information Systems)
Theodore Mock, Ph.D. - Distinguished Professor (Accounting and Information Systems)
Jorge Silva-Rosso, Ph.D. (Marketing)
Richard Smith, Ph.D. - Philip L. Boyd Chair (Finance)
Yunzeng Wang, Ph.D. - Dean’s Distinguished Scholar (Operations and Supply Chain Management)
Rami Zwak, Ph.D. (Marketing)

Professors Emeriti

Bajis M. Dodin, Ph.D. - Operations and Supply Chain Management
David Mayers, Ph.D. (Finance)
Kathleen Montgomery, Ph.D. - Distinguished Professor (Management)
Michael Moore, Ph.D. (Accounting and Information Systems)
Amin Rapoport, Ph.D. - Distinguished Professor (Management)

Waymond Rodgers, Ph.D. - Accounting and Information Systems
David Stewart, Ph.D. - Distinguished Professor (Marketing)

Associate Professors

Long Gao, Ph.D. - Operations and Supply Chain Management
Elodie Goodman, Ph.D. - Operations and Supply Chain Management
Michael P. Haselhuhn, Ph.D. (Management)
Yawan Jiao, Ph.D. (Finance)
Thomas Kramer, Ph.D. (Marketing)
Boris Maciejovsky, Ph.D. (Management)
Elaine Wong, Ph.D. (Management)

Assistant Professor Emeritus

Lawrence Zahn, Ph.D. - Management and Marketing

Assistant Professors

Alexander Barinov, Ph.D. (Finance)
Timothy Gubler, Ph.D. (Management)
Hyun ‘Shana’ Hong, Ph.D. - Accounting and Information Systems
Ivalina Kalcheva, Ph.D. (Finance)
Kevin Li, Ph.D. - Accounting and Information Systems
Ye Li, Ph.D. (Management)
Haibo Liu, Ph.D. - Management
Adem Onderdet, Ph.D. - Operations and Supply Chain Management
Marlo Raveendran, Ph.D. (Management)
Ashish Sood, Ph.D. (Marketing)
Y. Charles Zhang, Ph.D. (Marketing)

Adjunct Professor

Richard Savich, Ph.D. - Accounting and Information Systems

Lecturers

Sean Jasso, Ph.D. - Management and Marketing
Asish Satpathy, Ph.D. - Information Systems and Finance
Raj Singh, Ph.D. - Management and Marketing
Craig Weaver, Ph.D. - Accounting and Information Systems

Graduate Programs

The A. Gary Anderson Graduate School of Management offers a variety of programs leading to the M.B.A. (Master of Business Administration) degree. These include a two-year, full-time M.B.A. program, and a Flexible M.B.A. (or FLEX M.B.A.) program, which may be completed in 27-33 months. AGSM also offers a Master of Professional Accountancy (M.P.Ac.) program and a Master of Finance (M.Fin.). The Ph.D. Program in Management offers the Doctor of Philosophy Degree (Ph.D.). In limited circumstances, students in the Ph.D. Program may be awarded a degree (the Master of Arts (M.A.) in Management) should they fail to complete their doctoral studies.

Admission

Applications for the traditional M.B.A. program are accepted for fall, winter, and spring entry. The program is open to eligible students from all undergraduate majors. Quantitative methods (business calculus, statistics, linear algebra) is a prerequisite to the program. Qualified students who have not taken this prerequisite course may be admitted, but must meet this requirement during their first two quarters in residence. Admission to the graduate program is based on several criteria including the quality of previous academic work, scores on the Graduate Management Admission Test (GMAT) or General Record Examination (GRE), letters of recommendation, and managerial experience.

Applications for the M.P.Ac. program are accepted for the Fall quarter. Applications for the M.Fin. program are accepted for the Fall quarter. Applications for the Ph.D. program are accepted for the Fall quarter. Coursework for the M.P.Ac. program is expected to be completed in one academic year.

Applications for the Executive M.B.A. program are no longer accepted. Applications are not accepted for the M.A. in Management degree.

Course Work

The M.B.A. program can be completed in two years on a full-time basis or in three to four years on a part-time basis. In the 80-unit program (20 courses), all students take 36 units in a common body of knowledge that consists of courses in quantitative analysis, managerial economics, financial accounting, finance, operations and management science, information systems, organizational behavior and theory, strategic management, and marketing management. Thereafter, students complete a required internship, 28-36 units selected from electives, a management synthesis course, and a thesis or an industry-based case project (in the management synthesis class MGT 238). All students must complete a non-degree credit workshop in communications, leadership, teams, and ethics.

Electives are selected with the assistance of a faculty advisor to meet individual educational and career goals. Electives are offered in areas such as accounting, entrepreneurial management, finance, human resources management, international management, management science, management information systems, marketing, and production and operations management. The program is flexible to meet individual student interests, and students are also encouraged to take courses in related disciplines such as economics, statistics, computer science, and sociology.

Normative Time to Degree

7 quarters - M.B.A.; 6 quarters - M.Fin. and M.P.Ac. 15 quarters – Ph.D.

Master of Business Administration

Candidates for the M.B.A. are required to complete all the general requirements specified in the Graduate Studies section of this catalog. The program conforms to Plan I or Plan II.

Plan I (Thesis) For thesis work, a maximum of 8 units of credit is granted. The thesis is a two or more quarter research endeavor to be initiated during a student’s final year in the program. It is expected that most students will develop theses related to advanced work in their electives. The format and other details of the thesis must be approved by the Graduate Division of UCR.

Plan II (Comprehensive Examination) Students who elect Plan II must complete an industry-based group case analysis as part of the management synthesis course. This case serves in lieu of a comprehensive final examination. Students whose case analyses are deemed “not acceptable” are given one additional quarter to revise them to an “acceptable” level.
Executive Master of Business Administration Program (E.M.B.A.)

The E.M.B.A. program is not currently accepting new students. For more information, contact SoBA’s M.B.A. Program Office, 102 Anderson Hall, South; (951) 827-6200.

Master of Finance (M.Fin.)

The Department of Finance and Management Science of the A. Gary Anderson Graduate School of Management offers a Master of Finance (M.Fin.) degree. The degree program consists of a full-time one-academic-year program (or its equivalent on a part-time basis).

Admission

The M.Fin. is offered as a one-year program (48 units) for graduates who hold a baccalaureate degree in a field that provides sufficient quantitative background to enable successful completion of the program. Appropriate undergraduate majors include, but are not limited to, business, engineering, mathematics, statistics, and physics, among others.

All applicants to this program must have completed a bachelor’s degree or its approved equivalent from an accredited institution, and have attained an undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applications are accepted for fall term.

All applicants must submit scores from the Graduate Management Admissions Test (GMAT) or Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application or in the General UCR catalog.

Course Work

In the first quarter of the M.Fin. degree program, students are expected to take core courses in quantitative methods, finance, and financial accounting. This grounding is sufficient to expose students, in the second quarter, to two main subfields of finance: corporate finance and asset pricing. In the final quarter, the students are expected to build on what they learned in the second quarter by taking more advanced courses in the two areas, such as Corporate Risk Management, and Fixed Income Securities.

Students are expected to choose an elective both in their second and third quarter of study from an extensive range of electives, such as International Finance, Entrepreneurial Finance, Decision-making Under Uncertainty, and Financial Strategy and Corporate Control in Finance, in addition to relevant courses such as Financial Statement Analysis, Advanced Financial Accounting, Applied Business Forecasting from other disciplines in Business.

Plan II (Comprehensive Examination) requires that at least 18 units be in graduate level courses taken at a UC campus. None of these may be in courses numbered 297 or 299. Every candidate must take a comprehensive examination, the content of which is determined by the department or program. In most cases, units from courses numbered 291 cannot be used. Candidates for the degree are required to complete all of the general requirements specified by Graduate Studies. The program is intended to conform to Plan II.

Normative Time to Degree

One year

Master of Professional Accountability (MPAc)

The Master of Professional Accountability program provides advanced education in audit and assurance, taxation, accounting information systems and ethics. The MPAc is offered in two tracks. The first track is for graduates of a baccalaureate degree with a concentration or major in accounting and is designed to be completed in 3 quarters. The second track is for graduates of a baccalaureate degree without a concentration or major in accounting and is designed to be completed in 4 quarters.

All applicants to this program must have completed a bachelor’s degree or its approved equivalent from an accredited institution and to have attained undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applications are accepted for fall term.

All applicants must submit scores from the Graduate Management Admissions Test (GMAT) or Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit at least one letter of recommendation from individuals who can attest to their professional and academic skills.

All other application requirements are specified in the graduate application or in the General UCR catalog.

Candidates in the first track must complete 48 units to earn the degree. Of the 48 units, 20 units are required:

- MGT 225. Professional Accounting and Auditing Research
- MGT 229. Sustainability and Ethical Control Systems
- MGT 240B. Advanced Taxation
- MGT 278A. Auditing and Assurance Services: Theory and Practice
- MGT 278B. Information Technology Auditing and Assurance

The balance of the 28 elective units will include other courses in accounting and auditing, courses offered by AGSM in other graduate programs and by other departments in UCR.

Flexible Master of Business Administration Program (FLEX M.B.A.)

The Flexible M.B.A. program (or FLEX M.B.A.) provides emerging managers an opportunity to earn an M.B.A. degree with minimal disruption to their professional lives. Students attend classes on weeknights during the program. The FLEX M.B.A. program admits new students for enrollment in fall, winter, or spring.

The program consists of both core courses and electives, allowing students to establish a solid foundation of traditional business skills and then customize their education based on personal interests and goals. The curriculum provides constant interaction between information presented in the classroom and what is being used on the job, reinforcing and enhancing the student’s learning experience.

In addition to classroom work, students attend three residential sessions. In this concentrated setting, students and faculty have an opportunity to explore in depth a variety of business challenges and how those challenges can best be met using contemporary management tools.

Further information may be obtained by contacting the University of California, Riverside, Flexible M.B.A. Program Office.

Admissions

Students interested in pursuing the M.B.A. degree program at UC Riverside's Anderson Graduate School of Management (AGSM) must have earned a BA, or its equivalent, with training comparable to that provided by the University of California.

Evaluation of the applicant’s file for admission to the FLEX M.B.A. degree program is similar to that of the full-time M.B.A. program and will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, essays, and letters of recommendation).

Applicants are required to submit scores on either the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE). A minimum scholastic average of 3.0 or better is required, in most cases, for course work completed in upper-division or prior graduate study. No specific undergraduate major or course work is required for admission, though preparation in quantitative methods (such as calculus and statistics) is strongly encouraged. Students who do not have adequate quantitative preparation at the time of admission will need to complete preparatory coursework in mathematics in addition to the courses required for the degree.

The admissions committee assesses professional and organizational experience in terms of scope or level of responsibility, evidence of contribution or success, and evidence of career progression or of growth in responsibility. No specific number of years of work experience is required.

Applicants must submit at least one letter of recommendation from individuals who can attest to their professional and leadership skills and to their potential for business leadership.

Normative time: 27-33 months
In addition to the above requirements, students who are admitted to the second track of the program must complete the following courses during the first term at the program:

MGT 400A - Financial Accounting Principles and Practices I

MGT 400D - Taxation of Individuals and Business Entities

MGT 400E - Auditing and Assurance Further, students in the second track, based on their own academic and professional background, might be asked to take other preparatory courses that would ensure their success at the program.

Units earn in the MGT400 series are not for degree credit.

Plan I (Thesis) is not an option for the MPAc degree program. Plan II (Comprehensive Examination) Plan II requires that at least 18 units be in graduate-level courses taken at a UC campus. None of these may be in courses numbered 297 or 299. To receive the degree, students must pass a comprehensive examination, the content of which is determined by AGSM faculty. The exam is taken after advancing to candidacy and at the end of all coursework (in the last week of the Spring Quarter). The exam will cover the topics taught throughout the entire program. This exam is designed to ensure that all students receiving the degree have internalized the central knowledge, problem solving and ethical skills necessary if they are to act as overseers of public trust.

**Plan II (Comprehensive Examination) Normative Time to Degree** 3 or 4 quarters, depending on the program’s track.

**Doctoral Degree**

The Ph.D. Program in Management offers the Doctor of Philosophy Degree (Ph.D.). See Ph.D. Program in Management in this section of the catalog.

**Ph.D. Program in Management**

The Ph.D. Program in Management offers the Doctor of Philosophy Degree (Ph.D.). Concentrations are offered in five major field areas:

- Accounting
- Finance
- Marketing
- Operations
- Strategic Management and Organizations (SMO)

The Ph.D. Program in Management trains doctoral students in the design and execution of original research in Management.

**Admissions**

Applicants will be expected to have completed a bachelor’s degree at a four-year accredited college or university and to have attained an undergraduate academic record that satisfies the standards established by the Graduate Division, University of California, Riverside. In addition to the following requirements, all applicants must meet the general requirements as set forth in the Graduate Studies section of the General Catalog.

A prior business degree is not a requirement. However, if a student has no previous business coursework, he/she must consult with the Graduate Advisor about whether any coursework in the major field area will be necessary.

Applicants will be required to submit official GMAT or GRE exam scores. Preference for one exam is not given over the other. All applicants whose first language is not English must also submit an acceptable TOEFL test score prior to admittance. The successful applicant is expected to score at least 560 on the paper exam or 220 on the computer based exam, or 80 on the TOEFL iBT. Applications are accepted for admission for Fall Quarter.

**Language Requirement** There is no foreign language requirement, but students who wish to TA must pass an English language proficiency exam. Students are expected to communicate their research findings in English in written and oral presentations.

**Plan II (Comprehensive Examination) The M.A. Degree, Plan II, requires the approval of the Graduate Advisor and is only available to doctoral students who are not continuing in the Ph.D. program. In addition, it requires completion of a minimum of 36 units of approved graduate-level coursework and passing the comprehensive examination at least at the M.A. level. The comprehensive examination will be prepared and administered by the Graduate Examination Committee. The comprehensive examination will cover a broad range of topics chosen from the core research, major field, and elective graduate courses taken by the student in their first two years of study. Students must be in residence for 3 quarters.

UCR will not award M.A. degrees to students already possessing an M.A. in Management.

**Required/Elective Courses & Required Research**

- Required Research Methods Courses
- Required Field Seminars
- Other Research Courses
- Field Colloquium
- First Year Research Paper
- Professional Development Course

Each of these requirements is detailed below according to the area of concentration within the Management program. Each area requires at least 16 courses related to its field of study. In addition, some specializations require a field colloquium until the student advances to candidacy.

**Required Research Methods Courses** Research methods courses are intended to provide the student with a strong foundation in research methodology. Students who wish to have courses waived must first obtain the approval of the Graduate Advisor and then the Graduate Dean. Each area’s required research method courses (between five and seven, depending on the area) are as follows:

1. **Accounting**

   Students are required to take five courses from among ECON205A-C, ECON283E-G, PSYC211-213, PSYC243, PSYC259, SOC201A-B, SOC203A-B, and SOC205.

2. **Finance**

   Complete the six courses in this list: ECON 205A-C and ECON 283E-G.

3. **Marketing**


4. **Operations**

   Complete the four courses from this list: MATH209A-B, MATH217, and STAT215.

5. **SMO**


**Required Field Seminars**

Ph.D. students are required to complete field seminars in their major field area. The requirements for each area are as follows:

1. **Accounting**

   Students are required to take three courses from among MGT293E-Z.

2. **Finance**

   Complete the following four courses: MGT295F-G, MGT295I, MGT295K and MGT295M.

3. **Marketing**

   Complete the following four courses: MGT288A-D.

4. **Operations**

   Students are required to complete three courses from among MGT296E-Z.

5. **SMO**

   Complete the following four courses: MGT289A-D.

**Other Research Courses** It is important that Ph.D. students develop a deep understanding of a basic discipline related to their major field area. Thus, students are required to complete other graduate-level courses (200 level or higher). The requirements are as follows:

1. **Accounting**

   Students are required to take three other courses from a department outside of SoBA.

   This leaves five electives for the students to choose, which typically include finance courses in 295F-M.

2. **Finance**

   Students are required to take ECON200A-C and two electives.
3. Marketing
Students are required to take three courses from a department outside of SoBA. This leaves four elective courses for students to choose.

4. Operations
Students are required to take ECON200A-B and four additional courses from among ECON 244, ECON 283J, ECON 283N, ECON 283Q, EE231, MATH209C, MATH228, STAT205, STAT207, and STAT210A-B.

5. SMO
Students are required to take three courses from a department outside of SoBA. This leaves four elective courses for students to choose.

Field Colloquium It is essential that Ph.D. students actively participate in the intellectual life of the school. In particular, students are expected to attend research presentations of visiting scholars. To facilitate this, field colloquia (MGT 285) will be offered each quarter. Ph.D. students in Marketing and SMO are required to take the field colloquium each quarter for course credit until they advance to Ph.D. candidacy. MGT 285 does not count as an elective in the Other Courses listed above.

First Year Research Paper Ph.D. students must complete an original research paper at a level consistent with the quality of a rigorous Ph.D. program during their first year. The student works with the area faculty to develop the research topic, set expectations, and provide feedback. A committee consisting of the program faculty evaluates the submitted paper. Students whose paper is deemed substandard by the area faculty may be terminated from the Ph.D. program.

Professional Development Course In order to ensure that doctoral students are prepared to enter future careers as researchers and are able to communicate their work to other researchers, students are required to take a professional development course (MGT402). MGT 402 does not count as an elective in the Other Courses listed above.

Comprehensive Examination The comprehensive examination serves as both a major field examination, as well as an examination of topics covered in core research courses. Subsequent to the comprehensive examination a committee of the relevant area faculty will issue a grade of passing at the Ph.D. level, passing at the M.A. level, or failing. If, in the first attempt, a student fails the comprehensive examination or passes at the M.A. level, he or she may be allowed to retake the examination. Up to two attempts to pass this examination are allowed. Students who pass only at the M.A. level may be recommended for a Master's degree. Substantial failure on the comprehensive examination may lead to the student's formal withdrawal from the University or to membership in the University's Academic Progress Committee.

Graduate Courses
MGT 200 Organizational Behavior and Theory (4)
Lecture, 3 hours; extra reading, 1.5 hours; outside projects, 1.5 hours. Prerequisite(s): MGT 404 or consent of instructor. This course introduces students to the academic literature on the behavior of individuals in organizations. Students will be expected to develop skills and knowledge in the field of organizational behavior, as well as to participate in group discussions and case studies.

MGT 201 Quantitative Analysis (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MGT 403 or equivalent. The course introduces students to the tools and techniques of statistical analysis, including hypothesis testing, regression analysis, and time series analysis. Students will be expected to develop skills in the use of statistical software and to participate in group discussions and case studies.

MGT 202 Financial Management (4)
Lecture, 3 hours; extra reading, 1.5 hours; outside projects, 1.5 hours. Prerequisite(s): MGT 402 or equivalent. The course introduces students to the principles and practices of financial management in organizations. Students will be expected to develop skills in the use of financial analysis tools and to participate in group discussions and case studies.

MGT 203 Economics for Management (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): MGT 403 or equivalent. The course introduces students to the principles of microeconomics and macroeconomics as they apply to management decision making. Students will be expected to develop skills in the use of economic analysis tools and to participate in group discussions and case studies.

MGT 204 Cost and Management Accounting (4)
Lecture, 3 hours; outside projects, 3 hours. Prerequisite(s): MGT 211 or equivalent. The course introduces students to the principles of cost accounting and management accounting. Students will be expected to develop skills in the use of accounting analysis tools and to participate in group discussions and case studies.

MGT 205 Information Systems (4)
Lecture, 3 hours; laboratory, 1 hour; outside projects and extra reading, 2 hours. Prerequisite(s): MGT 201, spreadsheet skills. The course introduces students to the principles of information systems and their role in modern organizations. Students will be expected to develop skills in the use of information systems analysis and design tools and to participate in group discussions and case studies.

MGT 206 Business, Government, and Society (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): MGT 403 or equivalent. The course introduces students to the role of business in society and the relationship between business and government. Students will be expected to develop skills in the use of public policy analysis tools and to participate in group discussions and case studies.

MGT 207 Operations Management for Competitive Advantage (4)
Lecture, 3 hours; outside projects and extra reading, 3 hours per week. Prerequisite(s): MGT 201, spreadsheet skills. The course introduces students to the principles of operations management and their role in creating competitive advantage. Students will be expected to develop skills in the use of operations management tools and to participate in group discussions and case studies.

MGT 208 Human Resources Management (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): MGT 403 or equivalent. The course introduces students to the principles of human resources management and their role in creating a competitive advantage. Students will be expected to develop skills in the use of human resources management tools and to participate in group discussions and case studies.

MGT 210 Financial Accounting (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MGT 201 or equivalent. The course introduces students to the principles of financial accounting and their role in creating a competitive advantage. Students will be expected to develop skills in the use of financial accounting tools and to participate in group discussions and case studies.

MGT 211 Application of Behavioral Economics to Management, Decision-Making, and Policy (4)
Lecture, 3 hours; written work and group presentation, 3 hours per week (group activity). The course introduces students to the principles of behavioral economics and their role in management decision making. Students will be expected to develop skills in the use of behavioral economics tools and to participate in group discussions and case studies.
standing or consent of instructor. Covers behavioral economics and the applications to management, decision making, and policy. Includes social preferences, heuristics and biases, choice effects, emotions and self-control, psychology of money, behavioral finance, dishonesty and revenge, and group decision making.

MGT 213 Trading Strategies and Financial Models (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 205A, MGT 202, MGT 205F or consent of instructor. Introduces the most well-known empirical deviations from the capital asset pricing model (CAPM) stock market anomalies. Includes ways to predict market strength, profit, and measure the risk and trading costs of performing such trading strategies.

MGT 214 Corporate Strategy (4) Lecture, 3 hours; group presentation, 3 hours per week (group activity). Prerequisite(s): MGT 200, MGT 201, MGT 202, MGT 209; or consent of instructor. Introduces the corporate strategies of multi-business organizations, assesses their effectiveness, and develops (better) alternatives. Explores the main challenges large organizations face and contrasts the challenges of multi-business organizations with single-business firms. Focuses on the analysis of real world organizations through case analysis, class discussions, and group projects.

MGT 215 International Comparative Management (4) Lecture, 3 hours; outside projects and readings, 3 hours. Prerequisite(s): graduate standing. Compara- tive analysis of significant management practices. The impacts of cultural, political, social, and economic factors on decision making within the international arena are examined.

MGT 218 Ethics in Management (4) Lecture, 3 hours. Examines ethical dilemmas faced by managers and organizations and extends decision analysis to include the ethical dimension present in most policy decisions. Seeks to improve the students’ ability to identify and respond to ethical issues in organizations, including such areas as affirmative action, bribery, deception, working conditions, product safety, environmental impact, and international relations.

MGT 220 Negotiations for Managers (4) Lecture, 3 hours, individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Develops student understanding of the theory and processes underlying a broad spectrum of negotiation problems. Students attain competence in negotiations by applying analytic and interpersonal skills learned from readings and lectures to negotiation exercises and debriefings.

MGT 221 Decision Making Under Uncertainty (4) Lecture, 3 hours; outside projects and extra reading, 3 hours. Prerequisite(s): MGT 207 or consent of instructor. Discusses the operational aspects of quality improvement in manufacturing and service organizations. Focuses on the broader issues of total quality management, statistical process control, and the difficulties in implementing quality efforts in organizations.

MGT 225 Professional Accounting and Auditing Research (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing. Provides an in-depth examination of the professional accounting and auditing literature. Includes issue identification, location and evaluation of authority using online and electronic accounting, auditing, and tax research databases; developing conclusions and recommendations; and communication of research results.

MGT 226 Fraud and Forensics Auditing (4) Lecture, 3 hours; extra reading, 1.5 hours; outside projects, 1.5 hours. Prerequisite(s): MGT 204 or equivalent. Introduces the most well-known empirical deviations from the capital asset pricing model (CAPM) stock market anomalies. Includes ways to predict market stability, profit, and measure the risk and trading costs of performing such trading strategies.
business problems from a managerial point of view. Surveys various optimization techniques with an emphasis on the why and how of these types of models. Utilizes spreadsheet solvers to accomplish the mathematical manipulations. Emphasizes input requirements and interpretation of results.

MGT 272 Global Strategy and Management (4) Seminar, 3 hours; outside projects, 3 hours. Prerequisite(s): MGT 202, MGT 205 or consent of instructor. Provides an overview of the strategic issues that multinational firms and managers encounter in a global marketplace. Topics include the globalization of the world economy, mode of entry into markets, analysis of political risk, global strategic alliances, and competing in emerging economies.

MGT 274 Special Topics in Finance (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): MGT 202. Emphasizes critical evaluation of the evidence for different models of corporate financial policy.

MGT 275 Transportation and Logistics Management (4) Lecture, 3 hours; term paper, 1 hour; written work, 2 hours. Prerequisite(s): MGT 207 or consent of instructor. Introduces the principles of internal (operational) audit and assurance, the consent of instructor. Examines the nature and practices of internal (operational) audit and assurance, the consent of instructor. Provides an overview of the strategic issues that multinational firms and managers encounter in a global marketplace. Topics include the globalization of the world economy, mode of entry into markets, analysis of political risk, global strategic alliances, and competing in emerging economies.

MGT 276 Financial Strategy and Corporate Control (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): MGT 202. Covers the nexus among finance, strategy, governance, and corporate control. Examines the theory and empirical evidence for models of corporate financial policy and the market for corporate control. Emphasizes critical evaluation of the evidence for different models of corporate financial policy.

MGT 277 Advanced Financial Accounting (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 165C or equivalent (may be taken concurrently). Covers advanced financial accounting and reporting practices. Emphasizes topics such as consolidated financial statements, branch accounting, foreign transactions, segment reporting, partnership accounting, and accounting for nonprofit organizations.

MGT 278A Foundations of Auditing and Assurance Services (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): MGT 278A or consent of instructor. Covers basic concepts and techniques used in the provision of information technology audit and assurance services. Topics include information technology security; risk assessment; internal control; audit evidence; independence and objectivity; measurement theory, suitable criteria; and the role of regulation, framing, heuristics and biases, and the role of technology.

MGT 278B Information Technology Auditing and Assurance (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): MGT 278A or consent of instructor. Covers basic concepts and techniques used in the provision of information technology audit and assurance services. Topics include information technology security; risk assessment; internal control; audit evidence; independence and objectivity; measurement theory, suitable criteria; and the role of regulation, framing, heuristics and biases, and the role of technology.

MGT 278C Internal Auditing (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): MGT 278A or consent of instructor. Examines the nature and practices of internal (operational) audit and assurance, the management audit process, and the use of internal auditing to top management and governing boards. Develops skills to understand, analyze, and critically evaluate internal audit research.

MGT 280 Business Issues in Electronic Commerce (4) Seminar, 3 hours; outside project, 3 hours. Prerequisite(s): MGT 205 or consent of instructor. Provides an understanding of the various business strategies, management issues, and pertinent technologies related to electronic commerce. Explores several of the problems surrounding electronic commerce including security issues, privacy, encryption, safeguarding of intellectual property rights, acceptable use policies, and legal issues.

MGT 281 Systems Analysis and Design (4) Seminar, 3 hours; outside project, 3 hours. Prerequisite(s): MGT 205, MGT 230; or consent of instructor. Provides an understanding of the systems development life cycle with emphasis on the analysis and design phases. Familiarizes students with the tools and processes used by system developers to analyze, design, and construct computer-based systems. Provides experience in analyzing and designing a computer-based system.

MGT 282 Business Data Communications (4) Seminar, 3 hours; outside project, 3 hours. Prerequisite(s): MGT 205. Provides an understanding of telephone communications in business, with an emphasis on information management. Specific topics include data communications (hardware components, interfaces, and link protocols), architecture and technology (packet, local area networks, and emerging digital services), and network management (control and security).

MGT 285 Field Colloquium (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Includes oral reports by visiting scholars, faculty, and students on current research topics in management. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content change to a maximum of 8 units.

MGT 286A Behavioral Research in Marketing (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): doctoral standing or consent of instructor. Examines the development of consumer behavior research and evaluation from theoretical as well as practical perspectives. Provides insight into the integrative framework for organizing knowledge of consumer behavior and conducting research.

MGT 288B Quantitative Research in Marketing (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): doctoral standing or consent of instructor. Examines research strategies appropriate to the study of organizational questions. Topics include emotions in organizations, motivation, leadership, decision making, interpersonal relations, diversity and identity, culture, and organizational learning and routines.

MGT 289A Macro Organizational Theory (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): doctoral standing or consent of instructor. A study of theories related to structure of organizations and control systems both within and external to the organization. Emphasizes the interaction of organizations with their environments, theoretical and empirical contributions from institutional analysis, resource dependence, population ecology, and transaction costs.

MGT 289B Strategic Management (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): doctoral standing or consent of instructor. Focuses on the conduct and performance of organizations. Topics in strategy research explain differences in organizations’ profitability and survival by relating variance in these performance outcomes to factors at multiple levels. Provides theoretical perspectives from economics, sociology, and psychology to supplement approaches to understanding firm performance and related issues.

MGT 289C Designing Organizational Research (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): doctoral standing or consent of instructor. Provides a survey of the design approaches for non-laboratory study within and across organizations. Covers research strategies appropriate to the study of different organizational questions. Topics include issues of measurement, types of data, and data collection methods (including archival, surveys, interviews, and social network data).

MGT 290 Directed Studies (1-6) Prerequisite(s): graduate standing; consent of instructor. Directed studies and research in selected problems or theories of management for advanced graduate students to pursue special areas of interest. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MGT 292 Concurrent Studies in Management (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor. Explores one or more graduate projects based on content related to an appropriate undergraduate course. Includes faculty guidance and evaluation. Taken concurrently with the undergraduate course. Course is repeatable.

MGT 293 (E-Z) Seminars in Accounting (4) Seminar, 3 hours; extra reading, 2 hours; individual study, 1 hour. Prerequisite(s): graduate standing in management, or consent of instructor. Topics include financial accounting; auditing standards; earnings quality and management; earning forecasts and financial analyst; valuation; performance evaluations; strategic management accounting; auditor behavior and decision making; tax policy planning; managerial accounting decision-making; accounting information systems, accounting and capital markets, research design methodologies in accounting, accounting information, disclosure game theory.

MGT 293F Capital Markets Research in Accounting (4) Seminar, 3 hours; extra reading, 2 hours; individual study, 1 hour. Prerequisite(s): graduate standing in Management, or consent of the instructor. Includes issues in financial accounting related to the interaction of accounting and capital markets. Focuses on selected classic and current empirical and theoretical research in financial accounting. Provides advanced training in empirical accounting research with an emphasis on securities market effects of accounting policies and practices.

MGT 295 (E-Z) Seminars in Finance (4) Seminar, 3 hours; assignment of remaining hours vary from segment to segment. Prerequisite(s): graduate standing in Management; or consent of instructor; individual
segments may have additional prerequisites. Topics include discrete and continuous time asset pricing theory and portfolio choice; empirical research in finance (including recent developments in empirical asset pricing); and advanced topics in corporate finance theory and related empirical research.

MGT 295E Theory of Exchanges under Uncertainty (4) Seminar, 3 hours; written work, 15 hours per quarter; extra reading, 2 hours; Prerequisite(s): graduate standing in Management; or consent of instructor. An introduction to the theory of financial economics. Covers the implications of no arbitrage, decisions under uncertainty, and various equilibrium models in a world with only one decision maker. Extends these concepts to multiple periods in discrete time and continuous time.

MGT 295F Empirical Methods in Finance (4) Seminar, 3 hours; term paper, 10-15.5 hours per quarter; problem sets involving statistical analysis of stock returns. students should spend at least 2 hours a week. Prerequisite(s): MGT 201, MGT 202, graduate standing in Management, or consent of instructor. Covers econometric approaches to analyzing common problems encountered when conducting empirical research. Focuses on hypothesis testing, specification tests, general methods of moments estimation, the capital asset pricing model, multifactor asset pricing models, event studies, operating performance studies, simultaneous equations models, and endogeneity issues. Demonstrates programming in SAS and/or Gauss.

MGT 295G Corporate Finance (4) Seminar, 3 hours; extra reading, 2 hours; written work, 2 hours. Prerequisite(s): graduate standing in Management; or consent of instructor. Deals with the contemporary issues in corporate finance. Focuses on selected classic and current empirical and theoretical research in corporate finance. Seeks to provide an advanced and rigorous background in the mainstream issues of modern corporate finance with an emphasis on empirical methodology.

MGT 295-I Asset Pricing Theory (4) Seminar, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): MGT 295F, ECON 205A, graduate standing in Management; or consent of instructor. Covers equilibrium models of stock returns and their relation to utility theory, arbitrage-based pricing models, options, term structure models and limits to arbitrage.

MGT 295J Empirical Methods in Finance (4) Seminar, 3 hours; practicum, 1 hour; extra reading, 2 hours. Prerequisite(s): MGT 295I, graduate standing in Management; or consent of instructor. Covers empirical methods in finance research with an emphasis on empirical asset pricing studies. Topics include methods of testing models related to the theory of asset prices, stock market volatility, and stock returns.

MGT 295K Corporate Finance Research (4) Seminar, 3 hours; extra reading, 2 hours; written work, 1 hour; individual study, 3 hours per quarter. Prerequisite(s): MGT 295G, graduate standing in Management, or consent of instructor. Covers fundamental articles in corporate finance and research papers. Topics include agency problems, asymmetric information, governance, capital structure and merges.

MGT 295M Research Seminar in Finance (4) Seminar, 3 hours; research, 3 hours; Prerequisite(s): graduate standing in Management; or consent of instructor. Designed for finance Ph.D. students in their second through fifth year. Study finance economics articles and present research papers. Course is repeatable to a maximum of 20 hours.

MGT 296 (E-Z) Seminars in Operations (4) Seminar, 3 hours; extra reading, 2 hours; individual study, 1 hour. Prerequisite(s): graduate standing in Management; or consent of instructor. Individual segments may have additional prerequisites. Topics include revenue optimization; stochastic and deterministic dynamic programming applications in operations; inventory management; supply chain systems; dynamic optimization applications of management, economics and engineering; agency theory; signaling games; actions; behavioral economics pricing management; price discrimination; supply risk; sales force management; operations-marketing interface.

MGT 296F Game Theory Models in Operations (4) Seminar, 3 hours; extra reading, 2 hours; individual study, 1 hour; Prerequisite(s): ECON 201A, ECON 201B, graduate standing in Management; or consent of instructor. Focuses on game theory and industrial organization ideas applied to operations management. Topics include strategic form games, dynamic games, signaling games, agency theory, mechanism design, market design, and their applications in operations management.

MGT 297 Directed Research (1-6) Prerequisite(s): consent of instructor. Directed research in selected problems of management for graduate students with special research interests. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MGT 298-F Fieldwork in Management (1-4) Field, 3-12 hours; consultation, 1 hour. Prerequisite(s): consent of instructor. Supervised field experience culminating in a final report or other academic component. May be repeated for up to 8 units of credit toward the degree.

MGT 299 Research for Thesis or Dissertation (1-12) Prerequisite(s): consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

MGT 302 Apprentice Teaching (1-4) Seminar, 1-4 MGT 302 Apprentice Teaching (1-4) Seminar, 1-4 hours. Prerequisite(s): limited to departmental teaching assistants; graduate standing. Supervised individual instruction in teaching including monitoring of teaching assistant’s activities and regular consultation with assistant concerning teaching responsibilities. Graded Satisfactory (S) or No Credit (NC). May be repeated; not for degree credit.

MGT 400A Financial Accounting Principles and Practices (4) Lecture, 20 hours per quarter; discussion, 20 hours per quarter. Prerequisite(s): graduate standing and consent of instructor or admission to the Master of Professional Accountancy (M.P.Ac.) program. Technical accounting theory and principles necessary for graduate work. Credit toward degree limited to M.P.Ac. students.

MGT 400B Financial Accounting Principles and Practices II (4) Lecture, 20 hours per quarter; discussion, 20 hours per quarter. Prerequisite(s): MGT 400A or consent of instructor. A continuation of technical accounting theory and principles necessary for graduate work. Credit toward degree limited to M.P.Ac. students.

MGT 400C Managerial Accounting/Accounting Information Systems (4) Lecture, 20 hours per quarter; discussion, 20 hours per quarter. Prerequisite(s): graduate standing and consent of instructor or admission to the Master of Professional Accountancy (M.P.Ac.) program. Managerial accounting and accounting information systems concepts necessary for graduate work.

MGT 400D Taxation of Individuals and Business Entities (4) Lecture, 20 hours per quarter; discussion, 20 hours per quarter. Prerequisite(s): graduate standing and consent of instructor or admission to the Master of Professional Accountancy (M.P.Ac.) program. Taxation rules and regulations for individuals and business entities necessary for graduate work.

MGT 400E Auditing and Assurance (4) Discussion, 20 hours per quarter; lecture, 20 hours per quarter. Prerequisite(s): graduate standing and consent of instructor or admission to the Master of Professional Accountancy (M.P.Ac.) program. Audit and assurance concepts necessary for graduate work.
Materials Science and Engineering

Subject abbreviation: MSE
The Marlan and Rosemary Bourns College of Engineering

Ashok Mulchandani, Ph.D. Chair
Undergraduate Advising Office, A159C
Bourns Hall;
(951) 827-3647 (ENGR)
mse.ucr.edu

Program Faculty

Distinguished Professors
Reza Abbaschian, Ph.D. Dean, BCOE (Mechanical Engineering)
Alexander Balandin, Ph.D. (Electrical and Computer Engineering)
Harry W. Green, Ph.D. (Graduate Division and Earth Sciences)
Ashok Mulchandani, Ph.D. (Chemical and Environmental Engineering)
Kambiz Vafai, Ph.D. (Mechanical Engineering)
Francisco Zaera, Ph.D. (Chemistry)

Professors
Guillermo Aguilar, Ph.D. (Mechanical Engineering)
Christopher Bardeen, Ph.D. (Chemistry)
Ludwig Bartels, Ph.D. (Chemistry)
Pingyun Feng, Ph.D. (Chemistry)
Cheryl Hayashi, Ph.D. (Biological Sciences)
David Kiselius, Ph.D. (Chemical and Environmental Engineering)
Roger K. Lake, Ph.D. (Electrical and Computer Engineering)
Jianlin Liu, Ph.D. (Electrical and Computer Engineering)
Stefano Lonardi, Ph.D. (Computer Science and Engineering)
Allen Mills, Ph.D. (Physics and Astronomy)
Mart Moloj, Ph.D. (Computer Science and Engineering)
Umar Mohideen, Ph.D. (Physics and Astronomy)
Dimitrios Morikis, Ph.D. (Bioengineering)
Leonard Mueller, Ph.D. (Chemical Engineering)
Nosang V. Myung, Ph.D. (Chemical and Environmental Engineering)
Cengiz Ozkan, Ph.D. (Mechanical Engineering)
Mihiro Ozkan, Ph.D. (Electrical and Computer Engineering)
Victor Rodgers, Ph.D. (Bioengineering)
Jing Shi, Ph.D. (Physics and Astronomy)
Harry W.K. Tom, Ph.D. (Physics and Astronomy)
Kathryn Uhrich, Ph.D. (Dean, College of Natural & Agricultural Sciences)
Jianzhong Wu, Ph.D. (Chemical Engineering)
Guanshui Xu, Ph.D. (Mechanical Engineering)
Jory Yarmoff, Ph.D. (Physics and Astronomy)
Yadong Yin, Ph.D. (Chemistry)

Associate Professors
Elaine Haberer, Ph.D. (Electrical and Computer Engineering)
Huinan Liu, Ph.D. (Bioengineering)
Lorenzo Mangolini, Ph.D. (Mechanical Engineering)
Masanori Rco, Ph.D. (Mechanical Engineering)
Valentine Velleu, Ph.D. (Bioengineering)

Assistant Professors
Igor Barsegov, Ph.D. (Physics and Astronomy)
Shane Cybart, Ph.D. (Mechanical Engineering)
Sinisa Coh, Ph.D. (Mechanical Engineering)
Yongtao Cui, Ph.D. (Physics and Astronomy)
Boniface P.T. Fokwa, Ph.D. (Chemistry)
Nathaniel Gabor, Ph.D. (Physics and Astronomy)
Alex Greaney, Ph.D. (Mechanical Engineering)
Juchen Guo, Ph.D. (Chemical and Environmental Engineering)
De-en Jiang, Ph.D. (Chemistry)
Sandeep Kumar, Ph.D. (Mechanical Engineering)
Chen Li, Ph.D. (Mechanical Engineering)
Ming Liu, Ph.D. (Electrical and Computer Engineering)
Suween Mathauchu, Ph.D. (Mechanical Engineering)
Ming Lee Tang, Ph.D. (Chemistry)
Richard Wilson, Ph.D. (Mechanical Engineering)
Peng Wei, Ph.D. (Physics and Astronomy)
Bryan Wong, Ph.D. (Chemical and Environmental Engineering)
Ruoxue Yan, Ph.D. (Chemical and Environmental Engineering)

Adjunct Professors
Nissim Amos, Ph.D. (Electrical and Computer Engineering)
Krassimir Bozhilov, Ph.D. (Central Facility for Advanced Microscopy and Microanalysis)
Alexander Khitun, Ph.D. (Electrical and Computer Engineering)
Alfredo Martinez-Morales, Ph.D. (Managing Director of the Southern California Research Initiative for Solar Energy (SC-RISE))

Major

The B.S. degree in Materials Science and Engineering is offered jointly by the five participating departments of The Marlan and Rosemary Bourns College of Engineering. The program aims to produce students who are effective team players in materials engineering or related engineering, science or managerial positions, who use and improve on their skills in the job; who can enter into graduate or professional degree programs; and who are responsible engineers, professionals or scientists demonstrating ethical and professional responsibility and continuing to learn through a variety of educational experiences.

The Materials Science and Engineering Program Educational Objectives are to prepare our graduates to impact an evolving society by producing materials science and engineering constituents who:

- are successful in both education and industry
- can demonstrate professionalism and leadership in cutting edge interdisciplinary materials science and engineering practices
- can utilize an understanding of the principles of materials science and engineering to improve existing systems and innovate and design next generation technologies
- will contribute effectively as individuals, team members, and/or leaders to achieve personal, group and institutional goals.

The Materials Science and Engineering B.S. degree program at UCR is accredited by the Engineering Accreditation Commission of ABET, abet.org.

University Requirements

See Undergraduate Studies section.

College Requirements

See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The Materials Science and Engineering major uses the following major requirements to satisfy the college’s Natural Sciences and Mathematics breadth requirement.

1. One course in the biological sciences chosen from an approved list
2. CHEM 001A, CHEM 001LA
3. MATH 008B or MATH 009A
4. PHYS 040A, PHYS 040B

Major Requirements

1. Lower-division requirements (72 units)
   a) CHEM 001A, CHEM 001LA, CHEM 001B, CHEM 001LB, CHEM 001C, CHEM 001LC
   b) CS 030
   c) EE 001A, EE 01LA
   d) MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   e) ME 010
   f) MSE 001
   g) PHYS 040A, PHYS 040B, PHYS 040C
   h) CHEM 008A, CHEM 008A
2. Upper-division requirements (72 units)
   a) BIEN 140A/CCE 140A
   b) CEE 135
   c) CHE 100
   d) EE 138
   e) ENGR 180W
   f) ME 110, ME 114, ME 156
   g) MSE 160, MSE 161, MSE 175A, MSE 175B
   h) STAT 155
   i) Technical Electives (20 units): chosen from BIEN 140B/CCE 140B, CEE 147, EE 133, EE 136, EE 137, EE 139, ME 113, ME 116, ME 138, ME 153, ME 180, MSE 197

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

Graduate Program

The Department of Materials Science and Engineering offers programs leading to M.S. and Ph.D. degrees. Research focus areas currently include Materials Processing, Semiconductor Materials, Materials Analysis, Nanoscale Materials, Bioinspired Materials, Ceramic Materials, Magnetic Materials and Materials for Spintronics.

Admission Applicants should have completed a program equivalent to UCR’s B.S. in Materials Science and Engineering.
Science and Engineering, obtained a B.S. in a related discipline and demonstrated particular interest/aptitude for Materials Science and Engineering, or demonstrate the required knowledge and proficiency in the following subjects:

1. Fundamentals of Materials Science and Engineering (equivalent to MSE 001)
2. Fundamentals of Chemistry (equivalent to Chem 001A & Chem 001B & Chem 001C)
3. Fundamentals of Physics (equivalent to Phys 040A & Phys 040B and Phys 040C)
4. Fundamentals of Materials Synthesis or Processing (for instance, equivalent to Chem 112A)
5. Nanostructure Characterization or Materials Characterization (equivalent to MSE 160 or MSE 161).

Under special circumstances, students who have not completed all preparation course requirements may be admitted provided that the deficiencies are corrected within the first year of graduate study. Deficiencies limited to 12 units maximum. Courses taken for this purpose do not count towards an advanced degree.

All applicants must submit official scores for the GRE General Test. All applicants whose native language is not English and who do not have a degree from an institution where English is the exclusive language of instruction must complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 (paper-based), 213 (computer-based), or 80 (Internet-based). Beginning with the Fall 2011 application cycle, UCR will accept scores from the Academic Modules of the International English Language Testing System IELTS, which is jointly managed by the British Council, IDP:IELTS Australia and the University of Cambridge ESOL Examinations. The exam must be taken within two years of the time prior to enrollment at UCR. The minimum acceptable scores are: overall band score of 7 with no individual section score less than 6. Please request an official Test Report Form (TRF) of your IELTS. Remember to order the TRF from the test center where you took the test and ask the administrator to send the official TRF to:

Graduate Admissions Office
Graduate Division
University Office Building
University of California, Riverside
Riverside, CA 92521 USA

For more information about registering for this exam or to locate the office of any test center, consult the IELTS website.

Applicants must meet the general admission requirements of the Riverside Division of the Academic Senate and the UCR Graduate Council as set forth in the UC Riverside Graduate Student Application.

Master of Science

The Program of Materials Science and Engineering offers the M.S. degree in Materials Science and Engineering. Students may obtain an M.S. degree in Materials Science and Engineering through one of two plans: 1) Thesis or 2) Comprehensive Examination.

Plan I (Thesis) Students must complete 36 units of graduate or upper-division undergraduate course work, of which 24 must be graduate level units. Student must complete at least one course from 3 of the 5 areas of Materials Science and Engineering (MSE 201-209, 210-219, 220-229, 230-239, 240-249) as well as at least one unit of MSE 200 and at least five units of MSE 250. Students must enroll in MSE 200 the first time it is offered during their residency. At least two units of MSE 250-259 must be taken for a letter grade. Students can take a maximum of 12 units in Graduate Research and a maximum 6 units in Directed Studies. The course of study needs to be approved each quarter by the research advisor (when determined) and the MSE graduate advisor. The degree will be awarded when all these requirements are met and the thesis has been submitted successfully.

Plan II (Comprehensive Exam) All students must complete 36 units of graduate or upper division undergraduate courses, of which 18 units must be graduate level. Student must complete at least one course from each of the 5 areas of Materials Science and Engineering (MSE 201-209, 210-219, 220-229, 230-39, 240-249) as well as at least one unit of MSE 200 and at least four units of MSE 250. At least one unit of MSE 250-259 must be taken for a letter grade. None may be in graduate research (MSE 297 or MSE 299). A maximum of 6 units may be in Directed Studies. Students must enroll in MSE 200 the first time it is offered during their residency. The course of study needs to be approved each quarter by the MSE graduate advisor.

Students will take a written comprehensive examination conducted jointly with the Ph.D. preliminary examination. The examination emphasizes the fundamental knowledge of the study area rather than the specifics covered in individual courses.

Students concurrently enrolled in a Ph.D. program in another department must have their course of study approved by the Graduate Advisor. Coursework used to complete requirements in a non-MSE Ph.D. program cannot be used towards the Master’s degree in MSE. An Oral Comprehensive Examination that measures the student’s breadth of knowledge in Materials Science and Engineering will be given after the appropriate course of study has been completed.

Normative Time to Degree – Six quarters (two years)

Doctoral Degree

The Program of Materials Science and Engineering offers the Ph.D. degree in Materials Science and Engineering.

Admission In addition to the requirements set forth for a M.S. degree, applicants should demonstrate exceptional achievement that clearly indicates their ability to conduct Ph.D. level studies.

Course Work There is no comprehensive course requirement for the Ph.D. degree; only a few courses are mandatory. The faculty recommends that the student take a minimum of 36 units of graduate or upper-division undergraduate course work covering all five areas of study in Materials Science and Engineering: Thermodynamic Foundation of Materials, Crystal Structure and Bonding, Materials Characterization Techniques, Functional Materials, and Materials Synthesis and Imaging (MSE 201-MSE 209, MSE 210-MSE 219, MSE 220-MSE 229, MSE 230-MSE 239, MSE 240-MSE 249). Students must enroll in MSE 200 the first time it is offered during their residency. Students must enroll in MSE 250 during all quarters of residency and must obtain a letter grade in an MSE 250-MSE 259 course once during each academic year of residency except for the first one.

The courses may include graduate course work used for the M.S. degree. The course of study needs to be approved each quarter by the research advisor (when determined) and the MSE graduate advisor. Students may need to take considerably more than the courses indicated above to prepare for and conduct their Ph.D. research.

Preliminary Examination The purpose of the preliminary examination is to screen candidates for continuation in the doctoral program. The examination is administered by the graduate program committee jointly with the M.S. comprehensive examination. Candidates must solve at least one problem in each of the five areas of study in Material Science and Engineering. Plan II M.S. candidates who took the combined M.S. comprehensive and Ph.D. preliminary examination and successfully passed at the Ph.D. level are given credit for having passed the Ph.D. preliminary examination.

Dissertation Proposal and Oral Qualifying Examination After passing the preliminary examination at the Ph.D. level, doctoral candidates must prepare and submit a dissertation proposal to their qualifying examination committee at least one month before the qualifying examination. The format of the proposal is flexible, but the proposal should clearly indicate the proposed problem under study, demonstrate substantial knowledge of the topic and related issues, state the progress made towards a solution, and indicate the work remaining to be done. The new approaches and methods to be used in the research should also be discussed. An extensive bibliography for the problem under study should be attached to the proposal. Within one week after submission, the student is informed whether the proposal meets these standards and the student is permitted to proceed to the oral exam.

The oral qualifying examination focuses on the dissertation problem. It includes considerable depth in the student’s area of specialization, as required for a successful completion of the dissertation. The examination is a three-hour session, which begins with the student’s presentation of the dissertation topic and is followed with questions and suggestions by the doctoral committee.

Dissertation Examination and Defense A doctoral dissertation should be an original and
substantial contribution to knowledge in the student’s major field. The dissertation must demonstrate the student’s ability to carry out a program of independent advanced research and to report the results in accordance with standards observed in recognized scientific journals. When the doctoral committee determines that a suitable draft of the dissertation has been presented, a dissertation examination and defense for the student is scheduled. The defense consists of a public seminar followed by questions from the committee members and the audience.

Normative Time to Degree 12 quarters (15 quarters for students without an M.S. in Materials Science and Engineering)

Preparation for Careers in Teaching All doctoral students are encouraged to serve as teaching assistants for at least three quarters during their graduate career. The program offers a Teaching Practicum in Materials Science and Engineering (MSE 302).

Dissertation Examination and Defense Contact the Graduate Student Affairs Assistant at the Department of Materials Science and Engineering, (951) 827-3383, or visit mse.ucr.edu for information on graduate courses.

Lower-Division Course

MSE 001 Fundamentals of Materials Science and Engineering (2) Lecture, 1 hour; discussion, 1 hour; laboratory, 1 hour. An introduction to properties and applications of different types of materials essential for various areas of engineering. Explores the relationships between structure and properties as well as processing of the materials. Illustrates a wide range of properties required for different types of applications. Graded Satisfactory (S) or No Credit (NC).

Upper-Division Courses

MSE 136 Tissue Engineering (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): BIOL 005A and BIOL 005B, CHEM 010C or CHEM 010HC or equivalents, junior or senior standing or consent of instructor. Covers progress in cellular and molecular biology and engineering. Provides the basis for advancing tissue repair and regeneration with the goal of restoring compromised tissue functions. Presents methods for cell culture, tissue design and development, manipulation of the cell/tissue microenvironment, and current strategies for functional reconstruction of injured tissues. Cross-listed with BIEN 136.

MSE 160 Nanostructure Characterization Laboratory (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ME 114. Covers structure of materials at the nanoscale, including semiconductors, ceramics, metals, and carbon nanotubes. Explores fundamental and advanced topics through a variety of exercises. Addresses primary methods of characterization, including scanning electron microscopy, scanning probe microscopy, X-ray diffraction, and transmission electron microscopy. Also covers elementary discussions of X-ray, vibrational, and electron waves in solids and introductory diffraction theory.

MSE 161 Analytical Materials Characterization (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): MSE 160. Analysis of the surfaces of materials via ion, electron, and photon spectroscopies. Includes Rutherford backscattering; secondary ion mass spectroscopy; electron energy loss spectroscopy; Auger electron spectroscopy; X-ray photoelectron spectroscopy; photoluminescence; extended X-ray absorption fine structure; Fourier transform infrared spectroscopy; and Raman spectroscopy. Also covers sputtering, high-vacuum generation, and focused ion beam milling.

MSE 175A Senior Design (4) Lecture, 2 hours; discussion, 1 hour; practicum, 3 hours. Prerequisite(s): CHE 116 or ME 116A; EE 139; senior standing in Materials Science and Engineering. Covers preparation of formal engineering reports and statistical analysis on a series of problems illustrating methodology from various branches of applied materials science and engineering. Addresses the entire design process: design problem definition; generation of a design specification; documentation; design review process; prototype fabrication; testing and calibration; cost estimation; and federal guidelines. Requires a term project and oral presentation. Graded In-Progress (IP) until MSE 175A and MSE 175B are completed, at which time a final, letter grades is assigned.

MSE 175B Senior Design (4) Lecture, 1 hour; discussion, 1 hour; practicum, 6 hours. Prerequisite(s): MSE 175A; senior standing in Materials Science and Engineering. Covers preparation of formal engineering reports and statistical analysis on a series of problems illustrating methodology from various branches of applied materials science and engineering. Addresses the entire design process: design problem definition; generation of a design specification; documentation; design review process; prototype fabrication; testing and calibration; cost estimation; and federal guidelines. Requires a term project and oral presentation. Graded Satisfactory (S) or No Credit (NC) grading is not available.

MSE 197 Research for Undergraduates (1-4) Laboratory, 3-12 hours. Prerequisite(s): sophomore or junior or senior standing in Materials Science and Engineering or consent of instructor. Research conducted under the supervision of a MSE faculty member on selected problems in materials science and engineering supporting the student's area of study. Course credit is repeatable to a maximum of 8 units; maximum of 4 units may count toward the technical elective requirement.

Graduate Courses

MSE 200 Graduate Studies in Materials Science and Engineering (4) Lecture, 4 hours. Prerequisite(s): graduate standing in Materials Science and Engineering or consent of instructor. Introduction to graduate studies in materials science and engineering. Provides overview of the area of specialization of the academic program as well as research opportunities and fundamental methods of the discipline. Summarizes areas of employment of graduates in Materials Science and Engineering. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination.

MSE 201 Thermodynamic Foundations of Materials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in Materials Science and Engineering or consent of instructor. MSE 201 online section; enrollment in the Online Master-in-Science in Engineering program. Covers the laws of thermodynamics and fundamental equations for multi-component elastic solids, electromagnetic media, and equilibrium criteria. Describes applications to solution thermodynamics, point defects in solids, elastic effects, phase diagrams, transitions, and interfaces. Includes nucleation theory, kinetics (diffusion of heat, mass, and charge), and coupled flows.

MSE 204 Thermodynamics and Statistical Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Covers thermodynamics and statistical principles of ideal Bose systems, ideal Fermi systems, and bulk motion. Cross-listed with PHYS 212A.

MSE 205 Advanced Physical Chemistry: Thermodynam-
ics (3) Lecture, 3 hours. Prerequisite(s): CHEM 110A and CHEM 110B with grades of “C” or better. Covers concepts in thermodynamics including fundamental equations, potentials, Maxwell relations, and stability criteria. Cross-listed with CHEM 210D.

MSE 207 Applied Quantum Mechanics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 046, PHYS 040A; or consent of instructor. Covers topics in quantum mechanics including the Schroedinger equation; operator formalism; harmonic oscillator; quantum wells; spin, bosons, and fermions; solids; perturbation theory; Wentzel-Kramers-Bril- louin approximation; tunneling; light-binding model; quantum measurements; quantum cryptography; and quantum computing. Cross-listed with EE 201.

MSE 208 Mechanics and Physics of Materials (4) Lecture, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the structure and properties of materials; the characterization and modeling of mechanical, thermal, electric, and magnetic properties of materials; and coupling properties. Top-ics include wave propagation in solids, fatigue, fracture, and brittle-to-ductile transitions. Cross-listed with ME 266.

MSE 210 Crystal Structure and Bonding (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 221C; graduate standing or consent of instructor. Topics include classical and quantum theories of the electron gas; crystal and reciprocal lattices; X-ray diffraction; crystal symmetries; electrons in a periodic potential; nearly free electrons; tight binding; semiclassical dynamics; and semiclassical transport. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with PHYS 240A.

MSE 214 Condensed Matter Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 221C; graduate standing or consent of instructor. Topics include classical and quantum theories of the electron gas; crystal and reciprocal lattices; X-ray diffraction; crystal symmetries; electrons in a periodic potential; nearly free electrons; tight binding; semiclassical dynamics; and semiclassical transport. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with PHYS 240A.

MSE 217 Fundamentals of Semiconductors and Nano-
structures (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 133, EE 201/MSE 207; or consent of instructor. Examines principles of semiconductor materials and nanostructures. Topics include phonons, electron and holes, band-structure, electron transport, defects, optical properties, and radiative recombina-
tion. Also covers absorption and emission of radiation in nanostructures and nonlinear optics effects. Emphasizes properties of semiconductor superlattices, quantum wells, wires, and dots. Cross-listed with EE 202.

MSE 218 Imperfections in Solids (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in Chemical or Materials Science and Engineering or Computer Science or Electrical Engineering or Materials Science and Engineering or Mechanical Engineering. Covers fundamentals of crystal structures and crystal defects, including the generation of point defects; nucleation and propagation of dislocations; perfect and partial dislocations; twins, stacking faults, and transformations; mechanics of semiconductor and metallic thin films and multilayered structures. Cross-listed with ME 278.

MSE 220 Materials Characterization Techniques (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in Materials Science and Engineer-
ing or consent of instructor. Concepts of instrumental techniques used in the characterization of engineering materials by electron microscopy, X-ray diffraction, and spectroscopy. Provides analysis of defects responsible
for materials properties. Addresses modern electrical, optical, and particle beam techniques for material characterization. Includes Hall Effect and Raman spectroscopy.

MSE 221 Electron Microscopy and Microanalysis (3) Lecture, 3 hours. Prerequisite(s): Concurrent or previous enrollment in MSE 221 or consent of instructor. Provides practical training in transmission electron microscopy and associated techniques including sample preparation.

MSE 222 Laboratory in Transmission Electron Microscopy (1) Laboratory, 2 hours; written work, 1 hour. Prerequisite(s): Concurrent or previous enrollment in MSE 221 or consent of instructor. Provides practical training in transmission electron microscopy and associated techniques including sample preparation.

MSE 225A Spectrometry in Organic Structure Analysis (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Utilizes modern spectroscopic techniques such as IR, mass spectrometry, and <V>1<V>H and <V>13<V>C NMR to determine the structure of complex organic molecules. Topics include advanced NMR techniques such as 2D NMR, NMR pulse sequences, diffusion NMR, and MRI.

MSE 225B Advanced Analytical Chemistry-Optical Spectroscopy (3) Lecture, 3 hours. Prerequisite(s): CHEM 125. Provides an overview of modern analytical optical spectroscopic techniques including theory, instrumentation, and applications. Cross-listed with CHEM 221B.

MSE 225C Introduction to Computational Quantum Chemistry (3) Lecture, 3 hours. Prerequisite(s): CHEM 113 or equivalent, graduate standing; or consent of instructor. Introduces computational techniques in quantum chemistry. Includes Hartree-Fock theory, Density Functional Theory, and electron correlation methods. Emphasizes practical applications in a research setting. Cross-listed with CHEM 206A.

MSE 226 Optical Methods in Biology, Chemistry, and Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 109 or equivalent; graduate standing; consent of instructor. Covers the origin of fluorescence and other emission processes that modulate the characteristics of molecular emissions. Presents emission-based analytical and bioanalytical methods and techniques. Reviews state-of-the-art instrumentation, including their applicability, limitations, and source of error. Emphasizes practical applications in photochemistry, quantum chemistry, and bioanalytical techniques. Includes fluorescence, Raman, and infrared spectroscopy.

MSE 227 Nanoscale Characterization Techniques (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 203/MSE 207 or consent of instructor. An in-depth study of nanoscale materials and device characterization techniques. Emphasizes atomic force microscopy (AFM) and scanning tunneling microscopy (STM). Includes semiconductor fabrication fundamentals; metrology requirements; in situ monitoring; interconnects and failures; principles of AFM, STM, and scanning electron microscopy; X-ray methods; optical and infrared techniques; and electrical characterization. Cross-listed with EE 206.

MSE 230 Functional Materials: Semiconductors (4) Lecture; 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in Materials Science and Engineering or consent of instructor. Covers semiconductor crystal growth techniques; purification; doping; radiation damage; annealing; metal-semiconductor interfaces; defects and impurities; and major electronic and optical methods for the analysis of semiconductor materials. Includes semiconductor device fabrication issues.

MSE 234A Physics of Nanoscale Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores the fundamental concepts and techniques of nanoscale physics, including nanoscale fabrication and characterization techniques, electronic properties in reduced dimensional carbon nanotubes and nanoelectromechanical systems, superconductivity in reduced dimensions, and nonphononics. Students whose research is related to materials and nanoscale systems physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with PHYS 234.

MSE 234B Spintronics and Nanoscale Magnetism (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers the origin and electronic properties of semiconductor heterostructures, superlattices, heterojunction bipolar transistors, and nanostructure devices. Includes basis of magnetism, magnetic circuits, ferromagnetic resonance (FMR), nuclear magnetic resonance (NMR), magnetic resonance imaging, and magnetic coherent and spin-coherent behavior in ferromagnets. Students whose research is related to materials and nanoscale systems physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with PHYS 235.

MSE 236 Nanomaterials for Regenerative Medicine (4) Lecture; 4 hours. Prerequisite(s): BIOL 005C, CHEM 010C (or CHEM 010HC), MSE 001, or equivalents; graduate standing or consent of instructor. Covers recent advances in nanomaterial synthesis, fabrication, and characterization. Focuses on the medical applications of nanomaterials and nanotechnology. Addresses methods of synthesis of nanomaterials, such as nanoparticles, nanotubes, and nanofibers. Includes critical design criteria and assessment methods for properties of nanomaterials to meet medical requirements. Cross-listed with BIEN 236.

MSE 237A Applied Ferromagnetism (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 116; consent of instructor. Introduces fundamentals of ferromagnetism including the development of magnetization and the generation of magnetic resonance and spintronics-related devices. Includes basics of magnetism, magnetic circuits, ferromagnetic resonance (FMR), nuclear magnetic resonance (NMR), spintronics, and applications of nanomaterials and nanotechnology. Includes ferromagnetic resonance and their mechanistic pathways with emphasis on recent advances and practical organic chemistry. Cross-listed with CHEM 211E.

MSE 237B Nanoscale Phonon Engineering (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 202/MSE 217. Studies acoustic and optical phonons that are essential for the development of phononics and applications of phononics in phononics. Explores phonon theory and applications in phononic devices. Includes phononics applications in phononic devices and related materials. Cross-listed with EE 201.

MSE 237C Solid-State Devices (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 133 or consent of instructor. Covers electronic devices including p-n junctions, field-effect transistors, heterojunction bipolar transistors, and nanostructure devices. Includes electrical properties of semiconductor heterostructures, superlattices, quantum wires, and dots, as well as electronic devices based on these structures. Cross-listed with EE 203.

MSE 238 Introduction to Microelectromechanical Systems (4) Lecture, 4 hours. Prerequisite(s): ME 110, ME 111A, or equivalent. Cross-listed with MSE 238 online section; enrollment in the Online Master-in-Science in Engineering program. An introduction to the design and fabrication of microelectromechanical systems (MEMS). Topics include micromachining processes; mechanical properties; transduction, applications in mechanical, thermal, optical, radiation, and biological sensors and actuators; microfluidic devices; BioMEMS and applications; packaging and reliability concepts; and metrology techniques for MEMS.

MSE 240 Materials Synthesis and Processing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers synthesis and processing of materials. Focuses on the mechanical and chemical properties of segmentor fabrication and their physical and chemical foundation.

MSE 245A Advanced Organic Reactions (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers modern organic reactions and reagents and their mechanistic pathways with emphasis on recent advances and practical organic chemistry. Cross-listed with CHEM 211E.

MSE 245B Structure and Bonding in Inorganic Chemistry (3) Lecture, 3 hours. Prerequisite(s): CHEM 150A, CHEM 150B. Covers advanced synthesis, structure, and bonding in inorganic, coordination, and organometallic chemistry. Cross-listed with CHEM 231A.

MSE 245C Nanoscience and Nanotechnology (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry, Physics, Engineering, or a related subject or consent of instructor. Provides a condensed, interdisciplinary overview of selected fields of nanoscience and emerging nanotechnological applications. Focuses on applications relevant for the campus research community that are not based on electronic applications of silicon. Cross-listed with CHEM 203.

MSE 245D Interdisciplinary Overview of Current Issues in Semiconductor Processing (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Chemistry, Physics, Engineering, or a related subject or consent of instructor. Cross-listed with CHEM 237A. An interdisciplinary overview of present-day semiconductor processing. Introduces topics such as properties of semiconductors, cleanroom environment, epitaxy, ion implantation, etching, lithography, device architecture, testing, and failure detection. May offer field trips. Cross-listed with CHEM 208 and PHYS 202.

MSE 246 Cellular and Molecular Engineering (4) Lecture, 2 hours; discussion, 1 hour; practicum, 3 hours. Prerequisite(s): graduate standing or consent of instructor. BIEN 224/MSE 246 online section; enrollment in the Online Master-in-Science in Engineering program. Emphasizes biophysical and engineering concepts of cell biology at the cellular and molecular level. Includes receptor-ligand dynamics in cell signaling and function; DNA replication and RNA processing; cellular and protein sorting; control of gene expression; membrane structure, transport and traffic; biological signal transduction; and mechanics of cell division. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with BIEN 224.

MSE 248 Nanoscale Science and Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): graduate standing or consent of instructor. MSE 248/ME 272 online section; enrollment in the Online Master-in-Science in Engineering program. An overview of the current state of the art in the science of nanoscale materials, with a focus on the technological and societal implications of nanoscale materials. Topics include the design and fabrication of nanoscale devices and systems. Cross-listed with MSE 248.
grading examinations, as well as student-instructor relations in lower- and upper-division Materials Science and Engineering courses. Required each quarter of teaching assistants and associates in Materials Science and Engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

### Mathematics

**Subject abbreviation:** MATH  
**College of Natural and Agricultural Sciences**

<table>
<thead>
<tr>
<th>Professor</th>
<th>Title</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Alber, Ph.D.</td>
<td>Distinguished Professor</td>
<td>matheq.ucr.edu</td>
</tr>
<tr>
<td>John C. Baetz, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mei-Chu Chang, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vyjayanthi Chari, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michel Lapidus, Ph.D.</td>
<td>Distinguished Professor</td>
<td></td>
</tr>
<tr>
<td>Yat Sun Poon, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ziv Ran, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David E. Rush, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinhard Schultz, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stefano Vidussi, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frederic H. Wilhelm, Jr., Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bun Wong, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feng Xu, Ph.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qi S. Zhang, Ph.D.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Professors Emeriti**

- Theodore J. Barth, Ph.D.
- Richard E. Block, Ph.D.
- John E. de Pillis, Ph.D.
- Gerhard Gierz, Ph.D.
- Lawrence H. Harper, Ph.D.
- Frederic T. Metcalf, Ph.D.
- Malempati M. Rao, Ph.D.
- Louis J. Ratliff, Jr., Ph.D.
- James D. Stafney, Ph.D.
- Albert R. Stralka, Ph.D.

**Associate Professors**

- Wei Liang Gan, Ph.D.
- Jacob Greenfield, Ph.D.
- Zhan-gan Guan, Ph.D.
- James Kellie, Ph.D.

**Assistant Professors**

- Po-Ning Chen, Ph.D.
- Welsao Chen, Ph.D.
- Kevin Costello, Ph.D.
- Jose Gonzalez, Ph.D.
- Sara Lapan, Ph.D.
- Carl Mautner, Ph.D.
- Amir Moradi, Ph.D.
- David Weisbart, Ph.D.
- Zhenghe Zhang, Ph.D.

**Visiting Assistant Professors**

- Brian Bensou, Ph.D.
- Zhian Beninksy, Ph.D.
- Humberto Diaz, Ph.D.
- Xin Dong, Ph.D.
- Steven Gindi, Ph.D.
- Chenyu He, Ph.D.
- Bingyuan Liu, Ph.D.
- Neel Lissay, Ph.D.
- Kadiyme Nur Saglam, Ph.D.
- Lei Song, Ph.D.
- Liheng Tao, Ph.D.
- Christina Vasilakopoulou, Ph.D.
- Chenyu Wen, Ph.D.
- Xinli Xiao, Ph.D.
- Zhixin Zhu, Ph.D.

**Lecturers**

- Michael Curtis

**Cooperating Faculty**

- Bae-Liar "Larry" Li, Ph.D. (Botany and Plant Sciences)

**Academic Coordinator**

Rob Lam
their preparation to face the challenges of a credentialing program.

Before admission and student teaching in a graduate credential program, the candidate must pass the California Basic Education Skills Test (CBEST) and demonstrate subject-matter proficiency in the fields which the candidate will teach. The candidate can demonstrate proficiency either by passing the commission’s subject-matter assessment examination or completing an undergraduate program that is state approved for teacher preparation.

California Teach-Science/Mathematics Initiative (CaTEACH-SMI) California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities, such as the SMI & Alpha Center Apprentice Programs, to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources which includes the National Science Foundation (NSF) Noyce Scholarship Program, to promote planning and professional development towards a science/mathematics education career.

For more information about the CaTEACH-SMI program, please visit smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at facebook.com/ScienceMathInitiativeAtUCR.

Change of Major Criteria

All courses taken to fulfill major requirements must be completed with grades of C- or better after repeats.

Freshman (0-44.9 units earned)

Completion of the following with grade of “C-” or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 007A or MATH009A or MATH 009HA

Sophomores (45-89.9 earned units)

Completion of the following with grade of “C-” or better and must be in good academic standing. (2.0 quarter and cumulative GPA).

MATH 007A or MATH009A or MATH 009HA
MATH 007B or MATH009B or MATH009HB
MATH 009C or MATH 010A

Juniors & Seniors (90 or more earned units)

Completion of the following with grade of “C-” or better and must be in good academic standing.

(2.0 quarter and cumulative GPA).

MATH 007A or MATH009A or MATH 009HA
MATH 007B or MATH009B or MATH009HB
MATH 009C
MATH 010A
MATH 031

Major change requests are reviewed during the 2nd, 3rd, 4th & 10th weeks of each quarter. Students are required to complete degree programs without exceeding 216 earned units.

Transfer Selection Criteria

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with “C” grades or better:

MATH 007A or MATH009A, MATH 007B or MATH 009B, and MATH 009C (mandatory)

And at least one sequence from:

1. BIOL 005A/BIOL 05LA and BIOL 005B (and BIOL 005C, if articulated)
2. CHEM 001A, CHEM 011A, CHEM 001B, CHEM 011B, CHEM 001C, and CHEM 011C
3. PHYS 040A, PHYS 040B, and PHYS 040C
4. MATH 010A, MATH 010B, and MATH 046

Courses must be completed with a letter grade, with no grade lower than a “C.” Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Major Requirements for the Bachelor of Arts and Bachelor of Science in Mathematics

To fulfill the Natural Sciences requirement, the Department of Mathematics requires the following:

1. One of the year sequences
   a) BIOL 002, BIOL 003, BIOL 005C
   b) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C
   c) PHYS 040A, PHYS 040B, PHYS 040C
2. Either one course in the physical sciences listed above if (a) above is completed or one course in the biological sciences if (b) or (c) above is completed

The major requirements for the B.A. and B.S. degrees in Mathematics are as follows:

For the Bachelor of Arts

1. Lower-division requirements: MATH 007A or MATH 009A or MATH 009HA, MATH 007B or MATH 009B or MATH 009HB, MATH 010A, MATH 010B, MATH 031, MATH 046

2. Four (4) units of either CS 010 or one upper-division course in Statistics

3. A minimum of 36 units of upper-division mathematics, excluding courses in the MATH 190--199 series

For the Bachelor of Science

Lower-division requirements for all programs are MATH 007A or MATH 009A or MATH 009HA, MATH 007B or MATH 009B or MATH 009HB, MATH 009C, MATH 010A, MATH 010B, MATH 031, MATH 046, CS 010 (CS 012 is recommended).

1. Pure Mathematics program (56 units)
   a) Thirty-six (36) units of upper-division mathematics to include at least 24 units from MATH 131, MATH 132, MATH 145A, MATH 145B, MATH 151A, MATH 151B, MATH 151C, MATH 171, MATH 172
   b) At least three courses from (a) above must be from MATH 145A, MATH 145B, MATH 151A, MATH 151B, MATH 151C
   c) Courses in the MATH 190--199 series are excluded
   d) Sixteen (16) additional units of upper-division mathematics, upper-division computer science, or other related courses approved by the undergraduate advisor (For students who wish to pursue graduate work, courses in complex variables, differential equations, and probability may be particularly useful.)

2. Applied Mathematics program
   MATH 131, MATH 135A and MATH 135B, or MATH 149A and MATH 149B. MATH 146A, MATH 146B, MATH 146C and the courses in one of the following options:
   a) General Applied Mathematics option
      (1) MATH 150A or MATH 151A
      (2) MATH 168
      (3) Students will select 16 units from MATH 120, MATH 121, MATH 126, MATH 141, MATH 147, MATH 148, MATH 149A, MATH 149B, MATH 149C, MATH 150B, MATH 151B, MATH 165A, MATH 165B
   b) Biology option
      (1) BIOL 005A, BIOL 05LA, BIOL 005B, BIOL 055C
      (2) MATH 149A
      (3) Two courses from MATH 120, MATH 121, MATH 35A, MATH 135B, MATH 149B, MATH 149C
      (4) BIOL 102, BIOL 105, BIOL 108
1. Lower-division Mathematics requirements (24 units)
   - MATH 007A or MATH 009A or MATH 009HA, MATH 007B or MATH 009B or MATH 009HB, MATH 009C, MATH 010A, MATH 010B
   - MATH 149A, MATH 149B, MATH 149C, MATH 171

2. Upper-division Mathematics requirements (36 units)
   - MATH 131, MATH 133, MATH 140, MATH 144, MATH 153
   - MATH 150A or MATH 151A
   - Three courses from: MATH 132, MATH 136, MATH 137, MATH 138A, MATH 145A, MATH 145B, MATH 149A, MATH 149B, MATH 149C, MATH 150B, MATH 151B, MATH 151C, MATH 171, MATH 172

3. Additional Mathematics and related disciplines requirements (12 units)
   - CS 010
   - CS 011/MATH 011
   - STAT 155

4. Natural Sciences (16-20 units)
   - BIOL 002 or BIOL 003 or BIOL 005A and BIOL 05A
   - CHEM 001A and CHEM 01LA or CHEM 001HA and CHEM 1HLA
   - PHYS 040A
   - CHEM 011B and CHEM 01LB or CHEM 011A and CHEM 1HLB or PHYS 040B or an additional laboratory Biological science course

5. Social Sciences (16 units)
   - One course in ECON or POSC
   - One course in ANTH
   - One course in PSYC
   - One course in SOC

6. Mathematics Education and Education requirements (18 or 19 units): EDUC 003 or EDUC 004 or EDUC 100B or equivalent, EDUC 104, EDUC 109/EDUC 109S, EDUC 110, EDUC 139

7. Recommended Courses: LING 020 or LING 021, EDUC 116, EDUC 174, EDUC 175/EDUC 175S

Mathematics Honors Program

Candidates for the Honors Program in Mathematics must complete:

1. Earn an overall GPA of at least 3.50 in Mathematics.
2. Earn a grade of "B" or better in each of MATH 151A, MATH 151B and MATH 151C.
3. Earn a grade of "B" or better in each of MATH 145B and MATH 171 OR in each of MATH 146A, MATH 146B and MATH 146C OR in each of MATH 149A and MATH 149B.
4. Satisfactorily complete one of the following:
   i) A research project earning a grade of "A" in MATH 197.
   ii) Two courses chosen from one of the sequences: MATH 201A, 201B, 201C; MATH 205A, MATH 205B, MATH 205C; MATH 209A, MATH 209B, MATH 209C; MATH 210A, MATH 210B with a grade of "B" or better in each course.

It is the responsibility of the honors candidates to notify the department of their eligibility.

Minor

The following are the requirements for a minor in Mathematics.

1. Lower-division courses (20 units): MATH 007A or MATH 009A or MATH 009HA, MATH 007B or MATH 009B or MATH 009HB, MATH 009C, MATH 010A, MATH 010B
2. Upper-division requirements: 24 units of upper-division mathematics courses. Of the specified upper-division units, a minimum of 16 must be unique to the minor and may not be used to satisfy major requirements and no more than 4 units in courses numbered 190–199.

Students with a minor in Mathematics should consult with a faculty advisor in Mathematics to construct a specific program consistent with their goals.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Programs

The Department of Mathematics offers the M.A., M.S., and Ph.D. degrees in Mathematics.

Admission

Domestic applicants must supply GRE General Test scores (verbal, quantitative, and analytical).
M.A. or M.S. in Mathematics

General university requirements are listed in the Graduate Studies section of this catalog. Specific requirements are as follows:

1. Completion of two of the following sequences: MATH 201A, MATH 201B, MATH 201C; MATH 205A, MATH 205B, MATH 205C; MATH 209A, MATH 209B, MATH 209C; or MATH 210A, MATH 210B, with a grade of “C” or better in each course and a GPA of 3.00 in each chosen sequence.

2. As a substitute for one or more course sequences in (1), passing a Ph.D. qualifying examination fulfills the course requirement of the corresponding sequence.

3. Taking 36 units of courses numbered between MATH 110 and MATH 189, or between MATH 200 and MATH 210. At least 18 must be from courses numbered between MATH 200 and MATH 210.

4. Completion of 2 units of MATH 401, Professional Development in Mathematics.

The requirements of 1 and 2 above constitute the comprehensive final examination requirement for the degree.

M.S. in Mathematics (Applied)

General university requirements are listed in the Graduate Studies section of this catalog. Specific requirements are as follows:

1. Completion of two sequences of courses numbered between MATH 206 and MATH 209 with a grade of “C” or better in each course and a GPA of at least 3.00 in each chosen sequence. A sequence consists of all courses with the same course number except for an alphabetical suffix. Any course without an alphabetical suffix is not part of a sequence.

2. As a substitute for one or more course sequences in (1), passing a Ph.D. qualifying examination fulfills the course requirement of the corresponding sequence.

3. Taking 36 units of courses numbered between MATH 110 and MATH 189, or between MATH 200 and MATH 210. At least 18 must be from courses numbered between MATH 200 and MATH 210.

4. Completion of 2 units of MATH 401, Professional Development in Mathematics.

The requirements of 1 and 2 above constitute the comprehensive final examination requirement for the degree.

Doctoral Degree

The Department of Mathematics offers the Ph.D. degree in Mathematics. Specific requirements are as follows:

1. Passing four sequences numbered between MATH 200 and MATH 210. A sequence consists of all courses with the same course number except for an alphabetical suffix. Any course without an alphabetical suffix is not part of a sequence.

2. For three of the four chosen sequences in (1), a qualifying examination must be taken. Two qualifying examinations, which are associated with two of the year-long sequences, must be passed with a grade of “A”. The third qualifying examination can be passed with a grade of “B” or better in any of the five sequences.

A student is allowed to take the qualifying examination at most twice for each sequence.

3. Completing four quarter-courses in mathematics numbered between 211 and 259.

4. Completion of 2 units of MATH 401, Professional Development in Mathematics.

Normative Time to Degree 15 quarters

Lower-Division Courses

Mathematics advisory examinations are scheduled before each quarter. The UCR Mathematics Advisory Exam is a prerequisite for students who wish to enroll in math courses but have not received course equivalence in MATH 005, MATH 007A, MATH 008B, MATH 009A, MATH 009HA, MATH 015, MATH 022, or MATH 023.

MATH 002 Math Support Practicum (0) Lecture, 4 hours; activity, 4 hours. Prerequisite(s): enrollment in the Summer Bridge MATH 002 program. Covers understanding course content and developing thinking and problem-solving skills. Introduces university life through exposure to test-taking techniques, effective note-taking strategies, time management, and university procedures and practices. Carries workload credit equivalent to 2 units but does not count towards graduation units. Offered in summer only. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENGL 002 or MATH 002.

MATH 004 Introduction to College Mathematics for Business and the Social Sciences (5) Lecture, 5 hours. Prerequisite(s): completion of MATH 005A with a grade of “C-” or better. Topics include exponential, logarithmic, and trigonometric functions and their graphs, including linear and polynomial functions, zeroes, and inverse functions as well as exponential, logarithmic, and trigonometric functions and their inverses. Also includes counting, including elementary probability. Involves applications to the natural sciences and engineering.

MATH 009A First-Year Calculus (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009A with a grade of “C-” or better or MATH 009B with a grade of “C-” or better. Further topics from integral calculus, improper integrals, infinite series, Taylor’s series, and Taylor’s theorem. Credit is awarded for only one of MATH 009A, MATH 009B, MATH 009A, or MATH 09HA.

MATH 009B First-Year Calculus (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009A or MATH 009B or MATH 009A with a grade of “C-” or better. Further topics from integral calculus, improper integrals, infinite series, Taylor’s series, and Taylor’s theorem. Credit is awarded for only one of MATH 009A, MATH 009B, or MATH 09HA.

MATH 009C First-Year Calculus (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009B with a grade of “C-” or better or MATH 09HB with a grade of “C-” or better. Further topics from integral calculus, improper integrals, infinite series, Taylor’s series, and Taylor’s theorem. Credit is awarded for only one of MATH 009C or MATH 09HC.

MATH 010A Calculus of Several Variables (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009B or MATH 009B with a grade of “C-” or better. Topics include Euclidean
Programs and Courses

MATH 010B Calculus of Several Variables (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better. Covers vectors; differential calculus, including implicit differentiation and Lagrange multipliers; multiple integration; line integrals; vector field theory; and theorems of Gauss, Green, and Stokes.

MATH 011 Introduction to Discrete Structures (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 007A or MATH 009A or MATH 099A; CS 010 or MATH 007B or MATH 009B or MATH 099B. Introduction to basic concepts of discrete mathematics emphasizing applications to computer science. Topics include propositional and predicate calculus, elementary set theory, functions, relations, proof techniques, elements of number theory, enumeration, and discrete probability. Cross-listed with CS 011.

MATH 022 Calculus for Business (5) Lecture, 3 hours; discussion, 2 hours. Prerequisite(s): a sufficiently high score on the placement examination, as determined by the Mathematics Department, or MATH 004 with a grade of "C-" or better or MATH 005 with a grade of "C-" or better or MATH 08A with a grade of "C-" or better or MATH 08B with a grade of "C-" or better. Emphasis is on theory and rigor. Credit is awarded for only one of MATH 099C or MATH 09HC.

Upper-Division Courses

Courses numbered MATH 100–109 do not meet upper-division mathematics requirements.

MATH 120 Optimization (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better. MATH 031 with a grade of "C-" or better. Introduction to classical optimization including constrained and unconstrained problems in several variables, gradients, Jacobian and Lagrangian methods and the Kuhn-Tucker conditions. Covers the basic concepts of linear programming including the simplex method and duality with applications to other subjects.

MATH 121 Game Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better. Examines games in extensive, normal, and characteristic form as models of conflict and/ or cooperation. Covers two-person zero-sum games, minimax theorem, and relation to linear programming. Includes non-zero-sum games, Nash equilibrium theorem, bargaining, the core, and the Shapley value. Addresses economic market games.

MATH 126 Combinatorics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 011/CS 011 with a grade of "C-" or better. A study of elements of combinatorics theory. Topics include chromatic polynomials, enumerating partitions of sets and integers, asymptotic enumeration, Polya theory, and Ramsey theory.

MATH 131 Linear Algebra I (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better (may be taken concurrently); MATH 031 with a grade of "C-" or better. An introduction to vector spaces, matrices, and linear transformations.

MATH 132 Linear Algebra II (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 131 with a grade of "C-" or better or equivalent. Further study of topics in linear algebra including eigenvalues. Exploration of Hermitian and unitary matrices, positive definite matrices, and canonical forms.

MATH 133 Geometry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 031 with a grade of "C-" or better; MATH 010A with a grade of "C-" or better; MATH 031 with a grade of "C-" or better; MATH 046 with a grade of "C-" or better. Studies elementary algebraic geometry, conics, Euclidean and non-Euclidean geometries, and their applications.

MATH 135A Numerical Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 010 or equivalent with a grade of "C-" or better; MATH 031 with a grade of "C-" or better or consent of instructor. Analyzes elementary theory of affine and projective planes, the line at infinity, finite geometries, Euclidean and non-Euclidean geometries, groups of transformations, and other algebraic structures related to geometry.

MATH 137 Plane Curves (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 031 with a grade of "C-" or better. MATH 171 and MATH 172 with a grade of "C-" or better. A study of the complex projective plane, homogeneous polynomials, plane curves, intersection multiplicities, and Bezout's theorem.

MATH 139A Introduction to Differential Geometry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 101A, MATH 031 with a grade of "C-" or better. Examines elementary theory of curves and surfaces. Includes first and second fundamental forms.

MATH 139B Introduction to Differential Geometry (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B with a grade of "C-" or better, MATH 046 with a grade of "C-" or better, concurrent enrollment or completion of MATH 144 with a grade of "C-" or better, or consent of instructor. Covers Gaussian curvature, geodesics, and the Gauss-Bonnet Theorem.

MATH 140A Ordinary and Partial Differential Equations (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B with a grade of "C-" or better, MATH 046 with a grade of "C-" or better, concurrent enrollment or completion of MATH 144 with a grade of "C-" or better, or consent of instructor. Covers classical partial differential equations, characteristics, classical fractals, fractal dimensions, self-similar fractals, fractal curves and sets; random fractals; chaotic dynamics and fractals; iteration theory; Julia set; and the Mandelbrot set. Explores the beauty of fractals; mathematical description of irregular shapes (clouds, trees, coastlines, mountains, galaxies, lungs, snowflakes); and applications to physics, engineering, biology, and computer graphics.

MATH 144 Introduction to Set Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better. Covers algebra of subsets of a set. Addresses algebra of relations and functions. Explores cardinal and ordinal numbers and their arithmetic operations. Includes the well-ordering theorem, transfinite induction, and Zorn's lemma.

MATH 145A Introduction to Topology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 144 with a grade of "C-" or better. Addresses elementary topology in metric spaces.

MATH 145B Introduction to Topology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 145A with a grade of "C-" or better. Explores geometric topology, algebra associated with finite complexes, and applications.

MATH 146A Ordinary and Partial Differential Equations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 144 with a grade of "C-" or better. Covers partial differential equations and transform methods.

MATH 146B Ordinary and Partial Differential Equations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 146A with a grade of "C-" or better. Explores boundary value problems for partial differential equations, orthogonal expansions, and separation of
variables.

MATH 147 Introduction to Fourier Analysis and Its Applications (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009C or MATH 09HC with a grade of "C-" or better; MATH 010B with a grade of "C-" or better; MATH 031 with a grade of "C-" or better (may be taken concurrently); MATH 046 or MATH 146A with a grade of "C-" or better. Covers Fourier series expansions of periodic functions, properties, and convergence; the Dirichlet kernel; Fourier integrals and the Fourier transform in one and several variables; the Plancherel theorem; and Fourier inversion. Includes applications of Fourier analysis (e.g., to spectral theory; numerical analysis; ordinary and partial differential equations, and wavelet transform).

MATH 148 Introduction to Chaotic and Complex Dynamical Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 101A with a grade of "C-" or better; MATH 031 with a grade of "C-" or better; MATH 046 or MATH 146A with a grade of "C-" or better; or consent of instructor. Explores examples of dynamical systems, quadratic maps, maps of the circle, and higher-dimensional examples. Includes symbolic dynamics, Sarkovskii's theorem, hyperbolicity, and structural stability. Introduces chaotic dynamical systems and the period doubling route to chaos. Also introduces basic notions from complex dynamics. Includes the Julia set and the Mandelbrot set.

MATH 149A Probability and Mathematical Statistics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better, MATH 010B with a grade of "C-" or better, concurrent enrollment in or completion of MATH 046 or a grade of "C-" or better. An introduction to the mathematical theory of probability and discrete and continuous distributions.

MATH 149B Probability and Mathematical Statistics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A with a grade of "C-" or better, MATH 010B with a grade of "C-" or better; MATH 046 or MATH 146A with a grade of "C-" or better; or consent of instructor. A study of the concepts and theory of single-variable random variables. Focuses on concrete examples from basic probability theory. Includes the central limit theorem, sampling distributions, and confidence intervals.

MATH 150A Intermediate Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 099C with a grade of "C-" or better; MATH 09HC with a grade of "C-" or better; MATH 132 with a grade of "C-" or better. Includes mappings by elementary functions and complex integrals, as well as Cauchy’s theorem, power series, and Laurent series.

MATH 165A Introduction to Complex Variables (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B with a grade of "C-" or better. An introduction to the theory of analytic functions of a complex variable. Includes mappings by elementary functions and complex integrals, as well as Cauchy’s theorem, power series, and Laurent series.

MATH 165B Introduction to Complex Variables (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B with a grade of "C-" or better. Topics include the theory of residues, conformal mapping, and applications to physical problems.

MATH 168 Introduction to Mathematical Modeling (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 146A. A detailed study of how mathematical methods are applied to specific problems in the sciences and engineering fields. Utilizes examples taken from the theories of mechanical vibrations, population dynamics, and flow phenomena.

MATH 171 Introduction to Modern Algebra (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 131 with a grade of "C-" or better. MATH 144 with a grade of "C-" or better; or consent of instructor. A study of the concepts and theory of single-variable calculus. Covers sequences through the fundamental theory of calculus. Introduces sequences and series, continuity, differentiation, and integration. Credit is awarded for only one of MATH 150A or MATH 151A.

MATH 150B Intermediate Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 131 with a grade of "C-" or better; MATH 150A or MATH 151A with a grade of "C-" or better. MATH 132 with a grade of "C-" or better is recommended. A study of infinite series and multivariable advanced calculus. Credit is awarded for only one of MATH 150B or MATH 151B.

MATH 151A Advanced Calculus (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 151A with a grade of "C-" or better. A continuation of MATH 151A. Topics include sequences and series of functions, as well as functions of several variables. Credit is awarded for only one of MATH 150B or MATH 151B.

MATH 151B Advanced Calculus (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 151A with a grade of "C-" or better. A continuation of MATH 151A. Topics include sequences and series of functions, as well as functions of several variables. Credit is awarded for only one of MATH 150B or MATH 151B.

Graduate Courses

MATH 201A Algebra (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 171, MATH 172, or equivalents. Topics include basic theory of groups and rings, the Sylow theorems, solvable groups, and the Jordan–Holder theorem.

MATH 201B Algebra (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 201A. Topics include rings, the functors hom and tensor, modules over a principle ideal domain, and applications to matrices.

MATH 201C Algebra (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 201B. Topics include algebraic and transcendental extensions of fields and the Galois theory, and the tensor and exterior algebras.

MATH 202 Numerical Linear Algebra (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 132. Covers standard decompositions of matrices and their computational uses, conditioning data, stability of solutions, and effective numerical methods for computing eigenvalues.

MATH 205A Topology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 145B or equivalent. An introduction to pointset topology.

MATH 205B Topology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 205A or equivalent. Covers homotopy theory and homology theory.

MATH 205C Topology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 205A or equivalent. Covers differential topology.

MATH 207A Ordinary Differential Equations (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 146B, MATH 151B, or consent of instructor. Covers existence, uniqueness, and stability of solutions to ordinary differential equations. Also includes chaotic dynamical systems, dynamical flows, and Lyapunov functions.

MATH 207B Partial Differential Equations I (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 201B, MATH 151B, or consent of instructor. Covers the theory of partial differential equations (PDEs). Addresses important examples, dynamical flows, and Lyapunov functions.

MATH 207C Partial Differential Equations II (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 207B, or consent of instructor. A continuation of MATH 207B. Discusses various problems and methods in the study of partial differential equations (PDEs). Addresses important examples, dynamical flows, and Lyapunov functions.

MATH 209A Real Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 151C. Topics include Lebesgue measure, integration, and differentiation.

MATH 209B Real Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 209A. Topics include representation theorems, Hilbert space, Lebesgue spaces, and Banach spaces.

MATH 209C Real Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 209B.
Topics include complex measures, general measure spaces, integration on product spaces, and Lebesgue spaces.

MATH 210A Complex Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 151C, MATH 165A. Studies include complex analytic functions, Cauchy’s theorem, Cauchy’s integral formula and the Laurent series, and the residue theorem.

MATH 210B Complex Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210A. Studies include entire and meromorphic functions, normal families and the Riemann mapping theorem, and harmonic functions and the Dirichlet problem.

MATH 211A Ordinary Differential Equations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 211A. Topics include the method of averaging and numerical integration, autonomous systems, the method of Liapounov, and stability for linear systems.

MATH 211B Ordinary Differential Equations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 211A. Topics include stability of nonlinear systems, existence and uniqueness of solutions; linear differential equations; singularities of the first and second kind; self-adjoint eigenvalue problems on a finite interval; and singular self-adjoint boundary-value problems for second-order equations.

MATH 212 Partial Differential Equations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 151C and MATH 165A. Classical theory of initial and boundary value problems for hyperbolic, parabolic and elliptic partial differential equations.

MATH 216A Combinatorial Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 111. Addresses the solving of combinatorial problems by studying their morphisms (transformations preserving the problem). Covers optimum path problems and their variants. Develops general techniques and the ability to work through the solutions of challenging special cases. Focuses on utilizing symmetry to systematically reduce a problem.

MATH 216B Combinatorial Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 216A. Addresses the solving of combinatorial problems by studying their morphisms (transformations preserving the problem). Covers optimum path problems and their variants. Develops general techniques and the ability to work through the solutions of challenging special cases. Focuses on utilizing symmetry to systematically reduce a problem.

MATH 217 Theory of Probability (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 209C. Topics include independence, strong limit theorems including the strong law and the Kolmogorov 0-1 law. Explores the key structures of analytic number theory. Addresses the theory of the Riemann zeta function: functional equation, analytic continuation, and zero-free regions. Illustrates application to the prime number theorem. Considers the Mellin transform and other Dirichlet series, including Dirichlet L-functions.

MATH 224 Introduction to Homological Algebra (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210C or consent of instructor. Theory of derived functors and its application to rings and associative algebras.

MATH 225 Commutative Algebra (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210C. Covers basic theory of commutative rings, primary decomposition, integral dependence and valuation rings, and the intersection theorem of Krull.

MATH 226 Algebraic Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210B, MATH 205A. Introduction to the theory of modules over rings of differential operators. Topics include holonomic D-modules, functorial properties, and applications.

MATH 227A Lie Algebras (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210A, MATH 210B. Studies include basic definitions, solvable and nilpotent Lie algebras, and structure and classification of semisimple Lie algebras.

MATH 227B Lie Algebras (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210A. Introduction to Lie algebra theory. Explores the key structures of analytic number theory. Studies include enveloping algebras and representation theory, representations of semisimple Lie algebras, generalization to Kac-Moody Lie algebras, and modular Lie algebras.

MATH 228 Functional Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 209A, MATH 209B, MATH 209C. Topological linear spaces; function spaces; linear operators; spectral theory; operational calculus; and further selected topics.

MATH 230 Deformation Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210B, MATH 232B. Introduction to deformation quantization. Topics include Hochschild complexes of associative algebras, differential graded Lie algebras, quasi-isomorphisms, Kontsevich’s formality theorem, and star-products.

MATH 232A Geometry I (Introduction to Manifolds) (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 131 and MATH 151C. Basic notions and examples; vector fields and flows; tensors and vector bundles; differential forms, integration and deRham’s theorem.

MATH 232B Geometry II (Introduction to Differential) (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 232A. Local and global theory of curves. Surfaces in R3: the Gauss map, fundamental forms, curvature. Riemannian geometry: the Levi-Civita connection, curvature, geodesics, exponential map, completeness, Gauss-Bonnet theorem for surfaces.

MATH 233 Comparison Geometry (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 232B or consent of instructor. Explores the question of how curvature affects topology.

MATH 241 Mathematical Physics: Classical Mechanics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 205A, MATH 205B, MATH 205C, or PHYS 205; or consent of instructor. Hamilton’s principle of least action. Variational methods and Lagrange’s equations. Hamilton’s equations. Introduction to symplectic geometry and its applications to classical mechanics. Poisson brackets. Conserved quantities and Noether’s theorem. Examples of Hamiltonian and dissipative dynamical systems. Introduction to classical chaos.

MATH 2242 Mathematical Physics: Quantum Mechanics (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 209A, MATH 209B, MATH 209C; or consent of instructor. Foundations of quantum theory together with the relevant mathematical, probabilistic interpretation of quantum mechanics, self-adjoint operators and physical observables, non-commutativity and the uncertainty principle. Spectral theory for (unbounded) self-adjoint operators. Stone’s theorem and other topics.

MATH 243A Algebraic Geometry (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 210A, MATH 210B. Topics include algebraic varieties in affine and projective space and their basic attributes such as dimension, degree, tangent space, and singularities; and products, mappings, and correspondences.

MATH 243B Algebraic Geometry (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 243A. Topics include further study of varieties, sheaves, and cohomology and detailed study of curves and special topics.

MATH 245 Analytic Number Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 205A; or consent of instructor. Explores the key structures of analytic number theory. Explores the key structures of analytic number theory. Studies the Mellin transform and other Dirichlet series, including Dirichlet L-functions.

MATH 246A Algebraic Topology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 205A and PHIL 205D; or consent of instructor. Explores the key structures of analytic number theory. Studies the Mellin transform and other Dirichlet series, including Dirichlet L-functions.

MATH 246B Algebraic Topology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 205A. Explores the key structures of analytic number theory. Studies the Mellin transform and other Dirichlet series, including Dirichlet L-functions.

MATH 247 Theory of Distributions and Applications (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 146A; MATH 205A; or consent of instructor. Explores approximation of differentiable functions. Addresses theory of distributions, including basic properties, differentiation, and key operations. Covers applications to multivariable calculus and classical equations of mathematical physics. Examines particular spaces of distributions: convolution and Fourier transform; fractional differentiation; Fourier integral operators; and pseudo differential operators.

MATH 248 Harmonic Analysis and Applications (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 146C, MATH 165B, MATH 209C; or consent of instructor. A study of Fourier series. Includes summability methods, kernels, Fourier transform, unitarity, applications to the uncertainty principle, and distributional Fourier transform. Introduces Hardy spaces, singular integral operators, and wavelet theory and its applications. Other topics include interpolation of linear operators and spectral analysis and applications.

MATH 249 Introduction to Dynamical Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 146B, MATH 151C; MATH 205C or MATH 232A; or consent of instructor. Explores the key structures of analytic number theory. Studies the Mellin transform and other Dirichlet series, including Dirichlet L-functions.

MATH 250 Seminar (1-4) variable hours. Prerequisite(s): consent of department. Seminar on special
topics of mathematics in preparation for individual research. Course is repeatable.

MATH 299 Colloquium in Mathematics (1) Prerequisite(s): graduate standing. Specialized discussions by staff, students and visiting scientists on current research topics in Mathematics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MATH 290 Directed Studies (1-6) Prerequisite(s): consent of instructor. Research and special studies in mathematics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MATH 291 Individual Study in Coordinated Areas (1-6) Individual study, 3-18 hours. Prerequisite(s): graduate standing in Mathematics or consent of instructor. Designed to advise and assist candidates with exam preparation Graded Satisfactory (S) or No Credit (NC). Course is repeatable prior to successful completion of the qualifying examination for M.A. and M.S. students to a maximum of 6 units and for Ph.D. students to a maximum of 12 units.

MATH 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): consent of department. Directed research in mathematics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable more than once per quarter if studying with two or more faculty members.

MATH 299 Research for Thesis or Dissertation (1-12) Thesis, 3-36 hours. Prerequisite(s): consent of department. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

MATH 302 Apprentice Teaching (2-4) Lecture, 0-1 hour; seminar, 2-4 hours; consultation, 1-2 hours. Prerequisite(s): graduate standing. Modern trends in mathematical pedagogy at the college level. Covers instructional methods and classroom/section activities most suitable for teaching Mathematics. Designed for new graduate students in the Mathematics Department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MATH 401 Professional Development in Mathematics (2) Lecture, 1 hour; consultation, 1 hour. Prerequisite(s): graduate standing in Mathematics. Includes professional and research ethics, scientific writing and publication, oral presentation skills, career options in academia, and nonacademic careers. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Mechanical Engineering

Subject abbreviation: ME
The Marlan and Rosemary Bourns College of Engineering
Guillermo Aguilar, Ph.D. Chair
Department Office, A342 Bourns Hall
(951) 827-5830; me.ucr.edu

Professors
Reza Abbaspochan, Ph.D. Distinguished Professor
Guillermo Aguilar, Ph.D. Distinguished Professor
Cengiz Ozkan, Ph.D. Distinguished Professor
Marko Princevcec, Ph.D.
Thomas Stahovich, Ph.D.
Kambiz Vafai, Ph.D. Distinguished Professor
Akula Venkatram, Ph.D.
Guanshui Xu, Ph.D.

Associate Professors
Hyejeung Jung, Ph.D.
Lorenzo Mangolini, Ph.D.
Masaru P. Rao, Ph.D.

Assistant Professors
Sinisa Coh, Ph.D.
Shane Cybart, Ph.D.
Elisa Franco, Ph.D.
P. Alex Greeney, Ph.D.
Sandeep Kumar, Ph.D.
Chen Li, Ph.D.
Monica Martinez, Ph.D.
Suveen Mathaudhu, Ph.D.
Fabio Pasqualletti, Ph.D.
Hideaki Tsutsui, Ph.D.
Richard Wilson, Ph.D.

Adjunct Professors
Chris Dames, Ph.D.
Santiago Camacho-Lopez, Ph.D.
Carlos Coimbra, Ph.D.
Javier Garay, Ph.D.

Cooperating Faculty
Bahman Amir, Ph.D. (Bioengineering)
Matthew Barth, Ph.D. (Electrical and Computer Engineering)
Bir Bhanu, Ph.D. (Electrical and Computer Engineering)
Mihri Ozkan, Ph.D. (Electrical and Computer Engineering)
Wei Ren, Ph.D. (Electrical and Computer Engineering)

Major
The design and production of machines requires a broad-based education. The Mechanical Engineering degree program has been structured to provide the necessary background in chemistry, physics, and advanced math to achieve success in the advanced engineering subjects. In addition, students are taught the basics of Mechanical Engineering while learning about the latest developments and experimental techniques.

The Mechanical Engineering program objectives are to produce mechanical engineers who:

• have the knowledge and skills to adapt to the changing engineering environment in industry
• are able to pursue and succeed in graduate studies
• have the educational breadth and the intellectual discipline required to enter professional careers outside engineering, such as business and law
• have an ability to work in multi-disciplinary teams
• engage in a lifetime of learning

The Mechanical Engineering B.S. degree program at UCR is accredited by the Engineering Accreditation Commission of ABET, abet.org. For more details see me.ucr.edu.

All undergraduates in the College of Engineering must see an advisor at least annually. Visit student.engr.ucr.edu for details.

University Requirements
See Undergraduate Studies section.

College Requirements
See The Marlan and Rosemary Bourns College of Engineering, Colleges and Programs section.

The Mechanical Engineering major uses the following major requirements to satisfy the college’s Natural Sciences and Mathematics breadth requirement.

Mathematics / Mechanical Engineering / 350
1. BIOL 005A, BIOL 051A
2. MATH 008B or MATH 009A
3. PHYS 040A, PHYS 040B, PHYS 040C

Major Requirements
1. Lower-division requirements (73 units)
   a) BIOL 005A, BIOL 051A
   b) CHEM 001A, CHEM 001B, CHEM 011A, CHEM 011B
   c) EE 001A, EE 011A
   d) MATH 008B or MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
   e) ME 002, ME 009, ME 010, ME 018
   f) PHYS 040A, PHYS 040B, PHYS 040C
2. Upper-division requirements (77 units)
   a) ME 100A, ME 103, ME 110, ME 113, ME 114, ME 116A, ME 118, ME 120, ME 135, ME 170A, ME 170B, ME 174, ME 175A, ME 175B, ME 175C
   b) STAT 100A
   c) Choose one Focus Area:
      (1) Materials and Structures
         Sixteen (16) units of technical electives chosen from ME 100B, ME 116B, ME 121, ME 122, ME 153, ME 156, ME 180, ME 197
      (2) Energy and Environment
         Sixteen (16) units of technical electives chosen from ME 100B, ME 116B, ME 117, ME 136, ME 137, ME 138, ME 197
      (3) Design and Manufacturing
         Sixteen (16) units of technical electives chosen from ME 121, ME 122, ME 130, ME 131, ME 133, ME 140, ME 153, ME 156, ME 176, ME 180, ME 197
      (4) General Mechanical Engineering
         Sixteen (16) units of technical electives chosen from the following list, in consultation with an advisor: ME 100B, ME 116B, ME 117, ME 121, ME 122, ME 130, ME 131, ME 133, ME 136, ME 137, ME 138, ME 140, ME 153, ME 156, ME 176, ME 180, ME 197

Visit the Student Affairs Office in the College of Engineering or student.engr.ucr.edu for a sample program.

Graduate Program
The Department of Mechanical Engineering offers graduate educational programs leading to M.S. and Ph.D. degrees in Mechanical Engineering. Broad areas of research include:

1) mechanics and materials, 2) fluids and thermal sciences and 3) information computation and design. Specific research focus areas include the following:
351 / Programs and Courses

- Air quality, small and large-scale pollutant dispersion in urban flows, turbulent combustion and wildland fire behavior, engine emissions and nanoparticle science, thermal and electrical properties of nanowires and nanotubes, direct energy conversion, porous media and multiphase transport, bioheat transfer, biomedical optics, and medical laser applications
- Wafer fab processing, thin film mechanics and nanotechnology, bio-inspired materials, mechanical behavior of thin films and other small-featured structures, mechanics of interfaces and surfaces, mechanical properties of carbon nanotubes and ferroelectric/piezoelectric materials, sensing and imaging, mechanics of geophysical materials, advanced material synthesis, composites, MEME, BioMEMS, biomedical devices, and processing of nanocrystalline materials
- Artificial intelligence, computer-aided design or manufacturing, process planning, sensor networks, and distributed computing and control

Visit me.ucr.edu/programs/gradindex.html for detailed information on the research programs of individual faculty members.

**Combined B.S. + M.S. Five-Year Program** The college offers a combined B.S. + M.S. program in Mechanical Engineering designed to lead to a Bachelor of Science degree as well as a Master of Science degree in five years. Applicants for this program must have a high school GPA above 3.6, a combined SAT Reasoning score above 1950 (or ACT plus Writing equivalent), complete the Entry Level Writing Requirement before matriculation, and have sufficient mathematics preparation to enroll in calculus in their first quarter as freshmen. Eight units of technical electives will count in both programs, reducing the total number of units required for the MS degree.

Interested students who are entering their junior year should check with their academic advisor for information on eligibility and other details.

**Admission** In addition to the following requirements, all applicants must meet the general requirements of the Riverside Division of the Academic Senate and the UCR Graduate Council as set forth in this catalog under the Graduate Studies section.

**Language Requirement** All international students whose first language is not English must demonstrate proficiency in spoken English by securing at least a “conditional pass” score on the TAST or SPEAK test before they can be appointed as a TA. However, to be considered for subsequent TA appointments, they must secure a “clear pass” on the TAST or SPEAK.

The fee associated with this test is paid by the department for the first attempt only. The TAST or SPEAK requirement is, however, waived for subsequent TA appointments.

**Master’s Degree**

The Department of Mechanical Engineering offers the M.S. degree in Mechanical Engineering. Applicants should have an undergraduate degree in engineering, physical sciences, or mathematics; a satisfactory GPA for the last two years of their undergraduate studies; and high scores on the GRE General Test. All official transcripts, official GRE reports and three letters of recommendation must be submitted for evaluation. Foreign students and permanent residents whose first language is not English must also submit an acceptable TOEFL test score prior to admittance; the minimum TOEFL exam score is 550 (paper-based), 213 (computer-based), or 80 (Internet-based).

The M.S. degree in Mechanical Engineering can be earned by either completing a thesis (Plan I), which reports a creative investigation of a defined problem, or passing a comprehensive examination (Plan II). A minimum of three quarters of residency is required. Students should enroll in 12 units each quarter unless the graduate advisor grants an exception.

Course work used to satisfy the student’s undergraduate degree requirements may not be applied toward the 36-unit M.S. requirement.

**Plan I (Thesis)** requires completion of a minimum of 36 units of upper-division and graduate-level approved course work and submission of an acceptable thesis. At least 24 of these units must be in graduate courses (200-series courses), a minimum of sixteen of these units being Mechanical Engineering graduate courses (ME 200 or higher, excluding ME 250, ME 290, ME 297, ME 298I, and ME 299). The student must take at least 3 units of seminar (ME 250) and at least 7 but no more than 11 directed or thesis research credits (ME 297 or ME 299). No more than 8 units of course work may be satisfied with directed studies (ME 290) or individual internship (ME 298I). Students must defend the thesis. An acceptable M.S. thesis must be submitted. The M.S. thesis may be based on:

1. A research or advanced design project, either analytical, computational or experimental;
2. An extensive report consisting of theoretical, computational or experimental contribution to mechanical engineering.

The student’s M.S. Thesis Committee is responsible for approving the thesis. The thesis committee is composed of three members (including the research advisor).

**Plan II (Comprehensive Examination)** requires completion of a minimum of 36 units of upper-division and graduate-level approved course work and successfully passing a comprehensive examination. At least 24 of these units must be in graduate courses (200 series courses), a minimum of sixteen of these units being Mechanical Engineering graduate courses (ME 200 or higher, excluding ME 250, ME 290, ME 297, ME 298I, and ME 299). The student must take 1 unit of seminar (ME 250) and no more than 7 units of directed studies (ME 290) or individual internship (ME 298I). The comprehensive examination covers a broad range of topics chosen from upper-division and graduate courses the student has taken. This examination is prepared and administered by the graduate program committee. It is held during the spring quarter of every year.

**Normative Time to Degree**

Two years

Refer to the department’s graduate program guidelines for further details.

**Doctoral Degree**

The Department of Mechanical Engineering offers the Ph.D. degree in Mechanical Engineering.

**Admission** An M.S. or equivalent degree in engineering or physical sciences or mathematics is normally required for admission to the Ph.D. program, although applicants with exceptional undergraduate or research record may be admitted directly into the Ph.D. program without an M.S. degree. Applicants for the Ph.D. degree must also meet the same requirements as for the master’s programs. Students in the M.S. program of Mechanical Engineering who desire to pursue the Ph.D. degree must formally apply for admission to the Ph.D. program.

The procedure for satisfying the requirements for the Ph.D. degree in Mechanical Engineering at UCR consists of four principal parts:

1. Successful completion of an approved program of course work below
2. Passing a written and oral preliminary examination
3. Successful oral defense of a written dissertation proposal
4. Defense and approval of the dissertation

**Course Work** A course work plan should be formulated by the student and his/her faculty advisor within the first quarter after admission to the Ph.D. program and must be approved by the student’s Ph.D. advisor and Ph.D. Examination Committee. It is understood that changes to this may occur as the student’s research progresses. These changes should be documented after consultation with the Ph.D. advisor and Ph.D. Examination Committee.

**Core Course Work** Before the oral defense of the dissertation proposal at least 24 units of course work must be completed. This is excluding seminar and research credits. Of these a minimum of eight graduate units must be in Mechanical Engineering courses (ME 200 or higher, excluding ME 250, ME 290, ME 297, ME 298I, and ME 299). To meet this requirement by the end of the first year students must take at least eight units of course work per quarter. Typically students also enroll in ME 250 and ME 297 units their first year.

The student may be advised to take additional courses prior to advancement to candidacy.

**Seminar Requirement** The student must also complete 6 units of ME 250 (seminar) prior to graduation. One unit of ME 250 is offered each quarter. These units do not have to be completed before the dissertation proposal defense.

**Research Units** At least 36 units of directed or thesis research credits (ME 297 or ME 299) must be taken prior to graduation.

Courses taken as part of the Ph.D. requirement...
in Mechanical Engineering at UCR can be used to satisfy the course requirements for an M.S. in Mechanical Engineering at UCR and vice versa.

Normative Time to Degree Five years

Refer to the department’s graduate program guidelines for further details.

Written and Oral Preliminary Examination The examination aims to screen candidates for pursuing doctoral studies. It is administered by the graduate program committee and is composed of two sessions:

Session 1: Written Examination
Session 2: Oral Examination

Normally, both sessions are completed within a four-week period. The written examination is designed to test understanding of graduate-level mechanical engineering concepts and methods. It covers three subject areas to be selected by the student among the following:
- materials structure & properties, control systems, engineering analysis, fluid mechanics, heat transfer, thermodynamics, solid mechanics.
- Students are strongly encouraged to complete the relevant graduate-level course work for the selected subject areas. For details, consult the departmental guidelines. The oral examination assesses the student’s ability to conduct independent research. Consult departmental guidelines for details. The preliminary examination is normally offered once every year at the beginning of the summer session.

Dissertation and Final Oral Examination After successfully completing the preliminary examination, the student, with advice from the advisor, recommends a qualifying committee and prepares a dissertation proposal. The dissertation proposal consists of a written document and an oral presentation or defense. Typically, the student submits a dissertation proposal to the qualifying committee within one year after successfully completing the preliminary examination and completion of the required 24 units of graduate core courses.

The qualifying committee chair normally schedules an oral defense within one month of the written proposal submission. The presentation is given only to the qualifying committee members. The student is advanced to candidacy after successfully completing this examination and all coursework.

After completing the dissertation research, a written draft copy of the completed dissertation must be submitted to the dissertation committee for review, evaluation, and determination of whether the draft thesis is ready for oral defense. Once a draft has been approved for defense, an oral defense of the dissertation is scheduled and is open to the entire academic community. This defense consists of a presentation, followed by a question-and-answer period conducted by the dissertation committee and the audience. After successfully defending the dissertation, the candidate must submit final copies of the dissertation that comply with the format requirements set forth by the Graduate Division. Copies are given to the department and the dissertation advisor, in addition to those required by the Graduate Division.

Consult departmental guidelines for appointments to qualifying and dissertation committees.

Refer to the department’s graduate program guidelines for further details.

Lower-Division Courses

ME 001A Introduction to Mechanical Engineering (1) Laboratory, 3 hours. Prerequisite(s): none. An introduction to mechanical engineering as a field of study and as a profession. Orient students to the curriculum, faculty, and resources in the Department of Mechanical Engineering. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENGR 010 or ME 001A.

ME 001B Introduction to Mechanical Engineering (1) Laboratory, 3 hours. Prerequisite(s): none. An introduction to mechanical-engineering and computer-aided design. Students design, analyze, prototype, and test a mechanical device using modern methods. Graded Satisfactory (S) or No Credit (NC).

ME 001C Introduction to Mechanical Engineering (1) Laboratory, 3 hours. Prerequisite(s): MATH 008B or MATH 009A or MATH 09HA. An introduction to engineering problem solving and computing using EXCEL and MATLAB. Topics include functions, scalar and array operations, graphics, linear algebra, and symbolic mathematical operations with applications in mechanical engineering.

ME 002 Introduction to Mechanical Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 005 or equivalent. An introduction to the field of mechanical engineering. Topics include the mechanical engineering profession, machine components, forces in structures and fluids; materials and stresses; thermal and energy systems; machine motion; and machine design.

ME 003 How Things Work: The Principles Behind Technology (4) Lecture, 3 hours; discussion, 1 hour. Introduces the basic physical principles of engineering systems from everyday life such as automobiles, computers, and household appliances. Topics include conservation laws and the physics and chemistry of engineering systems. Does not confer credit towards a degree in the Bourns College of Engineering.

ME 004 Energy and the Environment (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Covers energy conservation, energy sources, market dynamics, and climate change. Addresses cultural, political, and social trends and their impact on the ecosystem. Discusses renewable and nonrenewable energy sources. Technical background not required. Does not confer credit towards a degree in the Bourns College of Engineering.

ME 005 The Science of Mythbusting (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces to the scientific method for non-science majors. Explores the application of scientific concepts to test the validity of myths and events from news stories, movies, and other popular media. Provides critical reasoning skills necessary to interpret advertiser's product claims, critique information on the World Wide Web, and understand new technologies. Students may petition for Satisfactory/No Credit (S/N). Credit is awarded for only one of CHE 114 or ME 113.

ME 009 Engineering Graphics and Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 002 (may be taken concurrently). Covers graphical concepts and projective geometry relating to spatial visualization and communication in design. Includes technical sketching, computer-aided design with solid modeling, geometric dimensioning and tolerancing, and an introduction to the engineering design process.

ME 010 Statics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009C, PHYS 040A. Covers equilibrium of coplanar force systems; analysis of frames and trusses; noncoplanar force systems; friction; and distributed loads.

ME 018 Introduction to Engineering Computation (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ME 002. An introduction to the use of MATLAB in engineering computation. Covers scripts and functions, programming, input/output, two- and three-dimensional graphics, and elementary numerical analysis.

Upper-Division Courses

ME 100A Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A, ME 018, PHYS 040B. Introduces basic concepts and applications of thermodynamics relevant to mechanical engineering. Topics include work and energy, the first law of thermodynamics, properties of pure substances, system and control volume analysis, the Carnot cycle, heat and refrigeration cycles, the second law of thermodynamics, entropy, and reversible and irreversible processes. Credit is awarded for only one of CHE 100 or ME 100A.

ME 100B Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A. Topics include the second law of thermodynamics, entropy function, entropy production, analysis of cycles, vapor power systems, gas power systems, refrigeration and heat pump systems, equations of state, thermodynamic property relations, ideal gas mixtures and psychrometrics, multicomponent systems, combustion, and reacting mixtures.

ME 103 Dynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 046, ME 010 with a grade of “C-” or better, ME 018. Topics include vector representation of kinematics and kinetics of particles; Newton’s laws of motion; force-mass-acceleration, work-energy, and impulse-momentum methods; kinetics of systems of particles; and kinematics and kinetics of rigid bodies.

ME 110 Mechanics of Materials (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 030 or ME 018, MATH 046, ME 010 with a grade of “C-” or better. Topics include mechanics of deformable bodies subjected to axial, torsional, shear, and bending loads; combined stresses; and their applications to the design of structures.

ME 113 Fluid Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 046, PHYS 040B, ME 010 with a grade of “C-” or better, ME 018. Introduces principles of fluid mechanics relevant to mechanical engineering. Topics include shear stresses and viscosity, fluid statics, pressure, forces on submerged surfaces, Bernoulli and mechanical energy equations, control volume approach, mass conservation, momentum and energy equations, the differential approach, turbulent flow in pipes, and lift and drag. Credit is awarded for only one of CHE 114 or ME 113.

ME 114 Introduction to Materials Science and Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 001B, PHYS 040C; upper-division standing. Covers materials classification, atomic structure and interatomic bonding, crystal structure of metals, imperfections in solids, diffusion, mechanical properties of engineering materials, strengthening mechanisms, basic concepts of fracture and fatigue, phase diagrams, ceramics, polymers, and composites.

ME 116A Heat Transfer (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 046, ME 113 (ME 113 may be taken concurrently). Introduces the analysis of steady and transient heat conduction, fin and heat generating systems, two-dimensional conduction, internal and external forced convection, natural convection, radiation heat transfer, heat exchangers, and
ME 116B Heat Transfer (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 116A. Covers analytical and numerical methods in heat transfer and fluid mechanics. Topics include heat conduction and convection, gaseous radiation, boiling and condensation, general aspects of phase change, mass transfer principles, multimode heat transfer and the simulation of thermal fields, and the heat transfer process.

ME 117 Combustion and Environments (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A, ME 113, ME 116A. Examines combustion processes and fluid dynamics; fuel-air thermodynamics; combustion-driven engine design and operation; engine cycle analysis; fluid mechanics in engine components; pollutant formation, and gas turbines.

ME 118 Mechanical Engineering Modeling and Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 046, ME 018. Introduces data analysis and modeling used in engineering through the software package MATLAB. Numerical methods include descriptive and inferential statistics, sampling and bootstrapping, fitting linear and nonlinear models to observed data, interpolation, numerical differentiation and integration, and solution of systems of ordinary differential equations. Final project involves the development and evaluation of a model for an engineering system. Credit is awarded for only one of ENGR 118 or ME 118.

ME 120 Linear Systems and Controls (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 001A, EE 011A, ME 103. Introduces the modeling and analysis of dynamic systems, emphasizing the common features of mechanical, hydraulic, pneumatic, thermal, electrical, and electromechanical systems. Controls are introduced through state equations, equilibrium, linearization, stability, and time and frequency domain analysis.

ME 121 Feedback Control (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 118, ME 120. Introduces students to the analysis and design of feedback control systems using classical control methods. Topics include control system terminology, block diagrams, analysis and design of control systems in the time and frequency domains, closed-loop stability, root locus, Bode plots, and an introduction to analysis in state-space.

ME 122 Vibrations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 103. Covers free and forced vibration of discrete systems with and without damping resonance, matrix methods for multiple degree-of-freedom systems; normal modes, coupling, and normal coordinates; and use of energy methods.

ME 130 Kinematic and Dynamic Analysis of Mechanisms (4) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): ME 009, ME 103. Explores the kinematic analysis of planar mechanisms including linkages, cars, and gear trains. Introduces concepts of multibody dynamics.

ME 131 Design of Mechanisms (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ME 130. Involves design of planar, spherical, and spatial mechanisms using both exact and approximate graphical and analytical techniques. Requires a computer-aided design project.

ME 133 Introduction to Mechatronics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ME 120. Introduces hardware, software, sensors, actuators, physical systems models, and control theory in the context of control system implementation. Covers data acquisition (Labview), sensors, actuators, electric circuits and components, semiconductor electronics, logic circuits, signal processing using analog operational amplifiers, programmable logic controllers, and microcontroller programming and interfacing. Uses MATLAB and Simulink.

ME 135 Transport Phenomena (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A, ME 113, ME 116A. Introduces new concepts of thermodynamics, fluid mechanics, and heat transfer: sychrometry, combustion, one-dimensional compressible flow, and turbomachinery. Integrates the most important concepts of transport of momentum, heat, and mass.

ME 136 Environmental Impacts of Energy Production and Conversion (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A, ME 113, ME 116A. Examines the environmental impacts of energy production and conversion. Topics include pollution associated with fossil fuel combustion, environmental impacts of energy use, turbulent transport, and boundary layers. Credit is awarded for only one of ME 176 or ME 210.

ME 137 Environmental Fluid Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A, ME 113. Covers the application of fluid mechanics to flows in the atmosphere and oceans. Topics include hydrostatic balance, Coriolis effects, geostrophic balance, boundary layers, turbulence, tracer and heat transport.

ME 138 Transport Phenomena in Living Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIEN 105 or ME 113, MATH 046, PHYS 040B. An introduction to the basic conservation laws of mechanics (mass, linear momentum, and energy) to the modeling of complex biological systems. Emphasizes how these concepts can explain and predict life processes.

ME 140 Ship Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 018, ME 103, ME 113. Covers ship hull form, static and dynamic stability, ship response to waves, grounding and flooding, numerical integration of complex three-dimensional curved shapes and mathematical modeling of curved surfaces. Explores engineering approximations necessary for applications of fundamental principles to complex engineering systems such as ships.

ME 144 Introduction to Robotics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 132. Covers basic robot components from encoders to microprocessors. Kinematic and dynamic analysis of manipulators. Addresses open- and closed-loop control strategies, task planning, contact and noncontact sensors, robotic image understanding, and robotic programming languages. Experiments and projects include robot arm programming, control vision, and mobile robots. Cross-listed with EE 144.

ME 145 Robotic Planning and Kinematics (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 132. Covers basic robot components from encoders to microprocessors. Kinematic and dynamic analysis of manipulators. Addresses open- and closed-loop control strategies, task planning, contact and noncontact sensors, robotic image understanding, and robotic programming languages. Experiments and projects include robot arm programming, control vision, and mobile robots. Cross-listed with EE 145.

ME 153 Finite Element Methods (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 118. Covers weak form formulation, the Galerkin method and its computational implementation, mesh generation, data visualization, as well as programming finite element codes for practical engineering applications.

ME 156 Mechanical Behavior of Materials (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): senior standing; ME 100, ME 114. Introduces the theory and experimental techniques for testing the mechanical behavior of materials and structures. Covers the fundamental mechanisms of deformation and failure of metals, ceramics, polymers, composite materials, and electronic materials as well as structural design and materials selection.

ME 170A Experimental Techniques (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 001A, EE 011A, ME 118 (ME 118 may be taken concurrently). Covers the principles and practice of measurement and control, and the design and implementation of experiments. Topics include dimensional analysis, error analysis, signal-to-noise problems, filtering, data acquisition and data reduction, and statistical analysis. Includes experiments on the use of electronic devices and sensors, and practice in technical report writing.

ME 170B Experimental Techniques (4) Laboratory, 6 hours; discussion, 2 hours. Prerequisite(s): ME 103, ME 110, ME 116A, ME 170A. Analysis and verification of engineering theory using laboratory measurements in advanced, project-oriented experiments involving fluid flow, heat transfer, structural dynamics, thermodynamic systems, and electromechanical systems.

ME 174 Machine Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 009, ME 103 (can be taken concurrently). ME 110, ME 114. An introduction to the fundamentals of design. Topics include deflection and stiffness, static failure, and fatigue failure.

ME 175A Professional Topics in Engineering (2) Lecture, 2 hours. Prerequisite(s): senior standing in Mechanical Engineering major. ME 009. Topics include technical communication, team work, project management, engineering economics, professional ethics, and computer-aided design. Satisfactory (S) or No Credit (NC) grading is not available.

ME 175B Mechanical Engineering Design (3) Lecture, 2 hours; laboratory, 3 hours. Prerequisite(s): senior standing in Mechanical Engineering. ME 113, ME 116A, ME 170B, ME 175A (may be taken concurrently). Outlines the defining of a design problem and the conception and detail of the design solution. Explores design theory, design for safety, reliability, manufacture, and assembly. Graded In Progress (IP) until ME 175B and ME 175C are completed, at which time a final, letter grade is assigned.

ME 175C Mechanical Engineering Design (3) Lecture, 1 hour; discussion, 3 hours. Prerequisite(s): senior standing in Mechanical Engineering. ME 175B. Students create, test, and evaluate a prototype based on the project design generated in ME 175B. Lecture topics include prototyping techniques, design verification, and ethical topics in design. Satisfactory (S) or No Credit (NC) grading is not available.

ME 175D Mechanical Engineering Design (3) Lecture, 2 hours; workshop, 2 hours. Prerequisite(s): senior standing in Mechanical Engineering. Introduces concepts of business and management required to convert a technology into a viable business. Topics include technological assessment, market analysis, strategy, decision making, legal and intellectual property issues in business, financial analysis, business ethics and communication. Satisfactory (S) or No Credit (NC) grading is not available.

ME 176 Sustainable Product Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 103, ME 110, ME 113, ME 116A. Introduces the principles of sustainable product design. Topics include life cycle design; design for reliability, maintainability, and recycling/reuse/renamufacture; materials selection; and manufacturing processes. Includes project in which students analyze the environmental impact of a product and redesign it to reduce the impact. Credit is awarded for only one of ME 176 or ME 210.

ME 180 Optics and Lasers in Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): senior standing; ME 010, ME 110, ME 170A. Focuses...
on principles of optics and lasers, wave equations, interferometry, diffraction, laser-material interactions. Applications in analytical characterization including confocal microscopy, Raman spectroscopy, mechan- ical deformation analysis, scanning probe microscopy, ultraviolet-visible spectrophotometry, photolumi- nescence, optical detectors, and lasers in materials processing.

ME 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): consent of instructor, depart- ment chair, and Mechanical Engineering Undergrad- uate Program Committee chair. Individual study to meet special curricular needs. Requires a final written report. Course is repeatable to a maximum of 9 units.

ME 197 Research for Undergraduates (1-4) Outside research, 3-12 hours. Prerequisite(s): consent of instructor and Mechanical Engineering Undergraduate Program Committee chair. Directed research in a particular subject relevant to mechanical engineering. Requires a final written technical report. Course is repeatable to a maximum of 8 units.

Graduate Courses

ME 200 Methods of Engineering Analysis (4) Lecture, 4 hours. Prerequisite(s): graduate standing in engi- neering or consent of instructor. Topics include linear algebra theory, vector spaces, eigenvalue problems, complex analysis, integration, experimental education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

ME 210 Sustainable Product Design (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): ME 210 online section; enrollment in the Online Master-in-Science in Engineering program. Introduces the principles of sustainable product design. Topics include life cycle design; design for reliability, maintainability, and recycling/reuse/ remanufacture; materials selection; and manufacturing processes. Includes project in which students analyze the environmental impact of a product and redesign it to reduce the impact. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Credit is awarded for only one of ME 176 or ME 210.

ME 220 Optimal Control and Estimation (4) Lecture, 4 hours; term paper, 1 hour. Prerequisite(s): ME 120, ME 121 or equivalent; or consent of instructor. Introduces optimal control with an emphasis on discrete time linear systems. Topics include analysis of discrete Riccati equations; asymptotic properties of optimal controllers; optimal tracking; an introduction to Receding Horizon control; derivation of the Kalman filter. Extended Kalman Filter; and Un- scented Kalman filter. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 233.

ME 222 Advanced Robotics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 236/ME 236; ME 120 or equivalent. Topics include robot navigation; description of robot sensors and their characteristics; sensor data processing; feature extraction; and match- ing. Analysis of space for robot mapping: map-based localization; simultaneous localization and mapping; image-based motion estimation; and motion planning. Cross-listed with EE 245.

ME 223 Secure and Reliable Control Systems (4) Lecture, 4 hours. Prerequisite(s): graduate standing or consent of instructor. ME 223 online section; enrollment in the Online Master-in-Science in Engineering program. An introductory study of fault-tolerant and secure control systems. Topics include models and dynamical systems; linear system theory; detectability of attacks and failures; model-based fault detection; analytical redundancy; unknown-input observers; statistical methods for fault detection; graphical mod- els and structured system theory; and fault-tolerant control. Letter Grade or S/NC; no petition required.

ME 230 Computer-Aided Engineering Design (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ME 200 or equivalent; or ME 240A is recommended. Introduces data analysis, including discrete Fourier transforms, sampling theorem, and power spectra. Reviews Sturm-Liouville eigenfunction expansions, Gibbs phe- nomenon, convergence theorems, and Chebyshev transforms. Additional topics include Galerkin, tau, collocation, and pseudospectral methods, aliasing, time-advancement, and numerical stability. Explores applications of interpolation and curve fitting. Includes polynomial and power series expansions, Bezier parameterizations, and optimization methods. Demonstrates applications of computer graphics and computational geometry to mechanical system simula- tions, computer-aided design, and engineering design.

ME 235 Optimal Control (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 235/ME 236. Presents the theoretical foundations of optimal control systems and methods for their design and analysis. Covers principles of optimization; Lagrange's equation; linear-quadratic-Gaussian control; certainty-equiv- alence; the minimum principle; the Hamilton-Jac- obi-Bellman equation; and the algebraic Riccati equation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 235.

ME 240A Fundamentals of Fluid Mechanics (4) Lecture, 4 hours. Prerequisite(s): graduate standing or consent of instructor. ME 240A online section; enrollment in the Online Master-in-Science in Engineering program. Introduction to fluid mechanics. Explores equations of motion, stress tensor, the Navier-Stokes equations, boundary conditions, exact solutions, vorticity, and boundary layers.
ME 241A Fundamentals of Heat and Mass Transfer (4) Lecture, 4 hours. Prerequisite(s): ME 240A or consent of instructor. Introduces in-depth derivations of equations and principles governing heat and mass transfer with an emphasis on formulation of problems. Topics include equations involved in conduction, convection, radiation, and conservation of mass, momentum, and energy, and the analytical and numerical solution of transport problems. Mechanical Engineering graduate students receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

ME 241B Transport through Porous Media (4) Lecture, 4 hours. Prerequisite(s): graduate standing. Covers current theories on flow, heat, and mass transfer and the mechanics of multiphase transport in porous media. Mechanical Engineering graduate students receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

ME 241C Electronic Cooling and Thermal Issues in Microelectronics (4) Lecture, 4 hours. Prerequisite(s): graduate standing. Discusses thermal issues associated with the life cycle of electronic products. Covers passive, active, and hybrid thermal management techniques, conventional and advanced cooling approaches, and advanced thermal management concepts such as single phase, phase change and heat pipes. Mechanical Engineering graduate students receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

ME 242 Turbulence in Fluids (4) Lecture, 4 hours. Prerequisite(s): ME 240A or consent of instructor. An introduction to the application of fundamental conservation laws of mechanics (mass, momentum, and energy) to the modeling of complex turbulent natural and human-made flows. Covers tensor notation, statistical and spectral analysis, and basic turbulent closure techniques, including understanding of turbulence with intuitive insight into the problems that cannot be rigorously solved. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

ME 243 Advanced Mechanical Engineering Thermodynamics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A or equivalent. Introduces the fundamental statistical foundations of classical thermodynamics, explore laws of energy, temperature, pressure, chemical potential, and the free energies. Applications include chemical equilibrium and reactions, phase equilibrium and transitions including vapor-liquid and solid-solid, fluctuations, and thermodynamic nanoscale systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ME 244 Nanoscale Heat Transfer and Energy Conversion (4) Lecture, 4 hours. Prerequisite(s): at least two of EE 201/ME 207, EE 202/ME 217, ME 100A, ME 116A, or equivalents. Explores fundamental processes of energy transport and conversion at short length and time scales. Introduces classical and quantum-mechanical size effects on the origins of entropy, temperature, pressure, chemical potential, and the free energies. Applications include chemical equilibrium and reactions, phase equilibrium and transitions including vapor-liquid and solid-solid, fluctuations, and thermodynamic nanoscale systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ME 245 Radiative Heat Transfer (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 116A or ME 116B or equivalent or consent of instructor. Offers in-depth study of topics related to radiative heat transfer. Builds upon curriculum of radiation presented at the undergraduate level. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ME 246 Computational Fluid Dynamics with Applications (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): ME 240A or consent of instructor. Introduces finite difference, finite volume, and finite element; spectral methods, governing equations for nonreacting and reacting flows, and stability and convergence for steady and unsteady problems. Students use commercial computational fluid dynamics (CFD) software for the course project.

ME 248 Internal Combustion Engines (4) F Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ME 100A; graduate standing. Covers engine types and their operation. Also this engine design and operating parameters, thermodynamics of fuel-air mixture, engine cycles, spark ignition and compressed ignition engines, and emissions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ME 250 Seminar in Mechanical Engineering (1 or 2) Seminar, 1-2 hours. Prerequisite(s): graduate standing. Seminar in selected topics in mechanical engineering presented by graduate students, staff, faculty, and invited speakers. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

ME 255 Transport Processes in the Atmospheric Boundary Layer (4) Lecture, 4 hours. Prerequisite(s): ME 100A or CHE 100, ME 113 or CHE 114, and ME 116A or CHE 116; or consent of instructor. Examines heat, mass, and momentum transport in areas of the atmospheric boundary layer using current understanding of micrometeorology. Topics includes surface energy balance, Monin-Obukhov Similarity theory, and dispersion of pollutants in the atmospheric boundary layer. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ME 261 Theory of Elasticity (4) Lecture, 4 hours. Prerequisite(s): ME 110 or consent of instructor. Introduction to tensors, strain, equations of motion, and constitutive equations. Topics include typical boundary value problems of classical elasticity, problems of plane strain and plane stress, and variational principles.

ME 266 Mechanics and Physics of Materials (4) Lecture, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the structure and properties of materials; the characterization and modification of materials; and coupling properties. Topics include phase transformations and brittle-to-ductile transitions. Cross-listed with MSE 208.

ME 267 Finite Element Methods in Solid Mechanics (4) Lecture, 4 hours. Prerequisite(s): ME 261 or consent of instructor. Covers the formulation and implementation of finite element methods, including the Galerkin and energy methods. Topics include the static and dynamic analysis of mechanical and multiphysical systems and techniques of automatic mesh generation.

ME 270 Introduction to Microelectromechanical Systems (4) Lecture, 4 hours. Prerequisite(s): ME 110, ME 114, or equivalents+BR+for MSE 238 online section; enrollment in the Online Master-in-Science in Engineering program. An introduction to the design and fabrication of microelectromechanical systems (MEMS). Topics include micromachining processes, material properties, transduction; applications in mechanical, thermal, optical, radiation, and biological sensors and actuators; microfluidic devices; BioMEMS and applications; packaging and reliability concepts; and mechanical and microtechniques for MEMS. Cross-listed with MSE 238.

ME 271 Therapeutic Biomedical Microdevices (4) Lecture, 4 hours. Prerequisite(s): ME 270/ME 238 or equivalent or consent of instructor. An introduction to the application of micro device technology towards biomedical therapeutics. Topics include emerging micro device fabrication techniques, bio compatibility requirements, and applications in areas such as cardiovascular intervention, minimally-invasive drug delivery, neurorprosthetic interfaces, and cellular engineering. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

ME 272 Nanoscope Science and Engineering (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): graduate standing or consent of instructor. MSEE 248/ ME 272 online section; enrollment in the Online Master-in-Science in Engineering program. An overview of the machinery and science of the nanometer scale. Topics include patterning of materials via scanning probe lithography; electron beam lithography; nanoprinting; self-assembly; mechanical, electrical, magnetic, and chemical properties of nanoparticles, nanotubes, nanowires, and biomolecules (DNA, proteins, self-assembled monolayers, and nanocomposites and synthetic macromolecules. Cross-listed with MSE 248.

ME 273 Principles and Designs of Micro Transducers (4) Lecture, 4 hours; term paper, 1 hour; extra reading, 1 hour; written work, 1 hour. Prerequisite(s): MSEE 270/ MSEE 238 or equivalent; or consent of instructor. Emphasizes physical principles and designs of microelectromechanical systems (MEMS). Topics include macroscopic and microscopic physical phenomena and properties; signal processing; mechanical transducers; thermal transducers; electrical transducers; magnetic transducers; optical transducers; chemical and biological transducers; and applications such as lab-on-a-chip, medical diagnosis and power MEMS.

ME 274 Plasma-aided Manufacturing and Materials Processing (4) Lecture, 4 hours. Prerequisite(s): MSEE 243 or equivalent; or consent of instructor. ME 274 online section; enrollment in the Online Master-in-Science in Engineering program. Covers the fundamentals of gaseous plasmas and the physics of both equilibrium and non-equilibrium plasmas. Covers the basic techniques for plasma diagnostics. Discusses the use of plasmas as a materials processing medium for a variety of manufacturing processes. Advanced topics such as the processing of nanostructured materials using plasmas are included.

ME 278 Imperfections in Solids (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. ME 278 online section; enrollment in the Online Master-in-Science in Engineering program. Covers fundamentals of crystal structures and crystal defects, including the generation of point defects, nuclear point defects, and propagation of dislocations; perfect and partial dislocations; twins, stacking faults, and transformations; mechanics of semiconductor and metallic thin films and multilayered structures. Cross-listed with MSE 218.

ME 290 Directed Studies (1-6) Individual study, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Individual study, directed by a faculty member, of selected topics in mechanical engineering. May be taken Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units.

ME 297 Directed Research (1-4) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor. Research conducted under the supervision of a faculty member on selected problems in mechanical engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units.

ME 298-1 Industrial Internship (1-12) F, W, Summer Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): graduate standing; consent of graduate advisor. An individual apprenticeship in Mechanical Engineering with an approved professional individual
Mechanisms of Gene Expression and Regulation Studies Designated Emphasis

Subject abbreviation: GERS
School of Medicine

David Lo (Biomedical Sciences), Co-Director
Thomas Girke (Institute for Integrative Genome Biology), Co-Director
david.lo@ucr.edu
thomas.girke@ucr.edu

Advisory Committee & Participating Faculty
Devlin Binder (Biomedical Sciences)
Monica Carson (Biomedical Sciences)
Djurdica Coss (Biomedical Sciences)
Iryna Ethell (Biomedical Sciences)
Emma Wilson (Biomedical Sciences)
Meera Nair (Biomedical Sciences)
Declan McCole (Biomedical Sciences)
David Lo (Biomedical Sciences)
Christian Lyle (Biomedical Sciences)
Nicholas DiPatrizio (Biomedical Sciences)
Seema Twari-Woodruff (Biomedical Sciences)
Sika Zheng (Biomedical Sciences)
Karine LeRoch (Cell Biology and Neuroscience)
Frances Sladék (Cell Biology and Neuroscience)
Ted Karginov (Cell Biology and Neuroscience)
Yinsheng Wang (Chemistry)
Thomas Girke (Institute for Integrative Genome Biology)
Xinpeng Cui (Statistics)
Katherine Borkovich (Microbiology)
James Borneman (Microbiology)
Jason Stajich (Microbiology)
Shou-Wei Ding (Statistics)

Designated Emphasis Requirements

The Designate Emphasis is an interdisciplinary graduate program of study to enhance student training in the field through a focused coursework across at least two departments. The program is optional and the courses used for the DE may not be counted toward MS or PhD requirements.

1. Three (3) courses (12 units) with a focus in basic principles of genetics gene regulation (epigenetics, non coding RNA) and bioinformatics will be selected from:
   - MCB 221 - Microbial Genetics
   - CMBD 201 - Molecular Biology
   - CMBD 203 - Advanced Genetics
   - GEN 203 - Advanced Genetic Analysis of Model Organisms
   - GEN 241 - Advances in Genomics
   - GEN 242 - Data Analysis in Genome Biology
   - GEN 266 - Gene Silencing
   - GEN 220 - Computational Analysis of High Throughput Biological Data
   - BPSC/BIOL 148 - Quantitative Genetics
   - EEOB 214 - Evolutionary Genetics
   - EEOB 216 - Theory of Evolution
   - ENTX 204 - Genome Maintenance and Stability
   - STAT 100A Introduction to Statistics
   - BPSC 234 – Statistical Genomics
   - STAT 110 - Biostatistical Methods in Life Sciences
   - CS234: Computational Methods for Biomolecular Data
   - CS238: Algorithmic Techniques in Computational Data

2. BMSC 222 (2 units): Special Topics in Biomedical Sciences with emphasis in Gene expression and regulation. The course will address the research pertaining to the student's interest and prepare trainees in applying the knowledge of basic principles in regulation of gene expression and bioinformatics data analysis of next generation sequencing approaches. Graded Satisfactory (S) or No Credit (NC)

3. Research Project: students will write a review article on a selected genetics/ bioinformatics/ regulation of gene expression topic. The review will be evaluated by the Designated Emphasis Advisory Committee. It is the committee's expectation that student will fulfill this component by submitting the review article for the journal publication in a PubMed indexed journal. Successful completion of this review is required for the Designated Emphasis completion.

Media and Cultural Studies

Subject abbreviation: MCS
College of Humanities, Arts, and Social Sciences

Erika Suderburg, M.F.A. Chair
Department Office, 3126 INTS
erika.suderburg@ucr.edu
(951) 827-2685;
mcs.ucr.edu

Professors Emeriti
Toby Miller, Ph.D.
D. Charles Whitney, Ph.D. (Creative Writing)

Professor
John Jennings, M.F.A
Dylan Rodriguez, Ph.D.
Erika Suderburg, M.F.A
Sherry Vint, Ph.D.

Associate Professors
Derek Burrill, Ph.D.
Amalia Cabezas, Ph.D. (Gender and Sexuality Studies)
Michelle Dixon, Ph.D
Keith Harris, Ph.D.
Tabassum "Ruhl" Khan, Ph.D.
Jodi Kim, Ph.D.
Timothy Labor, Ph.D.
Judith Rodenbeck, Ph.D.
Richard Rodriguez, Ph.D.
Freya Schiwy, Ph.D.
Sarita See, Ph.D.
Setsu Shigematsu, Ph.D.
Wendy Weiqun Su, Ph.D.

Assistant Professor
Laura Harris, Ph.D. (on leave)
Gloria Kim Ph.D

Major
The Media and Cultural Studies minor provides an interdisciplinary examination of film, video, television multimedia, visual and digital cultures with a primary emphasis on history and theory, and a secondary focus on creative intervention in media environments through production.

The Media and Cultural Studies focuses an interdisciplinary lens on the analysis of the dynamic relationship between media and society with special emphasis on race, gender, class, sexuality, and ethnicity as well as political economy and globalization. Our students critically engage in major debates about social and environmental justice within both global and local contexts. They also learn through practicing creative interventions in media ecologies, for example, creative, documentary, and ethnographic video; photography; multimedia and digital production; and journalism. Media literacies are essential for the making of engaged global citizens, capable of moving flexibly between the applied and the critical, the professional and the scholarly, the empirical and the theoretical.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
1. Lower-division requirements (5 lower-
357 / Programs and Courses
division courses [at least 20 units]):
a) MCS 001
		 Students are required to take MCS 001
and must receive a “C-/above” in this
course to declare MCS as their major. The
department will consider grade petitions
on a case-by-case basis.
b) Any 3 of the following 5 courses
		 ART 004/MCS 004, MCS 005, MCS 010,
MCS 020, AHS 020/MCS 023
c) One additional course (at least 4 units)
from the following:
		 ART 006/MCS006, MCS 009/MUS 007,
MCS 015, CPLT 021/MCS021, AST 022/
JPN 022/ MCS 022, GER 045/MCS 042,
MCS 043/RUSN 045, ITAL 045/MCS 044,
FREN 045/MCS 045, MCS 046/SPN 046,
AST 047/KOR 047/MCS 047, AST 064/
MCS 049/VNM 064, CRWT 066/MCS 066/
TFDP 066
2. Upper-division requirements (minimum 9
upper-division courses [at least 36 units]):
a) 6 upper division MCS courses (strongly
recommended to be taken with MCS
faculty) chosen from [24 units total]
		 MCS 102, ANTH 103/MCS 103, ENGL
104/ MCS 104, MCS 105, MCS 106, MCS
107, MCS 110 (E-Z), MCS 111, GSST
112/LGBS 112/MCS 112, CPLT 134/
GER 134/JPN 134/MCS 114, MCS 115,
GER 118 (E-Z)/MCS 118 (E-Z), MCS
120, MCS 122, GSST 124/MCS 123/
SEAS 175, MCS 124, LNST 125 (E-Z)/
MCS 125 (E-Z)/SPN 125 (E-Z), CPLT 126/
GER 126/MCS 126, GSST 166/ MCS 127,
MCS 128, MCS 129, MCS 130, ART 131/
MCS 131, MCS 132, MCS 134, ART 135/
MCS 135, ART 136/MCS 136, AHS 136/
MCS 137, AHS 137/MCS 138, MCS 139/
SOC 139, MCS 140, ENGL 144 (E-Z)/MCS
144 (E-Z), ENGL145 (E-Z)/MCS 145 (EZ), ENGL 146 (E-Z)/MCS 146 (E-Z), MCS
148, ART 150/MCS 150, DNCE 171 (E-Z)/
MCS 151 (E-Z), DNCE 171G/ MCS 151G,
DNCE 171J/MCS 151J, DNCE 171M/
MCS 151M, DNCE 172 (E-Z)/MCS 152
(E-Z), DNCE 173 (E-Z)/MCS 153 (E-Z),
MCS 154, MCS 156 (E-Z), DNCE 161/
MCS 161, DNCE 162/MCS 162, ART 161/
MCS 163, MCS 164, MCS 167, MCS 168,
MCS169, MCS 171, MCS 172, MCS 173
(E-Z), MCS 174 (E-Z), MCS 177, MCS
178, MCS 179, MCS 180, MCS 181, MCS
184, MCS 185, MCS 186, MCS 188
b) Two additional courses outside of MCS
chosen from [8 units total]
		 AHS 182, AHS 188, ANTH 121, , ANTH
163, ANTH 180A, CPLT 110, CPLT 143/
FREN 143, CRWT 151, CRWT 155, CRWT
174, DNCE 131, DNCE 132, DNCE 134,
DNCE 135, ENGL 102, ENGL 121 (E-Z),
ENGL 122 (E-Z)/LGBS 122 (E-Z), ENGL
142 (E-Z), ETST 170/WRLT 170, ETST
175/GSST 175, HIST 191X, LNST 168/
ANTH 168/ETST 148, MUS 126/ANTH
177/GSST 126, MUS 140/HISA 139, MUS
153/LGBS 153, PHIL 111, POSC 146,
SOC 154, SOC 168, SOC 169, SPN 102A,

SPN 102B, TFDP 115, TFDP 122, TFDP
160, TFDP 177, TFDP 191W
c) One production course chosen from [4
units total]
		 ART 140, ART 145, ART 146 (E-Z), ART
155/MCS 155, ART 167, ART 168, ART
169 (E-Z), ART 175, CS 134, TFDP 101,
TFDP 102, TFDP 109, TFDP 132, TFDP
133, TFDP 135, TFDP 138, TFDP 144,
TFDP 145, TFDP 155, TFDP 156A, TFDP
156B, TFDP 157, TFDP 166A, TFDP
166B, TFDP 166C, TFDP 167, TFDP 168,
TFDP 169
d) No more than four units of MCS 190
or MCS 193 and a total of four units of
MCS 198-I may be applied towards the
minimum requirement.
No more than four units of MCS 190 and a
total of four units of MCS 198I may be applied
towards the minimum requirement.

Minor
The Media and Cultural Studies minor provides
an interdisciplinary examination of film, video,
television, multimedia, visual and digital
cultures with a primary emphasis on history
and theory and a secondary focus on creative
intervention in media environments through
production.
A minimum of 24 units (one lower-division
course and five upper-division courses) are
required.
1. Lower-division requirements (2 lower-division
courses [at least 8 units]):
a) MCS 001
		 Students are required to take MCS 001
and must receive a “C-/above” in this
course to declare MCS as their minor. The
department will consider grade petitions
on a case-by-case basis.
b) 1 lower division course chosen from the
following:
		 ART 004/MCS 004, MCS 005, MCS 010,
MCS 020, AHS 020/MCS 023
2. Upper-division requirements (a minimum of
4 courses [at least 16 units])
		 MCS 102, ANTH 103/MCS 103, ENGL 104/
MCS 104, MCS 105, MCS 106, MCS 107,
MCS 110 (E-Z), MCS 111, GSST 112/ LGBS
112/MCS 112, CPLT 134/GER 134/JPN
134/MCS 114, MCS 115, GER 118 (E-Z)/
MCS 118 (E-Z), MCS 120, MCS 122, GSST
124/MCS 123/SEAS 175, MCS 124, LNST
125 (E-Z)/MCS 125 (E-Z)/SPN 125 (E-Z),
CPLT 126/GER 126/MCS 126, GSST 166/
MCS 127, MCS 128, MCS 129, MCS 130,
ART 131/MCS 131, MCS 132, MCS 134,
ART 135/MCS 135, ART 136/MCS 136,
AHS 136/MCS 137, AHS 137/MCS 138,
MCS 139/SOC 139, MCS 140, ENGL 144
(E-Z)/MCS 144 (E-Z), ENGL 145 (E-Z)/MCS
145 (E-Z), ENGL 146 (E-Z)/MCS 146 (E-Z),
MCS 148, ART 150/MCS 150, DNCE 171
(E-Z)/MCS 151 (E-Z), DNCE 171G/MCS
151G, DNCE 171J/MCS 151J, DNCE 171M/
MCS 151M, DNCE 172 (E-Z)/MCS 152 (EZ), DNCE 173 (E-Z)/MCS 153 (E-Z), MCS

154, MCS 156 (E-Z), DNCE 161/MCS 161,
DNCE 162/MCS 162, ART 161/MCS 163,
MCS 164, MCS 167, MCS 168, MCS 169,
MCS 171, MCS 172, MCS 173 (E-Z), MCS
174 (E-Z), MCS 177, MCS 178, MCS 179,
MCS 180, MCS 181, MCS 184, MCS 185,
MCS 186, MCS 188
b) No more than one media production
course (4 units) may be used towards the
total of four upper division courses chosen
from:
		 ART 140, ART 145, ART 146 (E-Z), ART
155/MCS 155, ART 167, ART 168, ART
169 (E-Z), ART 175, CS 134, TFDP 101,
TFDP 102, TFDP 109, TFDP 132, TFDP
133, TFDP 135, TFDP 138, TFDP 144,
TFDP 145, TFDP 155, TFDP 156A, TFDP
156B, TFDP 157, TFDP 166A, TFDP
166B, TFDP 166C, TFDP 167, TFDP 168,
TFDP 169
See Minors under the College of Humanities,
Arts, and Social Sciences in the Colleges and
Programs section of this catalog for additional
information on minors.

Lower-Division Courses
MCS 001 Introduction to Media and Cultural Studies (4)
Lecture, 3 hours; discussion, 1 hour. Examines media
from economic, political, and cultural perspectives.
Discusses their relation to U.S. export industries; democratic communication and the parliamentary process;
and social trends. Explores how changes in media and
associated technologies are akin to a new industrial
revolution. Fulfills either the Humanities or Social
Sciences requirement for the College of Humanities,
Arts, and Social Sciences, but not both.
MCS 004 Introduction to Moving Images: Film, Video
and New Media (5) Lecture, 3 hours; studio, 3 hours;
screening, 3 hours. Prerequisite(s): none. Explores
issues and skills of video/film/media art based in
production, history, and theory of the moving image.
Introduces basic production, editing concepts and
techniques of live-action production, story boards, image editing, and final authoring. Examines the moving
image through installation, documentary, experimental film, video art, sound art, and performance.
Cross-listed with ART 004. Fulfills the Humanities
requirement for the College of Humanities, Arts, and
Social Sciences.
MCS 005 Introduction to Media Studies (4) Lecture,
3 hours; discussion, 1 hour. Introduces the history of
various mass media industries. Analyzes the roles,
functions, and effects of mass communication.
Discusses recent technological developments and
their implications for communication studies, as well
as media law, policy, and ethics. Investigates the
diffusion and impact of U.S. mass media in an era
of heightened globalization. Fulfills the Humanities
requirement for the College of Humanities, Arts, and
Social Sciences.
MCS 006 Introduction to Contemporary Critical Issues
in Art (4) Lecture, 3 hours; discussion, 1 hour. Examines basic principles and methodologies of theory as
applied to the interpretation and creation of works of
art. Includes screenings. Cross-listed with ART 006.
Fulfills the Humanities requirement for the College
of Humanities, Arts, and Social Sciences.
MCS 009 Music in Movies and TV (4) Lecture, 3
hours; discussion, 1 hour. Prerequisite(s): none. An
exploration of popular film and TV soundtrack music,
emphasizing drama and musical style. Scene study
features such films as <I>The Matrix, Casablanca,
The X-Files,<I> and <I>Altered States<I>. Cross-listed
with MUS 007. Fulfills the Humanities requirement


MCS 010 Introduction to Cultural Studies (4) Lecture, 3 hours; discussion, 1 hour. Investigates culture through the frameworks of feminism, Marxism, and race theories. Analyzes the different methodologies cultural critics use to theorize subcultures, cultural policies, and consumption. Explores ways cultural works are not only produced, consumed, but also disseminated and circulated within national and transnational contexts. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 015 Introduction to Television Studies (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the study of television, including its stylistic conventions, primary genres, modes of production, economics, and important critical methodologies. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 020 Introduction to Film Studies (4) Lecture, 3 hours; screening, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the formal and narrative principles of film construction and to various critical approaches to the cinema, such as auteur and genre theory. Provides an overview of world cinemas. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 021 Introduction to Film, Literature, and Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): not open to students with CPLT 024. Works studied range from the samurai epics of Kurosawa to recent anime. All films have subtitles. No previous knowledge of Japanese language or culture is required. Cross-listed with AST 022 and JPN 022. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 022 Introduction to Japanese Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to Japan’s major directors and to watching and writing about Japanese cinema. Works studied range from the samurai epics of Kurosawa to recent anime. All films have subtitles. No previous knowledge of Japanese language or culture is required. Cross-listed with AST 022 and JPN 022. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 023 Introduction to Media Art (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the impact of media technology on the visual arts, from photography to the Internet. Addresses mechanical reproduction, perception, gender, sexuality, identity, interactivity, cybertexts, and popular culture with AHS 029. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 024 World Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to world cinema as a fusion of national and international, culturally specific, and globally universal characteristics. Topics include realism, the role of world wars, Hollywood’s global reach, alternative aesthetics of third-world cinemas, cross-fertilization between Europe and Asia, and the function of international film festivals and the international film market. Cross-listed with CPLT 024. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 036 Food in Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Explores the representation of food, cooking, and restaurants in films from different national traditions. Includes gender roles; sensuality and sexuality; social class and the economics of food; excess and lack. Cross-listed with CPLT 027. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

MCS 038 The Ancient World in Film and Television (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. A study of representations of Greece and Rome in film, television, and other modern media. Introduces these “visual texts” both as popular art forms on their own and in relation to their ancient and modern literary sources. Cross-listed with CLA 045. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 042 Introduction to German Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Introduction to the history of German cinema from the advent of the medium to the 1920s and containing representative films. Covers film in Germany, Switzerland, and Austria. Attention is paid to the work of German-speaking filmmakers living in other parts of the world. Instruction is in English; all films have subtitles. Cross-listed with GER 045. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 043 Soviet Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. A survey of the Soviet cinema, beginning with the film innovations of the 1920s and continuing with representative films from each of the ensuing periods of Soviet culture. All work done in English. Cross-listed with RUSN 045. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 044 Italian Cinema (4) Lecture, 1.5 hours; discussion, 1.5 hours; screening, 3 hours. Prerequisite(s): none. Covers major works of the Italian cinema from Neorealism to the present, with emphasis on their historical evolution and representation of major elements of Italian culture. Knowledge of Italian not required. Cross-listed with ITAL 045. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 045 French Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Covers masterpieces of French cinema. Examines the historical evolution of French cinema as an art form, with emphasis on major themes and directors. Cross-listed with FREN 045. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 046 Introduction to Latin American Film (5) Lecture, 3 hours; screening, 3 hours; discussion, 1 hour. Provides an historical overview of Latin American film production. Introduces students to film industries, recent films, and international co-productions. Cross-listed with SPN 046. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 047 Introduction to Korean Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. An introduction to the major directors and films of Korea. Covers the genres and periods of works produced from the 1960s to the present. All films have English subtitles. No previous knowledge of Korean language or culture required. Cross-listed with AST 047 and KOR 047. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 049 Introduction to Vietnamese and Diasporic Film Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Engages in critical viewing strategies and analytical visual critique. Explores the revival of film production in Vietnam following the Vietnam War, with a focus on the means of production, state control, and international distribution. Readings are in translation; classes conducted in English. Cross-listed with AST 064, SEAS 064, and VNM 064. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 066 Screenwriting: How Movies Work (4) Lecture, 3 hours; discussion, 1 hour; screening, 8 hours per quarter. Prerequisite(s): none. An introduction to writing for stage and screen. Addresses structure, character, dialogue, theme, and story. Cross-listed with CRWT 066 and TFDP 066.

Upper-Division Courses

MCS 102 Media/Entertainment Law (4) Lecture, 3 hours; discussion, 1 hour; individual study, 5 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to basic concepts in media entertainment law with an emphasis on film and television. Covers copyright/intellectual property, entertainment financing, censorship, entertainment contracts, laws related to guilds, and representing talent. Focuses on both transactional law and case law. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

MCS 103 Introduction to Visual Anthropology (4) Seminar, 3 hours; individual study, 3 hours; outside research and projects, 3 hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 001W or consent of instructor. An introduction to the field of visual anthropology. Examines the similarities and differences between ethnographic film, critical studies, and written ethnographies. Explores the politics of representing other cultures visually. Cross-listed with ANTH 103. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 104 Film and Media Theory (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers different types of film and media theory. Addresses formalist, psychoanalytic, Marxist, feminist, and other approaches to the cinema and/or other media. Cross-listed with ENGL 104. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 105 Global Communication (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces a variety of theoretical perspectives on global communication and media studies. Compares different world media systems. Surveys global media conglomerates and explores global communication in a digital age. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

MCS 106 Disability Culture and Media (4) Lecture, 3 hours; extra reading, 1 hour; written work, 1 hour; artistic work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines disability rights politics and activism through cultural production. Explores access to art production, aesthetics and disability, and the role of art in social change. Surveys several genres of art production including dance, theatre, language and visual arts, and film and video.

MCS 107 History of Documentary Film (4) Lecture, 3 hours; screening, 3 hours; written work, 2 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Transnational survey of the documentary film from the silent era to the digital age. Topics include how to define nonfiction cinema; the social issue documentary of the 1930s; cinema verité; propaganda; ethnographic media; the essay film; experimental forms; media activism; re-enactment, and the role of changing technologies.

MCS 110 (E-Z) Topics in Film and Media History (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers topics in the history of film and media with attention to their aesthetic, socio-political, and economic contexts. J. Film and Media History after World War II; K. Chinese Media and Society. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 111 History of Media Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Provides a historical trajectory of theories of evolving media effects.
Explores methods that serve as reference points for mass communication research. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**MCS 112 History of Queer Cinema (4)** Lecture, 3 hours; screening, 3 hours; activity, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to queer cinema and the production of knowledge and meaning around queer film and video. Introduces students to the ways in which queer cinema operates as a medium for social critique and cultural resistance. Emphasizes the importance of context in the analysis of queer cinema. Prerequisite(s): upper-division standing or consent of instructor. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 113 Silent Cinema: Practice and Culture (4)** Lecture, 3 hours; discussion, 1 hour; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces early modes of cinema production, distribution, and exhibition. Takes an international perspective in the study of the political economy of silent cinema. Examines silent era cinema and industry. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 114 Cinematic War Memory (4)** Lecture, 3 hours; screening, 2 hours; project, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines cinematic confrontations involving World War II in Germany and Japan. Topics include desire between victims and perpetrators, representation of trauma, and ethical responsibility. All screenings have English subtitles. Cross-listed with CPT 134, GER 134, and JPN 134. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 115 Modern German History through Film (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores twentieth-century German history through film. Includes World Wars I and II, inflation and polarization of classes, Nazi Germany, representations of the Holocaust, and a divided and reunited Germany. Cross-listed with CPTL 115, GER 163, and HISE 163. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 118 (E-Z) Topics in German Cinema (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Studies a variety of films, directors, and movements in German film. Films are in German with English subtitles. No knowledge of German is required. Cross-listed with GER 118 (E-Z). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 120 Major Figures in Film and Media (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive analysis of the work of a significant figure in film, television, or other media who functions as an “auteur” (e.g., an influential director, star, or producer). Course is repeatable as topics change to a maximum of 8 units. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 122 Sustainability as the Future of Democracy (5)** Lecture, 3 hours; screening, 3 hours; activity, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical cultural analysis of the discourses underlying and validating the degradation and destruction of our natural environments, engineering vast income inequalities. Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**MCS 123 Asian American Women: Writing the Self in Literature and Film (4)** Lecture, 3 hours; screening, 1 hour; written work, 1 hour; extra reading, 1 hour. Prerequisite(s): MCS 010, upper-division standing, or consent of instructor. Analyzes Asian American autobiographies and films written and directed by women. Explores why the genre of autobiography is enabling and contentious within Asian American women’s writings. Examines films to see how such women filmmakers contend with memory, gender, and identity. Cross-listed with GSST 122 and SEAS 175. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

**MCS 124 Latin America, Democracy, and the Media (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the construct of democracy in Latin America related to various media. Introduces current political and cultural issues in multiple countries. Critically reconsiders the concept of democracy and how different social actors understand democracy. Examines Latin America’s role in media democratic processes. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 125 From Novel to Screen: Film Adaptations of German Literature (4)** Lecture, 3 hours; screening, 2 hours; individual study, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to classic works of German literature and their film adaptations. Examines adaptations by film directors such as Welles, Kubrick, Visconti, and Fassbinder. Studies the nexus between literature, film, and cultural politics. Cross-listed with CPTL 126 (E-Z) and SPN 125 (E-Z). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 126 From Novel to Screen: Film Adaptations of Latin American Literature (5)** Lecture, 3 hours; screening, 3 hours; extra reading, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Intensive film study and analysis of a theme or issue in Latin American film and media. E. Indigeneous Video and Latin America. Cross-listed with LNST 125 (E-Z) and SPN 126 (E-Z). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 127 Chicana/o Cultural Studies and Gender Politics (4)** Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores Chicana/o cultural studies and investigates the gender politics that attest to its intersectional approach. Considers how power and gendered politics have impacted the restructuring of the split subject in Chicana/o cultural studies. Cross-listed with GSST 166.

**MCS 128 Queer of Color Cultural Critique (4)** Seminar, 3 hours; project, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores emerging themes in queer of color critique. Includes modes of analysis, subjects, political prioritization, and paradigm shifts. Examines theory and seeks to locate theorizing in multiple sites and forms to encourage and imagine real world applications for cultural critique including transnational and cross-areas of social justice. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 129 Disney: Producing Race, Gender and Sexuality (4)** Lecture, 3 hours; extra reading, 1 hour; written work, 1 hour; activity, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Investigates the articulation of race, gender, sexuality, and class in Disney-based productions. Examines how globalization, capitalism and consumption intersect in the production of race, gender, class, disabilities and sexualities. Considers the relation between the Disney Corporation and cultures as commodities and imperialist corporate policies.

**MCS 130 Filipino American Culture (4)** Seminar, 3 hours; screening, 3 hours. Prerequisite(s): MCS 001. Explores the politics of a range of Filipino American expressive, performative, and creative forms (e.g., Filipina/o Culture Night video, art, fiction, theater). Ties in tandem with the study of theoretical and socio-historical scholarship in the interdisciplinary field of Filipino American Studies. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 131 Intermediate Photography and Digital Technology (4)** Lecture, 3 hours; laboratory, 4 hours. Prerequisite(s): ART 003 or consent of instructor. Covers the complete cycle of photographic production from scanning to output. Emphasizes developing skill in creating digital photographic imagery for creative and cultural expression. Software and some digital equipment are provided. A 35mm single lens reflex (SLR) or digital cameras and flash drives are required. Course is repeatable to a maximum of 8 units. Cross-listed with ART 131. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 132 Intersections of Media and Popular Culture (4)** Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent from instructor. Explores the intersection of popular culture with social studies and the political economy of entertainment. Examines the role of media in democratic processes. Fulfills the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**MCS 134 Transmedia: Demonstration Project (4)** Lecture, 2 hours; workshop, 1 hour; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces strategies for organizing and presenting materials, ideas, and arguments in various media. Includes visual, written, and audio texts; the spoken word; and performance. Course is repeatable to a maximum of 8 units. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 135 Intermedia: Art, Media, and Culture (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 136 Installation and Site-Specific Art (4)** Lecture, 3 hours; studio, 3 hours. Prerequisite(s): consent of instructor. Focuses on photography, video, film, television, installation, and other related “intermedias.” Focuses on intermedial artworks and how they are constructed, documented, analyzed, and viewed in the larger context of culture. Cross-listed with ART 135. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 137 History of Video Art (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Traces the evolution of video art from the invention of the Portapak and early video collectives to the current ubiquity of video installation, single-channel, and multimedia art. Emphasizes video art in the United States. Cross-listed with AHS 136. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**MCS 138 History of Experimental Cinema (4)** Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent from instructor. Explores the history of experimental cinema from the early days of the Lumière brothers to the current state of experimental cinema. Cross-listed with ART 138, AHS 136. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
hours; screening, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. A survey of cinema outside of the economic, institutional, and aesthetic imperatives of mainstream film production. Covers an array of alternative film movements including surrealism and dada, Soviet avant-garde, the Cine 16 Group, French new wave, North American avant-garde, and the artist’s film. Cross-listed with AHS 139. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 139 Mass Media and Popular Culture (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 002. A comparative analysis of the television, radio, record, cinema, and journalism industries as social institutions and a discussion of contemporary developments in mass communications theory. A study of the relationship between the social processes of modern society and the content of popular culture. Cross-listed with SOC 139. Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

MCS 140 Alternative Media Production and Social Movements (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the history, theory, and practice of alternative forms of media production. Focuses on how various media are used to disseminate information in order to motivate audiences to take action for social change. Provides opportunities to learn documentary making, experiment with media forms, and produce alternative media projects. Course is repeatable as topics change to a maximum of 12 units. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 142 Gender in Southeast Asian Diasporic Literature and Film (5) Lecture, 3 hours; screening, 3 hours; written work, 1 hour; extra reading, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on former Indochinese refugees who are producing literature and films in the United States and France. Examines how the perception of Indochina has been constructed, particularly how the region has been gendered female in the colonial imaginary. Explores the return of Southeast Asian migrants to the Western gaze. Cross-listed with GSST 122 and SEAS 172.

MCS 143 (E-Z) Gender, Sexuality, and Visual Cultures (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of gender and sexuality in film, television, and visual culture. E. Feminist Film Theory and Practice; F. Film and Gender; G. Screening the Lesbian; K. Queers that Kill. Cross-listed with ART 004. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 144 (E-Z) Race, Ethnicity, and Visual Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of race and ethnicity in film, television, and visual culture. Weekly screenings and readings. I. Racial Difference and Visual Culture in the Postcolonial World Context; J. Film, Race, and Ideology: The Case of the Vietnam War; K. Decolonizing the Screen. Cross-listed with ENGL 144 (E-Z). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 145 (E-Z) Special Topics in Film and Visual Culture (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An intensive formal, historical, and theoretical analysis of a theme or issue in film, media, television, and visual culture. E. Hollywood in the Twenty-First Century; F. Technologies of the Visual; G. Cultures and Technologies of the Aural; I. Advanced Composition and Research, for Digital Creation; J. Cross-listed with ENGL 146 (E-Z). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 147 Visual Culture and Afrofuturism (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the cultural production of space called Afrofuturism and the history of the black speculative arts. Includes how the speculative affects representations of race and blackness in literature, visual culture, and music. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

MCS 148 Bodies in Motion: Cinema as Choreography (4) Lecture, 2 hours; discussion, 1 hour; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction of cinema as a kind of choreography. Examines how it sets bodies in motion both on and in front of the screen. Considers some of the ways bodily movement was understood philosophically, scientifically, and bureaucratically at the moment cinema emerged. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 149 Comics and Visual Culture (4) Lecture, 3 hours; extra reading, 2 hours; activity, 1 hour. Prerequisite(s): upper-division standing or consent from instructor. An introduction to the history of the medium of comics in the United States. Examines the tensions between the mainstream focus of comics and graphic novels represented via the superhero genre and the alternatively diverse narratives that are afforded through the medium. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

MCS 150 Intermediate Moving Images: Film Video and New Media (5) Lecture, 3 hours; studio, 3 hours; screening, 3 hours. Prerequisite(s): ART 004/MCS 004. Examines the moving image through installation, documentary, experimental film, video art, sound art, and performance. Builds upon production and editing concepts introduced in ART 004/MCS 004. Explores issues and skills of videomedia/artist based in production, history, and theory of the moving image. Covers editing theory, lighting, and sound editing. Course is repeatable to a maximum of 10 units. Cross-listed with ART 150. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 151 (E-Z) Filmic Bodies (4) For hours and prerequisites, see segment descriptions. Assesses a multiplicity of filmic genres through the portals of the dancing and related to race, gender, class, and other identifiers. Explores the politics of movement on film, the mechanics of making film work, and the political economy of dance on film. Dance experience is usually not required. Segments are repeatable. Cross-listed with DNCE 171 (E-Z). Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 151F Ethnographic Representation of Dance on Film: “... and then they danced” (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes the juncture between representation and presentation in everyday dance genres on film. Explores race, class, tropes of authenticity, and ownership of cultural production through screenings, lectures, and theoretical writings. No previous dance experience required. Course is repeatable. Cross-listed with DNCE 171F. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 151G Gender, Mechanization, and Shape (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Utilizes film, video, and texts to examine the relationship among gender, mechanism, and shape during the twentieth century. Focuses on the performing arts, industrial and technological design, and the relationship of visual culture to changing notions of gender. Course is repeatable. Cross-listed with DNCE 171G. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 151J Spectatorship (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the nature of film studies through the eyes of the audience. Uses film, videos, and texts (in addition to outside viewing of films in cinematic locales) to formulate how viewing film instructs the viewer and shapes the film’s cultural context. Course is repeatable. Cross-listed with DNCE 171J. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 151K Attractions, Interruptions, and Disruptions in Narrative Film: Fight Scenes, Dance Sequences, and Special Effects (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the vast corpus of films that constitute the fight scene in cinema. Examines the movement of bodies on and off screen through narrative and what happens when the movement exceeds that regulations. Utilizes selected films to explore the fight scenes, dance sequences, and computer generated imagery in fight scenes and screenings both in class and outside of class. Course is repeatable. Cross-listed with DNCE 171K. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 151M Bollywood (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the vast corpus of films that constitute Bollywood. Focuses on the genre’s music and dance styles. Includes weekly film screenings. No previous dance experience required. Course is repeatable. Cross-listed with DNCE 171M. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 152 (E-Z) Television Bodies (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes choreographic practice within television marketing and their relation to popular culture. Also examines situational or tactical use and misuse of satellite, cablecast, and broadcast television by unintentional audiences that subsequently reconstitute themselves as communities of inhalers called “Bollywood.” Focuses on video as an archival and/or choreographic tool. J. Corporations and Corporalities: Commercials, Culture, and Choreography; K. Television as Location: The Satellite Feed; M. Music Television (MTV) and Popular Culture. Segments are repeatable. Cross-listed with DNCE 172 (E-Z). Fulfills the Fine Arts requirement for the College Humanities, Arts, and Social Sciences.

MCS 153 (E-Z) Digitalized Bodies (4) Lecture, 3 hours; screening, 2 hours; laboratory, 1 hour. Prerequisite(s): MCS 020; upper-division standing or consent of instructor. Provides a theoretical approach to digital subjectivities, bodies in motion, products, and realities. Addresses issues of liveliness, new media, mediated cultural identities, speed, transfer, telepresence, and...
MCS 154 Media, Gender, and Violence (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines media representations of women and violence. Topics include feminist and queer theory, pornography, sexual violence, state violence, censorship, militarization, policing, and intersectionality. Prerequisites: MCS 163 Special Topics in Art Criticism and Theory (4)

MCS 161 Vietnamese and Overseas Vietnamese Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Explores how Vietnamese media and the Vietnamese diaspora seek to imagine a sense of community in the context of the war. Texts range from essays, plays, and short stories to screenplays, novels, and films. Prerequisites: MCS 020 or upper-division standing or consent of instructor.

MCS 165 The Queer’s 1980s (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 001. An examination of film, video, print media, music, and other expressive forms from the U.S. and the United Kingdom during the 1980s. Explores why the Reagan/Thatcher era and the emergence of the AIDS pandemic gave rise to various forms of activism leading to the development of queer studies. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

MCS 167 New Chinese Cinema: Gender, Genre, and the “New Wave” (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Examines contemporary Hong Kong films, specifically the “New Wave” genre. Particular focus is on the sociopolitical conditions of Hong Kong and its relations with Great Britain and China, the legacies of which set the stage for the films and thematic concerns. Cross-listed with AST 187 and SEAS 177. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences, but not both.

MCS 168 Hong Kong Cinema: Subjectivity, Identity, and the Body. Subjectivity, Identity, and the Body. Explores how Hong Kong films, specifically the “New Wave” genre. Particular focus is on the sociopolitical conditions of Hong Kong and its relations with Great Britain and China, the legacies of which set the stage for the films and thematic concerns. Cross-listed with AST 187 and SEAS 177. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences, but not both.

MCS 172 Topics in Film and Media Genres (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Explores the history of film and media genres. Topics may include study of a specific film or media genre; comparative genre studies (including a survey of the history and theory of two or more genres); or analysis of the concept of genre in film and media studies. Each segment is repeatable as its content changes to a maximum of 12 units. Cross-listed with ART 161. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 173 International Cinemas (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Considers non-Hollywood cinemas in the national, historical, political, and cultural contexts which predate, parallel, or coexist with Hollywood films. Prerequisites: ART 005/MCS 005; ART 160 with grades of “C-” or better; consent of instructor. Advanced topics in contemporary art theory and criticism. Examines the reception, analysis, and theoretical underpinning of works of art in relation to contemporary and historical issues in the visual arts. Course is repeatable to a maximum of 12 units. Cross-listed with ART 161. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 174 (E-Z) Comparative Studies in Film (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Considers film in the context of the other arts. Course is repeatable to a maximum of 12 units. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
nationally identity, imperial culture, collective memory, and censorship. Includes transnational circulation of Japanese cultural forms, alternative media, and historical changes in technologies. Cross-listed with AST 184 and JPN 184. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 185 Imagining the Nation: Film and Media in Latin America (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Study of the role of media and film in creating a national imaginary in Latin America. Focus is on one region or nation—such as the Andes, the Caribbean, Mexico, Argentina, or Chile—relating local history to the global context. Course is repeatable as topics change to a maximum of 8 units. Cross-listed with LNST 105 and SPN 185. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 186 Media and Movements: Film, Video, Photography, and the Visual Arts (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): sophomore, junior, or senior standing; or consent of instructor. Focuses on key cultural movements or developments in Europe and the United States over the past century. Provides a thematic history of the avant-grade and experimental arts including painting, photography, video, film, performance, installation, and new media art. Cross-listed with AHS 186. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 187 Theorizing New Media (4) Seminar, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing, approval of instructor. Approaches new media through its archaeology. Introduces theories of media and media production, focusing on digital media and networked society. Draws from classic theory and from contemporary activist practice. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

MCS 188 Media & Militarism (4) F, W, S, Summer Lecture, 3 hours; screening, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Studies the function and effects of militarism in media. Includes how militarism is represented through various media genres such as cinema, television, advertising, documentary films, video games, digital, and new media. Explores its intersection with gender, race, class, religion, and nation. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 190 Special Studies (1-5) Consultation, 1 hour; individual study, 2 hours; term paper or project, 1-3 hours. Prerequisite(s): upper-division standing, consent of instructor and program chair. Faculty-driven individual study to meet special curricular needs. Requires a final paper or creative project. Course is repeatable to a maximum of 15 units. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

MCS 193 Senior Seminar (4) Seminar, 3 hours; project, 3 hours. Prerequisite(s): senior standing or consent of instructor. Advanced research in various fields of faculty interest. Includes completion of a research paper and a class presentation of its contents. Topics vary from year to year. Course is repeatable to a maximum of 8 units. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

MCS 198 R: Course-Variable Topics (1) activity hours vary per R:Course proposal. Prerequisite(s): permission needed from department. An opportunity for UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change to a maximum of 8 units. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

MCS 198-I Individual Internship in Media and Cultural Studies (1-12) Consultation, 1-3 hours; internship, 1-12 hours; individual study, 1-6 hours; term paper, 1-3 hours; written work, 2-6 hours. Prerequisite(s): upper-division standing, consent of instructor and the Media and Cultural Studies Chair. An internship in a professional organization or with an individual to gain skills and experiences for a career in visual media. Requires the writing of reports, final paper, or the making of a creative project. Course is repeatable to a maximum of 16 units. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

Graduate Courses

MCS 280 Colloquium in Book, Archive and Manuscript Studies (2) Colloquium, 2 hours. Prerequisite(s): graduate standing. Addresses current research topics pertaining to the program in designated emphasis. Includes events conducted both on and off campus. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

MCS 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s), graduate standing, consent of instructor and department chair. A directed studies course designed to address special curricular problems. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade if specialized topics are studied. Course is repeatable.

MCS 292 Concurrent Analytical Studies in Media and Cultural Studies (1-4) Outside research, 3-12 hours. Prerequisite(s): graduate standing, consent of instructor and graduate advisor. To be taken concurrently with a 100-series course, but on an individual basis. Limited to research, criticism, and written work. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade if specialized topics are studied. Course is repeatable.

Professional Course

MCS 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): appointment as a teaching assistant; graduate standing. Supervised teaching in undergraduate Media and Cultural Studies courses. Required for all Media and Cultural Studies teaching assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

Medical and Health Humanities Designated Emphasis

College of Humanities, Arts, and Social Sciences

Juliet McMullin (Anthropology and School of Medicine), Co-Director
Paul Lyons (School of Medicine), Co-Director juliet.mcmullin@ucr.edu; paul.lyons@ucr.edu

Advisory Committee & Participating Faculty
William Duniway (Psychology)
TS Harvey (Anthropology)
Rickerby Hinds (Theater and Film Studies)
Agnieszka Jaworska (Philosophy)
Jeanette Kohl (Art History)

Goldberry Long (Creative Writing)
Coleen Macnamara (Philosophy)
Michael Nduati (School of Medicine)
Dylan Rodriguez (Ethnic Studies)
Chikako Takeshita (Gender and Sexuality Studies)
Clifford Trafzer (History)
Susan Zieger (English)

Designated Emphasis Requirements

The Designated Emphasis is a 16-unit interdisciplinary graduate course of study, requiring students to demonstrate focused coursework and research in the field with two core requirements:

1. Four (4) graduate courses (16 units). Students will only be allowed to take one (1) undergraduate qualified course paired with a 292 in this DE. These courses must be 5 taken in at least two different departments: ANTH 261, ANTH 262, ANTH 265, ANTH 281, CRPA 210, ENGL 247, ENGL 273, ENGL 274, ENGL 278, ETST 201, ETST 221, ETST 222, Hist 238, Hist 238A, Hist 238B, Hist 265A, Phil 261, Phil 283, Psych 225, Psych 255, Psych 262, RLST 222, RLST 233, RLST 239, RLST 236.

2. Submission of a research portfolio within one year after the quarter in which the student advances to candidacy. The portfolio, to be reviewed by a standing committee of the Medical and Health Humanities Faculty, will demonstrate significant research in the field, including two research papers (one research paper must be the product of one of the 4 unit qualifying courses) and syllabi from the four completed courses. The student will also submit a self-statement (of no more than 1000 words) articulating their particular research emphasis and expertise, and one Medical and Health Humanities syllabus created by student.

All requirements for the Designated Emphasis must be satisfied within one year after the quarter in which a student advances to candidacy in their Ph.D. field; a minimum GPA of 3.0 is required for the award of the Designated Emphasis.

Medicine

Subject abbreviation: MDCL

School of Medicine
Division of Biomedical Sciences
Division of Clinical Sciences

Deborah Deas, M.D., M.P.H., the Mark and Pam Rubin Dean, UCR School of Medicine; CEO, Clinical Affairs, UCR School of Medicine
Neal L. Schiller, Ph.D. Senior Associate Dean, Student Affairs Director, Thomas Haider Program at the UCR School of Medicine; and Salma Haider Endowed Chair in Biomedical Sciences
Michael N. Nduati, M.D. Senior Associate Dean, Clinical Affairs
Paul Lyons, M.D. Senior Associate Dean, Medical Education
David Lo, M.D. Ph.D. Senior Associate Dean, Research
Andrew Alexander, M.D. Associate Dean,
Clinical Medical Education
Louise Borda, M.B.A. Associate Dean, Chief Assessment and Evaluation
Iryna Etell, Ph.D. Associate Dean, Academic Affairs

Christian Lytle, Ph.D. Associate Dean, Pre-Clerkship Curriculum
Gerald A. Maguire, M.D. Associate Dean, Graduate Medical Education
Greer Sullivan, M.D. Associate Dean, Population Health
Emma Simmons, M.D. Associate Dean, Student Affairs
Monica J. Carson, Ph.D. Chair, Division of Biomedical Sciences
Ramdas Pai, M.D. Chair, Division of Clinical Sciences

Student Affairs Office, 1682 SOM Education Bldg., (951) 827-4751; medschool.ucr.edu

Professors
Monica J. Carson, Ph.D. Neuroimmunology
Iryna Etell, Ph.D. Biology, Biochemistry
Byron Ford, Ph.D. Stroke and Brain Injury
David Lo, M.D. Ph.D. Distinguished Professor, Genetics
Maurizio Pellecchia, Ph.D. Endocrinology, Neuroscience
Monica J. Carson, Ph.D. Chair, Division of Population Health
Greer Sullivan, M.D. Associate Dean, Student Affairs
Gerald A. Maguire, M.D. Associate Dean, Academic Affairs

Clinical Professors
Brandon Brown, M.D. OB/GYN
Evgeny Abudovsky, M.D. OB/GYN
Djurdjica Cross, Ph.D. Endocrinology, Neuroimmunology

Associate Professors
Iliana Aguila, M.D. Family Medicine
Mohamed Abu-Qaoud, M.D. Pediatrics
Marla Abrolat, M.D. Internal Medicine
Ashten K. Aly, M.D. OB/GYN

Assistant Professors
Joanne Witkowski, M.D. Surgery
Deborah Taurek, M.D. OB/GYN
Made Sutjita, M.D. Family Medicine
Debra Stottlemyer, M.D. Internal Medicine

AssociateClinical Professors
Adolfo Aguilera, M.D. Family Medicine
Alex Z. Akopian, M.D. OB/GYN

Assistant Clinical Professors
Asharati Abdu-Khoury, M.D. OB/GYN
Elaine Akhtar, M.D. OB/GYN

Clinical Professors
Scott Allen, M.D. Internal Medicine
Dennis Alters, M.D. Psychiatry
Stephen Ashwal, M.D. Neurology
Howard Belzberg, M.D. Intensivist-Internal Medicine
Ann Bolger, M.D. Cardiology
Harbinder Brar, M.D. OB/GYN
Suvesh Chandlok, M.D. Internal Medicine
Robin Clark, M.D. Medical Genetics/Pediatrics
Michael Cummings, M.D. Psychiatry
Deborah Dea, M.D. M.P.H. Psychiatry
Philip Ente, M.D. Medicine/Neurology
Carl Feinstein, M.D. Psychiatry
Christopher Fichtner, M.D. Psychiatry
Kaya Fisher, M.D. Psychiatry
Rajesh Guliati, M.D. Internal Medicine
Laura Hamilton, M.D. Psychiatry
Jonathan W. Horstmann, M.D. Family Medicine
William P. Hunt, M.D. Family Medicine
Mohammad Kanakryeh, M.D. Internal Medicine
Daniel Kim, M.D. Internal Medicine
Najjapool Kriengsri, M.D. OB/GYN
Steven E. Larson, M.D. Family Medicine
Mark Linsky, M.D. Neurosurgery
Lawrence K. Loo, M.D. Internal Medicine
John Liu, M.D. Psychiatry
Paul Lyons, M.D. Family Medicine
Gerald Maguire, M.D. Psychiatry
Mary M. Marcinko, M.D. Family Medicine
Afshin Molkara, M.D. Surgery
Elizabeth Morrison-Ebel, M.D. OB/GYN
Howard Moss, M.D. Psychiatry
Talal Muhetseb, M.D. OB/GYN
Mikio Nihira, M.D. OB/GYN
Karen Noblett, M.D. OB/GYN
Ramdas Pai, M.D. OB/GYN
Ravi Raghavan, M.D. Pathology
Baldew S. Rai, M.D. Neurology
Robert E. Salis, M.D. Family Medicine/Sports Medicine
Steven E. Schreiber, M.D. Neurology
Stewart Shankel, M.D. Nephrology
Barbara Silver, M.D. Psychiatry
C. Paul Sinkhorn, M.D. OB/GYN
Emma Simmons, M.D. Family Medicine
David Song, M.D. OB/GYN
Catherine Steel, Ph.D. Psychiatry
Greer Sullivan, M.D. Social Medicine and Population Health
Arnold Tabuerca, M.D. Surgery
Ravi Thirumangadam, M.D. Internal Medicine/Gastroenterology
Dwayne Thomas, M.D. Internal Medicine
Sharon Wilczynski, M.D. Ph.D. Pathology
Adolfo Aguilera, M.D. Family Medicine
Andrew Alexander, M.D. Family Medicine
Lama Al-Khoury, M.D. Neuroscience
Mark Allison, M.D. Internal Medicine
Jason An, M.D. OB/GYN
Gary Annunziata, D.O. Internal Medicine/Gastroenterology
James Bartley, M.D. Pediatrics
Anand Raja Bhupathy, D.O. Dermatology
Christian Bianchi, M.D. Surgery
Joel Block, M.D. Medicine/Radiology
Darcy Bryan, M.D. OB/GYN
Jesus Bucardo, M.D. Psychiatry
Matthew Butter, M.D. Internal Medicine
Mario Carcamo, M.D. OB/GYN
Haim Hachiha, M.D. Radiology
Adam Chen, M.D. Internal Medicine
Morteza Chitsazan, D.O. Internal Medicine
Andrew Corr, M.D. Internal Medicine/Genetics
Evangelos Costacos, M.D. Psychiatry
Dale D. Daniel, M.D. Surgery
Jerry Dennis, M.D. Psychiatry
Samuel E. Dey, Jr., M.D. Psychiatry/Neurology
Joel Doughten, M.D. Family Medicine
Ahmed El-Bershawi, M.D. Internal Medicine
Andrew Elliott, M.D. Psychiatry
Rodolfo Escutin, M.D. Internal Medicine
Ramiz Fargo, M.D. Internal Medicine
Michael Finley, D.O. Osteopathic Medicine
David Franklin, M.D. Psychiatry
Carlo Garibaldi, D.O. OB/GYN
Roger Garrison, D.O. Internal Medicine
Peter Gelker, M.D. Psychiatry
Samer Ghostine, M.D. Neurology
Thomas Grayden, M.D. Psychiatry/Forensic Medicine
Theodore Gregoriou, M.D. Orthopedics/Sports Medicine
Gregory Guldner, M.D. Emergency Medicine
Thomas T. Haider, M.D. Orthopaedic Surgery
Gina Harold, MSN-Ed. Registered Nurse
Leila Harris, M.D. OB/GYN
David Hersh, M.D. Psychiatry
Patrick Hu, M.D. Internal Medicine
James Hwang, M.D. Family Medicine
Ramesh Kandady, M.D. Internal Medicine
Gemma Kim, M.D. Family Medicine
Steven E. Kim, M.D. Emergency Medicine
Tommy Kim, M.D. Emergency Medicine
Rebecca Kombulah, M.D. Psychiatry
Geoffrey Leung, M.D. Family Medicine
James Lissner, M.D. Family Medicine
Daniel Ludi, M.D. Surgery
Paul Lui, M.D. Surgery
Thomas Makowski, M.D. Internal Medicine
Alain Maliki, M.D. Internal Medicine
Kevin J. Mielke, D.O. Family Medicine
Tobias Moeller-Bertram, M.D. Anesthesiology/Pain Management
Ahsis Mukherjee, M.D. Internal Medicine
Iqbal Munir, M.D. Internal Medicine
Samar Nahas, M.D. OB/GYN
Michael Nduati, M.D. Family Medicine
Bryan Oshiro, M.D. OB/GYN
Kirk D. Pagel, M.D. Family Medicine
 Bipin Patel, M.D. OB/GYN
Jon Persichino, M.D. Internal Medicine
Alina Popa, M.D. Internal Medicine
Remus Popa, M.D. Internal Medicine
Richard Prather, M.D. Psychiatry
Sharon Riesen, M.D. Pediatrics
Frank Rogers, M.D. Surgery
Jaimie Robofsky, Ph.D. Psychology
Roger Seheult, M.D. Internal Medicine
Marion Sherman, M.D. Psychiatry
Lauren Simon, M.D. Family Medicine/Sports Medicine/Adolescent Medicine
Neal Slatkin, M.D. Psychiatry and Palliative Medicine
Robert Steele, M.D. Emergency Medicine
Ralph Steiger, M.D. OB/GYN
Debra Stoldtreyer, M.D. Internal Medicine
Young Suk, M.D. Internal Medicine
Made Sutjita, M.D. Internal Medicine
Deborah Taurek, M.D. Internal Medicine
Theodore Teruya, M.D. Surgery
Nimish Thaker, M.D. Urology
Gary Thompson, D.O. Internal Medicine
Bich-Van Tran, M.D. OB/GYN
Elizabeth Tuly, M.D. Psychiatry
Maria Villarosa, M.D. Psychiatry
Roopa Viraraghavan, M.D. Pediatrics
Erik Wahlstrom, M.D. Surgery
Raymond Wang, M.D. Genetics
Joanne Wilcikowski, M.D. Psychiatry

Assistant Clinical Professors
Maher Abdallah, M.D. OB/GYN
Robin Abdelmalik, M.D. Internal Medicine
Sabeen Abdul-Sattar, M.D. Family Medicine
Ariella Abdu, M.D. OB/GYN
Georges Abourjaili, M.D. Internal Medicine
Marla Abrolat, M.D. Pediatrics
Mohamed Abu-Qaoud, M.D. Internal Medicine
Hilal Abu-Zaahra, M.D. Pediatrics
Rosa Lee Acevedo, Ph.D. Psychology
Barbara Ackerman, RN, Ph.D. Clinical Psychology
Ardavan Afshar, M.D. Internal Medicine
Waqas Afzal, M.D. Internal Medicine
John Agapiou, M.D. Surgery
Jay Agarwal, M.D. Internal Medicine
Suman Agarwal, M.D. Family Medicine
Vlatka Agnetta, M.D. Emergency Medicine
Suneel Agrawal, M.D. Emergency Medicine
Iliana Aguila, M.D. Family Medicine
Jose Aguilar, M.D. Psychiatry
Seyed Ahmed, M.D. Genetics

Assistant Professors in Residence
Devin Binder, M.D./Ph.D. Clinical Neuroscience
Ashaurita Anderson, M.D. Pediatrics
Ann Cheney, Ph.D. Social Medicine and Population Health
Andrew Subica, Ph.D. Psychiatry

Clinical Professors
Scott Allen, M.D. Internal Medicine
Dennis Alters, M.D. Psychiatry
UCR School of Medicine

The mission of the UCR School of Medicine is to improve the health of the people of California and, especially, to serve Inland Southern California by training a diverse workforce of physicians and by developing innovative research and health care delivery programs that will improve the health of the medically underserved in the region and become models to be emulated throughout the state and nation.

With its opening in 2013, the UCR School of Medicine became the first new public medical school in California in more than four decades. It is expressly designed to meet the physician workforce needs in Inland Southern California and to improve the health of people living in the region. The school's community-based model provides medical students with clinical experiences in a variety of healthcare settings with diverse patient populations.

The UCR School of Medicine seeks students with diverse intellectual and life experiences. The school values broad academic backgrounds that include humanities, foreign language, social sciences and the arts to help prepare future physicians for interacting with increasingly diverse patient populations, health care professionals and colleagues.

The UCR School of Medicine provides a pathway into medical school for UCR students, with up to 24 seats filled by students who attend UCR for at least six consecutive quarters and complete their bachelor's degree at UCR. medschool.ucr.edu/admissions/haidier_program.html

All School of Medicine applicants apply to the UCR School of Medicine through the American Medical College Application Service, at amcas.org/students/applying/amcas, following its guidelines and deadlines. Students may submit their applications at any time during the application period, as early as June (14 months before medical school classes begin in August at UCR) or as late as November 2 (9 months before classes begin). Applications without recent MCAT scores are considered incomplete. Review the application guidelines at medschool.ucr.edu/admissions

Program Prerequisites

Pre-medical Education

Although students must complete the required pre-medical coursework listed below, students are not required to be science majors to do so. The School of Medicine values broad academic backgrounds that include humanities, foreign language, social sciences and the arts to help prepare future physicians for interacting with increasingly diverse patient populations, health care professionals and colleagues.

Required

- Mathematics (12 quarter units) to include introductory calculus and statistics
- English (12 quarter units) to include the study of English composition
- General college physics with laboratory (12 quarter units)
- College chemistry with laboratory to include inorganic and organic chemistry (24 quarter units)
- General biology with laboratory (12 quarter units)

Recommended

- A one-quarter course in biochemistry
- Spanish
- Computer skills
- Humanities

Completion of Requirements

Students must complete all premedical requirements before beginning the first year of medical study, although these requirements need not be completed at the time application for admission is filed. AP credit with a score of 4 or 5 (or International Baccalaureate score of 6 or 7) can be used to satisfy one quarter or one semester of English and one quarter or one semester of Mathematics. AP (or IB) credit can NOT be used to satisfy the Physics, Chemistry or Biology requirements.

Medical College Admission Test (MCAT)

The MCAT must be taken not later than fall of the year preceding admission to the School of Medicine. If more than one MCAT was taken, all the test grades must be included when making an application. The test must be repeated if, at the time of application, more than three years have elapsed since it was taken. Requests for test reports and all other correspondence and requests for information concerning the administration, processing, and scoring of the MCAT should be directed to the MCAT Program Office.

Additional details regarding application requirements and the admissions process can be found at medschool.ucr.edu/admissions

Academic Advising UCR undergraduates receive academic advising from professional staff and faculty of the department or program of their chosen major. Professional staff and peer mentors in the medical school's Health Professions Advising Center are available to guide students in planning pre-health professions course work, gaining health-related experiences, completing service work and can assist with preparing to apply for admission to graduate and professional programs.

For more information

UCR School of Medicine
Office of Student Affairs
1682A School of Medicine Education Building
University of California, Riverside
Riverside, CA 92521
(951) 827-7353; medadmissions@ucr.edu

Medical/Professional Courses

MDCL 231 Foundations of Medicine I (10.5) Lecture, 67.5 hours per quarter; discussion, 30 hours per quarter; laboratory, 20.5 hours per quarter; clinical 15 hours per quarter. Prerequisite (s): first year standing in medical school. Covers basic principles of disease processes, genetics, and molecular, cellular, and development biology. Instruction is driven by cases and accomplished through lectures and discovery in small group discussions, laboratories, and conferences. Also covers aspects of anatomy, doctoring, patient examination, and the longitudinal ambulatory clinical experience. Includes problem-based learning. Graded In Progress (IP) until MDCL 231, MDCL 232, MDCL 233, MDCL 234 and MDCL 235 are completed, at which time a final grade is assigned.

MDCL 232 Cardio, Renal & Resp Sciences I (17.5) Lecture, 113 hours per quarter; discussion, 45 hours per quarter; laboratory, 28 hours per quarter; clinical 36 hours per quarter. Prerequisite (s): first year standing in medical school. Covers physiology, pathophysiology, physical diagnosis & imaging in the cardiovascular, renal & respiratory sciences. Instruction is driven by cases & accomplished through lectures & discovery in small group discussions, laboratories, & conferences. Also covers aspects of anatomy, doctoring, examination & the longitudinal ambulatory clinical experience. Includes problem-based learning. Graded In Progress (IP) until MDCL 231, MDCL 232, MDCL 233, MDCL 234 and MDCL 235 are completed, at which time a final grade is assigned.

MDCL 233 Gastro, Endocrine & Repro Hth I (14) Lecture, 94 hours per quarter; discussion, 25 hours per quarter; laboratory, 33 hours per quarter; clinical 34 hours per quarter. Prerequisite (s): first year standing in medical school. Covers biochemistry, pathophysiology, physical diagnosis & imaging associated with gastrointestinal endocrine & reproductive health. Instruction is driven by cases & accomplished through lectures and discovery in small group discussions, laboratories & conferences. Also covers aspects of anatomy, doctoring, patient examination & the longitudinal ambulatory clinical experience. Includes PBL. Graded In Progress (IP)
MDCL 231 Anatomy II (14) Lecture, 80 hours per quarter; discussion, 48 hours per quarter; laboratory, 24 hours per quarter; clinical 40 hours per quarter. Prerequisite (s): second year standing in medical school. Covers the histology of the central nervous system. Also covers aspects of anatomy, medical school. Third year required clerkship in Neurology. Part 1 of 2. Graded In Progress (IP) until MDCL 231A and MDCL 231B are completed, at which time a final grade is assigned.

MDCL 232 Biochemistry I (10) Lecture, 44 hours per quarter; discussion, 24 hours per quarter; laboratory, 18 hours per quarter; clinical 40 hours per quarter. Prerequisite (s): second year standing in medical school. Covers the biochemical basis of medical science. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 232A and MDCL 232B are completed, at which time a final grade is assigned.

MDCL 233 Biochemistry II (12) Lecture, 62 hours per quarter; discussion, 44 hours per quarter; laboratory, 36 hours per quarter; clinical 33 hours per quarter. Prerequisite (s): second year standing in medical school. Covers the metabolic and biochemical basis of medical science. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 233A and MDCL 233B are completed, at which time a final grade is assigned.

MDCL 234 Microskeletal Medicine (6) Lecture, 50 hours per quarter; discussion, 14 hours per quarter; laboratory, 37 hours per quarter; clinical 15 hours per quarter. Prerequisite (s): second year standing in medical school. Covers the musculoskeletal system, physical diagnosis and imaging of the musculoskeletal system. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 234A and MDCL 234B are completed, at which time a final grade is assigned.

MDCL 235 Clinical Neurosciences I (9) Lecture, 51 hours per quarter; discussion, 24 hours per quarter; laboratory, 33 hours per quarter; clinical 15 hours per quarter. Prerequisite (s): first year standing in medical school. Covers neurobiology & provides an introduction to neurology & psychiatry, as well as the basic neuroanatomy, neurophysiology, neuroanatomy, neurophysiology, and neuropharmacology of the central nervous system. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 235A and MDCL 235B are completed, at which time a final grade is assigned.

MDCL 236 Foundations of Medicine II (14) Lecture, 97 hours per quarter; discussion, 28 hours per quarter; laboratory, 10 hours per quarter; clinical 42 hours per quarter. Prerequisite (s): second year standing in medical school. Covers the pathophysiology, pharmacology, physical diagnosis & treatment of infectious diseases, clinical neurology, oncology, neurology, & clinical reasoning skills. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 236A and MDCL 236B are completed, at which time a final grade is assigned.

MDCL 237 Cardio, Renal & Resp Sciences II (12) Lecture, 62 hours per quarter; discussion, 44 hours per quarter; laboratory, 36 hours per quarter; clinical 33 hours per quarter. Prerequisite (s): second year standing in medical school. Reviews concepts of cardiovascular, renal, and respiratory medicine. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 237A and MDCL 237B are completed, at which time a final grade is assigned.

MDCL 238 Gastro, Endocrine & Repro Health (13) Lecture, 80 hours per quarter; discussion, 34 hours per quarter; laboratory, 18 hours per quarter; clinical 42 hours per quarter. Prerequisite (s): second year standing in medical school. Covers the clinical and laboratory aspects of digestive, endocrine, and reproductive systems. Also covers aspects of anatomy, medical school. Third year required clerkship in Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 238A and MDCL 238B are completed, at which time a final grade is assigned.

MDCL 239 Clinical Neurosciences II (10) Lecture, 74 hours per quarter; discussion, 20 hours per quarter; laboratory, 6 hours per quarter; clinical 18 hours per quarter. Prerequisite (s): second year standing in medical school. Covers advanced clinical perspective of neurology, neurophysiology, psychiatry & neuropharmacology that is coordinated with physical & psychological clinical skills development. Utilizes weekly cases presented through lecture, small group discussion, laboratories & conferences. Also covers aspects of anatomy, medical school. Third year required clerkship in Psychiatry. Part 1 of 2. Graded In Progress (IP) until MDCL 239A and MDCL 239B are completed, at which time a final grade is assigned.

MDCL 240 Integrative Human Biol & Disease (3) Discussion, 30 hours per quarter. Prerequisite (s): second year standing in medical school. Reviews concepts of human biology and disease covered in MDCL 231, MDCL 232, MDCL 233, MDCL 234, MDCL 235, MDCL 236, MDCL 238 and MDCL 239. Pass/Fail.

MDCL 241A Internal Medicine I (5) Clinical, 160 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Internal Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 241A and MDCL 241B are completed, at which time a final grade is assigned.

MDCL 241B Internal Medicine II (5) Clinical, 160 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Internal Medicine. Part 2 of 2. Pass/Fail/Honors.

MDCL 242A Surgery I (5) Clinical, 160 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Surgery. Part 1 of 2. Graded In Progress (IP) until MDCL 242A and MDCL 242B are completed, at which time a final grade is assigned.


MDCL 243A Pediatrics I (4) Clinical, 126 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Pediatrics. Part 1 of 2. Graded In Progress (IP) until MDCL 243A and MDCL 243B are completed, at which time a final grade is assigned.

MDCL 243B Pediatrics II (4) Clinical, 126 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Pediatrics. Part 2 of 2. Pass/Fail/Honors.

MDCL 244A Obstetrics/Gynecology I (4) Clinical, 126 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Obstetrics/Gynecology. Part 1 of 2. Graded In Progress (IP) until MDCL 244A and MDCL 244B are completed, at which time a final grade is assigned.

MDCL 244B Obstetrics/Gynecology II (4) Clinical, 126 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Obstetrics/Gynecology. Part 2 of 2. Pass/Fail/Honors.

MDCL 245A Family Medicine I (4) Clinical, 126 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Family Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 245A and MDCL 245B are completed, at which time a final grade is assigned.

MDCL 245B Family Medicine II (4) Clinical, 126 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Family Medicine. Part 2 of 2. Pass/Fail/Honors.

MDCL 246A Psychiatry I (1) Clinical, 44 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Psychiatry. Part 1 of 2. Graded In Progress (IP) until MDCL 246A and MDCL 246B are completed, at which time a final grade is assigned.

MDCL 246B Psychiatry II (1) Clinical, 44 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Psychiatry. Part 2 of 2. Pass/Fail/Honors.

MDCL 247A Emergency Medicine I (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Emergency Medicine. Part 1 of 2. Graded In Progress (IP) until MDCL 247A, MDCL 247B, MDCL 247C and MDCL 247D are completed, at which time a final grade is assigned.

MDCL 247B Emergency Medicine II (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Emergency Medicine. Part 2 of 2. Pass/Fail/Honors.

MDCL 248A Longitudinal Ambulatory Care Experience (LACE) I (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Longitudinal Ambulatory Care Experience (LACE). Part 1 of 2. Graded In Progress (IP) until MDCL 248A, MDCL 248B, MDCL 248C and MDCL 248D are completed, at which time a final grade is assigned.

MDCL 248B Longitudinal Ambulatory Care Experience (LACE) II (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Longitudinal Ambulatory Care Experience (LACE). Part 2 of 2. Graded In Progress (IP) until MDCL 248A, MDCL 248B, MDCL 248C and MDCL 248D are completed, at which time a final grade is assigned.

MDCL 249C Longitudinal Ambulatory Care Experience (LACE) III (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Longitudinal Ambulatory Care Experience (LACE). Part 3 of 4. Graded In Progress (IP) until MDCL 249A, MDCL 249B, MDCL 249C and MDCL 249D are completed, at which time a final grade is assigned.

MDCL 249D Longitudinal Ambulatory Care Experience (LACE) IV (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year required clerkship in Longitudinal Ambulatory Care Experience (LACE). Third year required clerkship in Emergency Medicine. Part 4 of 4. Pass/Fail/Honors.
MDCL 249A Neurology I (1) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in medical school. Third year required clerkship in Neurology. Part 1 of 2. Graded In Progress (IP) until MDCL 249A, MDCL 249B, MDCL 249C and MDCL 249D are completed, at which time a final grade is assigned.

MDCL 249B Neurology II (3.5) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in medical school. Third year required clerkship in Neurology. Part 2 of 2. Graded In Progress (IP) until MDCL 249A, MDCL 249B, MDCL 249C and MDCL 249D are completed, at which time a final grade is assigned.

MDCL 249C Neurology III (3.5) Clinical, 36 hours per quarter. Prerequisite (s): third year standing in medical school. Third year required clerkship in Neurology. Part 3 of 4. Graded In Progress (IP) until MDCL 249A, MDCL 249B, MDCL 249C and MDCL 249D are completed, at which time a final grade is assigned.


MDCL 250 Clinical Sub-Internship (8) Clinical, 240 hours per quarter. Prerequisite (s): fourth year standing in Medical School. Fourth year required sub-internship in one of the following specialties: Family Medicine, Internal Medicine, Pediatrics, Obstetrics/Gynecology, General Surgery, or Psychiatry. Course is repeatable as topic/content changes. Pass/Fail/Honors.

MDCL 251 Radiology (8) Clinical, 240 hours per quarter. Prerequisite (s): fourth year standing in Medical School. Fourth year required Radiology rotation. Pass/Fail/Honors.

MDCL 252 Critical Care (8) Clinical, 240 hours per quarter. Prerequisite (s): fourth year standing in Medical School. Fourth year required Critical Care rotation. Pass/Fail/Honors.

MDCL 253 Back-to-Basics (8) Clinical, 240 hours per quarter. Prerequisite (s): fourth year standing in Medical School. Fourth year required Back-to-Basics rotation. Pass/Fail/Honors.

MDCL 254 Fourth Year Clinical Rotation (8) Clinical, 240 hours per quarter. Prerequisite (s): fourth year standing in Medical School. Fourth year required elective rotation. Pass/Fail/Honors.

MDCL 289 Medical Selectives (1 to 3) Lecture, 3-9 hours per quarter. Prerequisite (s): first or second year standing in medical school. Seminar course presenting various relevant topics in medicine. Content and instructor(s) may vary each time course is offered. Course is repeatable as topic changes Pass/Fail.

MDCL 290 Directed Studies (1 to 6) Lecture, 3-18 hours per quarter. Prerequisite (s): first or second year standing in medical school. Experimental or literature studies on specifically selected topics under direction of a staff member. Course is repeatable Pass/Fail.

MDCL 293 Clinical Selectives (1) Clinical, 12 hours per quarter. Prerequisite (s): third year standing in Medical school. Third year medical selective. Course is repeatable as content/ topic changes. Pass/Fail/Honors.

Microbiology

Subject abbreviation: MCBL
College of Natural and Agricultural Sciences
Jason Stajich, Ph.D. Program Director
Graduate Program, 1140 Batchelor Hall
(800) 735-0717 or (951) 827-5688
microbiology.ucr.edu

James Borneman, Ph.D. Chair, Microbiology Undergraduate Steering Committee
Program Office, 1223 Pierce Hall
(951) 827-7294
cnasstudent.ucr.edu/majors

Professors
James Adaskavage, Ph.D. (Plant Pathology and Microbiology)
Katherine A. Borkovich, Ph.D. (Plant Pathology and Microbiology)
James Borneman, Ph.D. (Plant Pathology and Microbiology)
Michael D. Coffey, Ph.D. (Plant Pathology and Microbiology)
Shou-Wei Ding, Ph.D. (Plant Pathology and Microbiology)
Sarjeet S. Gill, Ph.D. (Cell Biology and Neuroscience)
Hailing Jin, Ph.D. (Plant Pathology and Microbiology)
Howard S. Judelson, Ph.D. (Plant Pathology and Microbiology)
Karine Le Roch, Ph.D. (Cell Biology and Neurosciences)
Wenbo Ma, Ph.D. (Plant Pathology and Microbiology)
Ashok Mulchandani, Ph.D. (Chemical and Environmental Engineering)
Leonard Nunney, Ph.D. (Biology)
A.L.N. Rao, Ph.D. (Plant Pathology and Microbiology)
Philip Roberts, Ph.D. (Nematology)
Neal L. Schiller, Ph.D. (School of Medicine)
Jason E. Stajich, Ph.D., (Plant Pathology and Microbiology)
Richard Stouthamer, Ph.D. (Entomology)
Georgios Vidalakis, Ph.D. (Plant Pathology and Microbiology)
Sharon Walker, Ph.D. (Chemical and Environmental Engineering)
Marylyn V. Yates, Ph.D. (Environmental Sciences)

Professors Emeriti
Michael Allen, Ph.D. (Plant Pathology and Microbiology)
Donald A. Cooksey, Ph.D. (Plant Pathology and Microbiology)
David E. Crowley, Ph.D. (Environmental Sciences)
Dennis D. Focht, Ph.D. (Plant Pathology and Microbiology)
Thomas Miller, Ph.D. (Entomology)
Edward Platzer, Ph.D. (Biology and Nematology)
Michael Stanghellini, Ph.D. (Plant Pathology and Microbiology)

Associate Professors
James Ng, Ph.D. (Plant Pathology and Microbiology)
Caroline Roper, Ph.D. (Plant Pathology and Microbiology)
Joel L. Sachs, Ph.D. (Biology)
Emma Wilson, Ph.D. (School of Medicine)

Assistant Professors
Emma Aronson, Ph.D. (Plant Pathology and Microbiology)
Gregor Blaha, Ph.D. (Biochemistry)
Adler Dillman, Ph.D. (Nematology)
Emma Gachomo, Ph.D. (Plant Pathology and Microbiology)
Xin Ge, Ph.D. (Chemical and Environmental Sciences)
Joseph Generaux, Ph.D. (Chemistry)
Rong Hai, Ph.D. (Plant Pathology and Microbiology)
Ansel Hisao, Ph.D. (Plant Pathology and Microbiology)
Huinan Liu, Ph.D. (Biomedical Engineering)
Patria Manosla, Ph.D. (Plant Pathology and Microbiology)
Quinn McFrederick, Ph.D. (Entomology)
Meera Nair, Ph.D. (School of Medicine)

Lecturer
Afik Eskalen, Ph.D. (Plant Pathology and Microbiology)

Major

Microorganisms play key roles in ecosystems and human civilization. They can both cause and prevent a wide array of diseases in animals and plants. They are key components in the manufacturing of bread, cheese, and other food products. Microbes are involved in soil formation, global environmental processes and detoxifying contaminated environments. In addition, they contain a wealth of useful compounds and enzymes for biotechnology.

Students earning a degree will be prepared to continue study at the graduate level, earn teaching credentials, or enter professional schools in medicine, pharmacy, optometry, dentistry, veterinary medicine, and clinical laboratory science among others. Students will also be trained for technical careers in medicine, agriculture, biotechnology and environmental fields. For information on how to select elective coursework for specific career paths, visit the CNAS Undergraduate Academic Advising Center.

Students in the Microbiology major can obtain either B.A. or B.S. degrees. The B.S. degree offers students with a strong interest in the natural sciences an opportunity to emphasize this aspect of their education. The B.A. degree is available to students who wish to obtain a broader background in the humanities and social sciences than is required of students in the B.S. program.

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

Some of the following requirements for the Microbiology major may also fulfill the College’s breadth requirements. Consult with an advisor for course planning.

1. Core Curriculum (72-77 units)

Students must complete all required core curriculum courses with a grade of "C-" or better and with a cumulative GPA in the courses of at least 2.0. Grades of "D" or "F" in two required courses, either separate courses or repetitions of the same course, are grounds for discontinuation from the major.

a) BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C
b) CHEM001A, CHEM001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC
c) CHEM 008A and 08LB or CHEM 08HA and CHEM 08HLA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LC, CHEM 08OC and CHEM 08LC or CHEM 08HC and CHEM 08LC
d) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

e) MATH 007A or MATH 009A, MATH 007B or MATH 009B

f) STAT 100A

g) BCH 100, or BCH 110A and BCH 110B

2. Upper-Division Requirements (37 units)

  a) Major Core (19 units): BIOL 102, BIOL 107A, MCBL 121/BIOL 121, MCBL 121L/BIOL 121L, MCBL 125

  b) Major Electives. A minimum of 18 units from the following to be selected in consultation with a faculty advisor: BIOL 128/CMNS 128, BIOL 157, BIOL 158, CBNS 101, ENSC 120/NEM 120, MCBL 120/BIOL 120/PLPA 120, MCBL 120L/BIOL 120L/PLPA 120L, MCBL 122/BIOL 122, MCBL 123/BIOL 123/PLPA 123, MCBL 124/BIOL 124, MCBL 141/ENSC 141, MCBL 197, PLPA 134/BIOL 134, PLPA 134J/BIOL 134L

3. Other Requirements

For the Bachelor of Science degree, an additional 16 units in upper-division microbiology courses and/or substantive courses in a field or fields related to the major.

Acceptable courses include BCH 100, BCH 110C, BIOL 109, BIOL 119, ENSC 133/MCBL 133, MCBL 190, MCBL 198-1; a more complete list of acceptable courses is available at the CNAS Undergraduate Academic Advising Center.

For the Bachelor of Arts degree, the foreign language requirement may be fulfilled by completing level-four coursework or by demonstrating the equivalent proficiency in one foreign language.

4. Bachelor of Science Sample Program

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 005A, BIOL 005LA, or BIOL 020, BIOL 005B</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 001A, CHEM 001B, CHEM 001C</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 011A, CHEM 011B, CHEM 011C</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 001A, ENGL 001B</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 009A, MATH 009B</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>NASC 093</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>15</td>
<td>14</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 100A</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 005C</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 008A and OBLA or CHEM 08HA and CHEM 08HLA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HC and CHEM 08HC and CHEM 08HLA</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC

<table>
<thead>
<tr>
<th>Units</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCH 100</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 102</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCBL 121L</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHIL 009A</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Electives &amp; Other Reqs.</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>16</td>
<td>16</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 107A</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCBL 125</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Electives &amp; Other Reqs.</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>MCBL 197</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 001C</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>15</td>
<td>15</td>
<td>14</td>
</tr>
</tbody>
</table>

Notes:
1. Some students will take courses in summer session to (i) reduce the unit load during the normal academic year (ii) complete the degree requirements in less than four years or (iii) enable the acquisition of a minor or double major in four years.
2. No more than 4 units can be applied toward the Major Electives unit requirement, unless approved by the Microbiology Steering Committee.
3. No more than 4 units can be applied toward the Other Requirements unit requirement, unless approved by the Microbiology Steering Committee.
4. Students are encouraged to take a class in ethics.

Graduate Program

The Graduate Program in Microbiology is an interdisciplinary program with participating faculty from the departments of Biology, Cell Biology and Neuroscience, Chemical and Environmental Engineering, Chemistry, Entomology, Environmental Sciences, Plant Pathology and Microbiology, and the Division of Biomedical Sciences. Faculty research interests are concentrated in several disciplines in the areas of basic and applied microbiology. These disciplines include the following:

- Microbial Pathogenesis
- Environmental Microbiology and Ecology
- Microbial Evolution, Genomics, and Metagenomics
- Molecular and Cellular Microbiology

Admission For admission into the graduate program in Microbiology, a student must have a B.A. or B.S. degree from an accredited institution and an academic record that satisfies the minimum admission standards established by the UCR Graduate Division. In addition, all applicants must submit results of the GRE General Test (verbal, quantitative and analytical) at the time of application.

Although no specific undergraduate degree specialization is required, applicants should have an adequate background in the physical and biological sciences, including the following or equivalent courses:

- CHEM 001A, CHEM 001B, CHEM 001C (General Chemistry), CHEM 008A and OBLA or CHEM 08HA and CHEM 08HLA, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HLB, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HL (Organic Chemistry), BCH 110A, BCH 110B (Biochemistry), MATH 007A or MATH 009A, MATH 007B or MATH 009B (Calculus), STAT 100A or STAT 120A (Statistics), BIOL 102 (Genetics), BIOL 121A/MCBL 121A, BIOL 121L/MCBL 121L (Microbiology), BIOL 107A or BCH 110C (Molecular Biology)

This list is intended to represent the minimum background required for students wishing to pursue a graduate degree in Microbiology. Additional course work and laboratory experience in microbiology, biochemistry or genetics is highly desirable. However, upon the recommendation of the graduate advisory committee, occasionally a student may be admitted into the graduate program with one or more course work deficiencies; such students must satisfy these course work deficiencies usually within the first and no later than within the second year of graduate study.

Course work The program is designed to prepare students for teaching and research careers in colleges and universities, as well as basic and applied research in private, industrial and government laboratories. To attain this goal, a three-tiered curriculum has been designed whereby students are expected to complete the following:

1. A core sequence of classes in microbiology: MCBL 201 (Functional Diversity of Prokaryotes) or MCBL 202 (Microbial Pathogenesis and Physiology), BIOL 221/MCBL 221 (Microbial Genetics), and MCBL 211/SWCS 211 (Microbial Ecology)

2. A selection of elective courses in microbiology and other relevant fields chosen in consultation with the student’s major professor and the advisory committee in order to develop depth in particular areas of specialization

3. Research training in specific areas of microbiology

The program stresses the importance of innovative and independent laboratory research as the major component of the student’s education.

In addition to the above course work, students must attend one seminar per week each quarter in programs collaborating with
Microbiology. Students are also required to present one seminar during their tenure in the program. The seminar can be either on the student’s thesis research or related topics and can be presented in any of several program student seminar series.

Upon entering the program, a student advisory committee is appointed for each student to help plan a program of study. The committee consists of the student’s major professor, who serves as chair, and two other professors from the program with expertise in the student’s area of interest. Graduate students must meet at least annually with their advisory committee to plan their course. However, students are encouraged to meet with their committee more often. Minutes of the meeting, prepared by the chair, are approved by the rest of the committee and then placed in the student’s file. In addition, prior to advancement to candidacy, students present the advisory committee with a written summary of their research progress and plans at the beginning of each academic year.

Master’s Degree
M.S. students must fulfill the requirements for Plan I (Thesis) of the Graduate Council. They must complete the core series of courses and three additional graduate level courses chosen in consultation with the student advisory committee. Plan I requires 36 units, of which 24 must be in graduate level courses. No more than 6 units of MCBL 290 level courses may be used to satisfy this unit requirement. The student must also submit an acceptable research thesis. The M.S. thesis committee, consisting of three members, which may be the same as the student advisory committee, is nominated by the graduate advisor after consultation with the student. The committee, once approved by the graduate dean, becomes responsible for the student’s academic guidance and evaluation. The master’s degree is conferred at the end of the academic quarter in which all requirements have been satisfied.

Normative Time to Degree 6 quarters

Doctoral Degree
Ph.D. students must meet all requirements of the Graduate Council. Students satisfactorily complete the core class requirements and a program of courses approved by the student’s advisory committee. The Ph.D. degree is awarded upon passing the preliminary and qualifying examinations and demonstrating an ability to carry out original research by preparing and submitting an acceptable dissertation.

Students enrolled in the Ph.D. program are expected to become actively engaged in a research project no later than the end of their first year, and research progress is monitored by the student’s advisory committee until the student advances to candidacy and a dissertation committee is appointed.

Preliminary Examination
The preliminary examination, consisting of a written, comprehensive examination is based on general microbiology and required material in the student’s area of specialization. If a student fails this examination, the advisory committee recommends either additional course work in specific areas of weakness, transfer to a terminal M.S. degree program, or withdrawal from the program. The preliminary examination may only be repeated once and must be passed for the student to continue in the Ph.D. program. The preliminary examination is normally taken in the spring quarter of the second year.

Oral Qualifying Examination
After completion of the preliminary examination, the qualifying committee is established, and the oral qualifying examination is normally taken no later than the eighth quarter (year three) of academic work, not counting summer quarters.

A qualifying committee is nominated by the graduate advisory committee and submitted to the graduate dean for approval. Suggestions of potential members of the qualifying committee may be submitted to the advisory committee by the student and the student’s major professor. The qualifying committee is composed of five faculty members; three with expertise in the area of specialization in microbiology, one representing a different area from microbiology, and one outside member. The student’s major professor may not serve on the qualifying committee. Prior to the oral qualifying examination, the student submits a written dissertation research proposal to the members of the qualifying committee. The oral examination covers the student’s area of specialization and research field and must be passed for the student to continue in the program. Upon successful completion of the qualifying examination, the student is advanced to candidacy. The qualifying examination may be repeated only once.

Dissertation and Final Oral Examination
The dissertation committee is nominated by the graduate advisor for approval by the graduate dean (upon successful completion of the qualifying examination) and is composed of the student’s major professor and at least two other faculty members suggested by the student and the student’s major professor. Before approval of the dissertation, the student is expected to present orally the dissertation research at an announced defense seminar.

Teaching Requirement
Two quarters of teaching experience is required, which may be satisfied by serving as a teaching assistant in any of the microbiology courses listed.

Foreign Language Requirement
None

Normative Time to Degree 15 quarters

Upper-Division Courses

MCBL 120L Introduction to Plant Pathology Laboratory (1) F Laboratory, 4 hours. Prerequisite(s): BIOL 005A, BIOL 005B; concurrent enrollment in BIOL 120/MCBL 120/LPLA 120 or consent of instructor; BIOL 121/ MCBL 121 and BIOL 124/MCBL 124 recommended. Covers fundamentals in the use of laboratory instruments and techniques for the detection, isolation, and identification of representative infectious agents that cause disease in plants. Cross-listed with BIOL 120L and MCBL 120L. Credit for LPLA 210 if it has already been awarded for BIOL 120/MCBL 120/LPLA 120 and/or BIOL 120L/MCBL 120L/LPLA 120L. Manosalva

MCBL 120L Introductory Microbiology (4) F, W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 055A or BIOL 060, BIOL 065B, BIOL 065C, CHEM 001C or CHEM 01HC, CHEM 008B, and CHEM 08LC, or CHEM 08HLC, MATH 007B or MATH 009B or MATH 09HB, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A (BCH 100 or BCH 110A may be taken concurrently); or consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers evolutionary origins of metabolic diversity, bacterial and viral molecular genetics, and an introduction to microbial pathogenesis. Cross-listed with BIOL 121. Hsiao, Ma, Roper

MCBL 121L Microbiology Laboratory (3) W, Lecture, 1 hour; laboratory, 6 hours. Prerequisite(s): BIOL 121/MCBL 121 with a grade of “C-” or better. Laboratory exercises in diagnostic bacteriology, basic virology, and epidemiology. Includes fundamental quantitative and diagnostic microbiological procedures, basic mechanisms of microbial genetic exchange, and a project examining bacterial epidemiology. Cross-listed with BIOL 121L. Coffey

MCBL 122 Food Microbiology (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 055A or BIOL 060, BIOL 065B, BIOL 065C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09HB, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Considers viruses as infectious agents of bacteria, plants, and animals (vertebrates and invertebrates). Compares the major groups of viruses to each other with respect to their biological and biochemical properties, molecular and genetic characteristics, and modes of replication. Cross-listed with BIOL 123 and LPLA 123. Rao

MCBL 123 Introduction to Comparative Virology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 055A or BIOL 060, BIOL 065B, BIOL 065C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC, MATH 007B or MATH 009B or MATH 09HB, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Considers viruses as infectious agents of bacteria, plants, and animals (vertebrates and invertebrates). Compares the major groups of viruses to each other with respect to their biological and biochemical properties, molecular and genetic characteristics, and modes of replication. Cross-listed with BIOL 123 and LPLA 123. Rao

MCBL 124 Pathogenic Microbiology (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 121/MCBL 121 with a grade of “C-” or better; or consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers research strategies for examining microbial pathogenic mechanisms. Cross-listed with BIOL 124. Rao

MCBL 125 Experimental Microbiology (4) Lecture, 1.5 hours; workshop, 1 hour; laboratory, 6 hours. Prerequisite(s): upper division standing in Microbiology, BIOL 102, BIOL 107A, BIOL 121/MCBL 121, BIOL 121/MCBL 121L or consent of instructor. Introduces the process of performing experimental research in a microbiology laboratory. Teaches skills used in formulating hypotheses, designing experiments, performing laboratory experiments, analyzing data, and preparing and presenting research in written and oral formats.
Experimental systems utilized vary from quarter to quarter. Borkovich

MCBL 126 Microbiomes (3) Lecture, 3 hours. Prerequisite(s): BIOL 121/MCBL 121 with a grade of "C" or better, or consent of instructor. Introduces microorganisms, which are the collections of microorganisms that inhabit particular environments or locations, and that play crucial roles in agriculture, the environment and human health and disease. Covers fundamental knowledge about microorganisms and experimental strategies to understand and utilize microorganisms to prevent or treat human and plant diseases. Borneman

MCBL 130 Microbial Threats and Biodfense (3) S Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BIOL 121/MCBL 121. Explores the historical development, operation, and strategies of biodefense research. Addresses the impact of fungi, myxotoxins, bacteria, and viruses on human, animal, and plant health. Includes natural outbreaks and pandemics, epidemiology, detection technologies, ethics, and biodefense. Considers how these topics relate to plant, animal, and human health, as well as agriculture.

MCBL 133 Environmental Microbiology (4) Lecture, 4 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 054A or BIOL 020, BIOL 055B, or consent of instructor. Introduction to nonpathogenic microbial microorganisms in the environment. Topics include an introduction to microbial biology and microbial and metabolic genetic diversity; methods; symbiotic interactions; biofilms; and geomicrobiology and biogeochemistry. Explores life in extreme environments and the effects of the physical and chemical environment on microbes. Cross-listed with ENSC 133. Aronson

MCBL 141 Public Health Microbiology (4) Lecture, 2 hours; seminar, 1 hour. Prerequisite(s): BIOL 002 or BIOL 055A; BIOL 054A or BIOL 020, BIOL 055B; or consent of instructor. Infection and transmission of human pathogens. Topics include the history and development of human disease; and public health implications. Topics include characterizations of environmentally transmitted pathogens, microbial risk assessment, sampling and detection methods for microorganisms in environmental samples, food and waterborne disease outbreaks, wastewater treatment, and microbial regulations and standards. Cross-listed with ENSC 134. Yates

MCBL 190 Special Studies (1-5) F, W, S Summer Individual study. Prerequisite(s): consent of instructor and major chairperson. Provides an opportunity to meet specific curricular needs. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. No more than 4 units can be applied toward the degree without permission from the Microbiology Steering Committee.

MCBL 197 Research for Undergraduates (1-4) directed research, 1-12 hours. Prerequisite(s): consent of instructor; upper-division standing. Individual research in microbiology performed prior to consent of instructor and major chairperson. Experimental work, 1-12 hours; internship, 2-24 hours. Cross-listed with ENTM 262. Credit is repeatable to a maximum of 4 units. Cross-listed with ENTM 262. Borkovich

MCBL 205 Signal Transduction Pathways in Microbes and Plants (4) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): graduate standing in the biological sciences, BIOL 107A or BIOL 113 or BIOL 114 or CBNS 101; or consent of instructor. Advanced topics in signal transduction pathways that regulate growth and development of prokaryotic and eukaryotic microbes. Areas covered include two-component regulatory systems; quorum sensing; signaling via small and heterotrimetric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPSC 205, CMDB 205, GEN 205, and PLPA 205. Hsiao

MCBL 206 Gene Silencing (3) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): graduate standing, BIOL 107A or CBNS 101; or consent of instructor. An in-depth coverage of mechanisms, functions, and applications of RNAi and related gene regulatory pathways guided by small RNAs such as siRNAs and miRNAs in plants and animals. Cross-listed with CMDB 206 and GEN 206. Dong, Chen

MCBL 210 Molecular Biology of Human Disease Vectors (3) Lecture, 2 hours; seminar, 1 hour. Prerequisite(s): consent of instructor. Covers the molecular aspects of vectors transmitting most dangerous human diseases. Involves lectures and student presentations about current issues in molecular biology and genomics of vector insects and pathogens they transmit. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CMDB 210 and ENM 210. Ding, Chen

MCBL 211 Microbial Ecology (3) S, Odd Years Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Application of ecological principles to microbial communities. Emphasizes methods for analysis of diversity and community structure and statistical methods relating genetic and biochemical fingerprints to functional properties. Case studies explore factors affecting diversity, disease biocontrol, and bioremediation of environmental contaminants. Cross-listed with SWSC 211. Aronson, Bik

MCBL 221 Microbial Genetics (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102. In-depth coverage of the genetics of microbes. Emphasizes the primary data and the foundation of modern techniques using viruses, archaea, prokaryotes, and eukaryotes. Includes genome sequences and organization, plasmids and other vectors, mutation and genetic screens. Also covers transposable elements, recombination, and regulation of gene expression, development, and pathogenesis. Cross-listed with BIOL 221 and PLPA 226. Borkovich

MCBL 241 Special Topics (2) Lecture, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Oral presentations and intensive small-group discussion of selected topics in each faculty member’s area of research. Recent content emphasizes recent advances in the special topic area and varies accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with PLPA 241. Borkovich

MCBL 250 Seminar in Microbiology (1) S Seminar, 1 hour. Prerequisite(s): graduate standing. Formal seminars by graduate students, faculty, and invited scholars on selected topics in microbiology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Microbiology / Middle East and Islamic Studies / 372

MCBL 262 Molecular Biology of Arthropod Disease Vectors (2) Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Seminar series sponsored by the Center for Disease-Vector Research at the Institute for Integrative Genome Biology. Provides an opportunity for graduate students to discuss current issues of molecular biology and genomics of vector insects and pathogens they transmit with guest speakers. Course is repeatable to a maximum of 4 units. Cross-listed with ENTM 262, Borkovich

MCBL 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Directed research in microbiology. Performed prior to advancement to candidacy and in preparation for thesis or dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MCBL 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing. Directed research in microbiology. Performed prior to advancement to candidacy and in preparation for thesis or dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MCBL 299 Research for Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing. Original research in the area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Middle East and Islamic Studies

Subject abbreviation: MEIS

College of Humanities, Arts, and Social Sciences

Muhamad Ali, Ph.D. Director
Department Office, INTS 3111
(951)827-5111; muhamad.ali@ucr.edu

Committee in Charge
Muhammad Ali (Religious Studies)
Reza Aslan (Creative Writing)
Sherne Hafez (Gender and Sexuality Studies)
Erith Jaffe-Berg (Theatre, Film and Digital Production)
Rahi Khan (Media and Cultural Studies)
Laila Lalam (Creative Writing)
Benjamin Liu (Hispanic Studies)
Susan Osman (Anthropology)
Jeff Sacks (Comparative Literature & Foreign Languages)

Affiliated Faculty
Jonathan Eacott, Ph.D. History
John Ganim, Ph.D. English
Denver Graninger, Ph.D. History
Matthew King, Ph.D. Religious Studies
Michene Salman, Ph.D. History

Majors

Administered through the Interdisciplinary Studies Office, the Middle East and Islamic Studies major is designed to provide undergraduate students with a broad understanding of the history, politics and culture of the Middle East and Islamic traditions. The program offers an interdisciplinary approach to the study of the Middle East and Islamic traditions with focuses on gender, history, literature, popular discourses and politics, which canvass from North Africa to Southeast Asia.

The multidisciplinary nature of the program
prepares students for a critical understanding of current issues and further study in a number of academic fields at the graduate level. The major is useful to students planning careers in politics and government, business, education, international organizations, journalism, and the arts, as well as for those who simply desire a better understanding of the Middle East, Islam, and Islamic cultures.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
The major requirements for the B.A. in Middle East and Islamic Studies are as follows (56 units of required courses):

1. Language requirement: 6 courses (24 units) Students are required to fulfill the language requirement by taking courses in a language in MEIS (Arabic, Persian, Turkish, Hebrew, Urdu, Malay/Indonesian) or pass the proficiency requirement by taking a test administered by the department. Currently UCR offers only Arabic but students can take language classes either abroad (i.e. AUC in Cairo, Bogazici University in Istanbul) or in other UC campuses (UCLA, Irvine) upon the approval of MEIS director.

2. Senior Research (4 units): Students must take MEIS 199 or HIST 197 (taken senior year with the prior approval of the instructor or MEIS director)

3. Required courses: 3 courses (12 units) (at least one should be taken from area I and one from area II)

   a) Survey courses:
   - ARLC 155/CPLT 155/MEIS 155/RLST 157, RLST 111, HIST 121, HIST 124
   - Specialized courses
   - ANTH 169/GBST 169, GSST 162/RLST 162, HIST 125, HIST 126

4. Select four from the elective courses (16 units of elective courses):

   Arabic Literatures and Cultures
   - ARLC 120, ARLC 151/CPLT 151/MEIS 151, ARLC 152/CPLT 152, ARLC 154/CPLT 154/PHIL 128, ARLC 156/CPLT 156/MEIS 156/RLST 156, ARLC 158/CPLT 158/MEIS 158/RLST 158
   - ANTH 136/SEAS 136, ANTH 140I, ANTH 188/GBST 151, ANTH 189/GBST 168, ANTH 109
   - Asian Studies
   - AST 167/CPLT 167/SEAS 167
   - Comparative Ancient Civilizations
   - CPAC 121/CLA 121/POSC 121
   - Economics
   - ECON 170E
   - Gender and Sexuality Studies
   - ANTH 109/GSST 109, ANTH 188/GSST 151, ANTH 189/GSST 168, GSST 162/RLST 162, GSST 169
   - Global Studies
   - GSST 191
   - History
   - HIST 117, HISE 160, HISE 111, HISE 112, HISE 116, HISE 125, HIST 126, HIST 137
   - Media and Cultural Studies
   - MCS 172
   - Political Science
   - POSC 107, POSC 120, POSC 133, POSC 152
   - Religious Studies
   - RLST 112, RLST 113, RLST 116, RLST 121, RLST 130, RLST 148, RLST 150, RLST 151, RLST 162/RLST 162
   - Theatre, Film and Digital Production
   - TFDP 177
   - Minor
   - MEIS 151 Introduction to Arabic Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to Arabic literature through the study of major works of Arabic literature, including the structure of the Arabic language and the evolution of Arabic literary genres.
   - MEIS 152 Introduction to Islamic Studies (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to the history, culture, and society of the Muslim world, focusing on the development of Islamic thought and its impact on world history.
   - MEIS 153 Islamic Law (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to the fundamental concepts of Islamic law and its application in contemporary society.
   - MEIS 154 Islamic Modernity (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to the development of modern Islamic thought and its impact on world history.
   - MEIS 155 Islamic and Psychoanalysis (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to the relationship between Islamic thought and modern psychoanalytic theory, focusing on the development of Islamic thought and its impact on world history.

Graduate Course
MEIS 278 Early Modern Empires in the Middle East: The Ottomans and the Safavids (4) Seminar, 3 hours; extra
Middle East and Islamic Studies Designated Emphasis

Subject abbreviation: MEIS
College of Humanities, Arts, and Social Sciences
Muhammad Ali (Religious Studies) Director
(951)827-5111; muhammad.ali@ucr.edu

Committee in Charge
Muhammad Ali, Director (Religious Studies)
Reza Aslan (Creative Writing)
Sherine Hafez (Gender and Sexuality Studies)
Eirth Jaffe-Berg (Theatre, Film and Digital Production)
Ruhu Khan (Media and Cultural Studies)
Laila Lalam (Creative Writing)
Benjamin Liu (Hispanic Studies)
Susan Ossman (Anthropology)
Jeff Sacks (Comparative Literature)
Milagros Pera (Ph.D., Dean, College of Humanities, Arts, and Social Sciences, ex officio)
Fariba Zarinebaf, (History)

Designated Emphasis Requirements
The DE in Middle East and Islamic Studies offers two tracks, one with a requirement for proficiency in a relevant language (Arabic, Persian, Turkish, Hebrew, Urdu or another language, with the approval of the chair of the DE), and/or a placement test and a second track without a language requirement.
Students may double count two courses with MEIS content between the DE and the Ph.D.

Track One
Twelve (12) units plus language proficiency (4-6 quarters)
Three (3) courses (12 units) selected from the list below, at least one of which must be outside of the student’s Ph.D. department, plus the completion of four (4-6) quarters of language study, as described above.

Track Two
Sixteen (16) units
Three (4) courses (16 units) selected from the list below, at least one of which must be outside of the student’s Ph.D. department.

In both tracks, the student is required to take a 2 quarters graduate seminar with the prior approval of faculty member in the relevant discipline. It is understood that the second quarter would be devoted to substantial research and writing.

Applicable Courses

Current Graduate Seminars

Scott Whitfield, Trombone
Matthew Wyckoff, Electric Bass Guitar

Majors
The Music Department offers undergraduate majors leading to the B.A. in Music and the B.A. in Music and Culture.

Scholarships
Students have access to student assistantships, work-study, Gluck Fellowships, and scholarships. For further information or a department tour, call the Music Department, (951) 827-7059.

Performance
Throughout each academic year the Department of Music and Cultural Events sponsors more than 50 formal and informal concerts and recitals by campus ensembles, students, members of the performance faculty, and distinguished visiting artists. Most of the Music Department concerts are open to the public.

Facilities
The department’s facilities include practice rooms equipped with Yamaha pianos, a Performance Lab, a Chamber Music Studio, and a large lecture/rehearsal hall, as well as smaller classrooms and a computer lab. The department owns a large collection of early-music instruments, including a large number of keyboard instruments, as well as instruments for use in traditional chamber, orchestral, and wind ensembles. The department also owns the instruments for several Asian ensembles, i.e., Javanese gamelan, Japanese taiko, Philippine rondalla, North Indiana tabla, and Korean drums, as well as for two Latin American ensembles, Andean and Mexican folkloric. The Experimental Acoustic Research Studio (EARS) supports the composition of electronic music and is housed at a location near campus. The department is home to the Center for Iberian and Latin American Music, which sponsors concerts and lectures in addition to maintaining a website and scholarly journal.

The UCR library holds strong music-research collections located in three facilities. Approximately 35,000 books about music may be found in the Rivera Library, along with journal back-files and microforms. The Music Library, located in room 054 Arts Building (lower level), provides listening equipment, computers, and houses collections of some 10,000 LPs, more than 7,000 CDs, an authoritative collection of reference works, and over 35,000 music scores. A growing collection of music DVDs is also available in the Music Library. Special Collections, on the 4th floor of the Rivera Library, holds numerous 18th- and 19th-century scores of major German and Austro-American composers, as well as the Oswald Jonas and Joaquin Nin-Culmell archives. Located in the CHASS Interdisciplinary Building, the Multimedia Library houses the UCR Libraries’ collection of media. The collection includes video tapes (VHS), DVDs, Blu-Ray, laserdiscs, CD-ROMS, 16mm motion pictures and playback equipment. Online access to these collections is provided through the UCR Library’s local online catalog, SCOTTY and MELVYL, the UC system libraries’ online catalog. The UCR library homepage, library.ucr.edu, provides access to SCOTTY and MELVYL, as well as links to a wide variety of electronic resources.
Music Major
The Department of Music offers a Bachelor of Arts in music within the context of a liberal-arts curriculum. Students acquire practical knowledge of music performance and composition through individual study as well as participation in one or more of the department’s several ensembles. Development of the student’s vocal and/or instrumental technique is enhanced by the study of musicianship, theory, and history, which impart a deeper understanding of the structure of music and the cultural forces that shape it. The Major offers three curricular tracks, among which students may choose a concentration:
1. Music - General
2. Music - Composition
3. Music - Performance

Music and Culture Major
The Music and Culture major offers a predominantly scholarly and critical approach to music as culture from the perspective of research, criticism, and interpretation, with an emphasis on historical and ethnographic approaches. It is oriented primarily toward understanding music as a culturally expressive form. Courses in music and/or dance performance are required but are positioned more broadly within the major as a means to explore interrelationships between music and other forms of performance.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

Music Major
The major requirements for the B.A. degree in Music are as follows:

1. Lower-division requirements (6-31 units)
   a) MUS 030A, MUS 030B, MUS 030C (12 units or proficiency)
   b) MUS 031A, MUS 031B, MUS 031C (6 units or proficiency)
   c) MUS 080P (1 unit and piano proficiency)
   d) Participation in a major ensemble each quarter: MUS 160, MUS 161, MUS 162, MUS 163, MUS 164, MUS 165, MUS 166 (E-Z), MUS 167, MUS 168, MUS 170, MUS 171, MUS 172, MUS 174, MUS 175A, MUS 175B, MUS 176, MUS 177 (6-12 units)

2. Upper-division requirements (30-39 units)
   a) Participation in a major ensemble each quarter: MUS 160, MUS 161, MUS 162, MUS 163, MUS 164, MUS 165, MUS 166 (E-Z), MUS 168, MUS 169, MUS 170, MUS 171, MUS 172, MUS 174, MUS 175A, MUS 175B, MUS 176, MUS 177 (6-12 units)

3. Upper-division track requirements: choose from one of the following tracks
   a) Music – General (24 units)
   b) Music – Composition (24 units)
      12 units from the following: MUS 133, MUS 134, MUS 135, MUS 136, MUS 137, MUS 139, MUS 145A, MUS 145B, MUS 147
      12 units from the following: MUS 113, MUS 114, MUS 115, MUS 116, MUS 117, MUS 118, MUS 119, MUS 120, MUS 121, MUS 122, MUS 123, MUS 124, MUS 125, MUS 126, MUS 127, MUS 128, MUS 140, MUS 146, MUS 150A, MUS 150B, MUS 150C, MUS 150D, MUS 151, MUS 152, MUS 153, MUS 154 (E-Z), MUS 155 (E-Z), MUS 180 (E-Z), MUS 181 (E-Z), MUS 187, MUS 191 (E-Z) (no more than 6 units)
   c) Music – Performance (25-26 units)
      12 units from the following: MUS 133, MUS 134, MUS 135, MUS 136, MUS 137, MUS 139, MUS 145A, MUS 145B, MUS 147
      12 units from the following: MUS 113, MUS 114, MUS 115, MUS 116, MUS 117, MUS 118, MUS 119, MUS 120, MUS 121, MUS 122, MUS 123, MUS 124, MUS 125, MUS 126, MUS 127, MUS 128, MUS 140, MUS 146, MUS 150A, MUS 150B, MUS 150C, MUS 150D, MUS 151, MUS 152, MUS 153, MUS 154 (E-Z), MUS 155 (E-Z), MUS 180 (E-Z), MUS 181 (E-Z), MUS 187, MUS 191 (E-Z) (no more than 6 units)

Note: Students seeking a teaching credential are advised to take MUS 133, MUS 150A, MUS 150B, MUS 150C, MUS 150D, MUS 151, and MUS 152. Consult the Graduate School of Education for credential requirements.

Examinations and Auditions
The ability to play simple piano music is required of all majors. Students lacking keyboard proficiency when the major is declared must enroll in MUS 080P to prepare them for the proficiency examination.

This examination should be passed by the junior year. Consult the department for examination requirements.

All students intending to enroll in MUS 030A must take a music theory diagnostic examination, which is given at the beginning of instruction.

MUS 031A, MUS 031B, and MUS 031C are taken until proficiency for admission to MUS 131A is achieved. The completion of MUS 131A, MUS 131B, and MUS 131C is required for graduation.

All students normally participate in a major ensemble each quarter. Admission to any ensemble course is by consent of instructor. All students intending to participate in an ensemble course must audition during registration.

Fees An additional course fee will be charged at the time of registration for MUS 080 (E-Z), MUS 081 (E-Z), MUS 180 (E-Z), and MUS 181 (E-Z).
A limited number of scholarships will be made available.

Music and Culture Major
All majors must enroll in at least one music ensemble each quarter. However, students may enroll in DNCE 067A through DNCE 075B instead of, or in addition to, any of the music ensemble courses.

In addition, the major requirements for the B.A. degree in Music and Culture are as follows:

1. Lower-division requirements (17–19 units)
   a) MUS 030A, MUS 030B, MUS 030C
   b) MUS 031A, MUS 031B, MUS 031C
   c) ANTH 001, SOC 001, DNCE 005, or DNCE 007

2. Upper-division requirements (59 units)
   a) Music courses (39–49 units)
      (1) Western Music History: MUS 112A, MUS 112B, MUS 112C, MUS 114, MUS 115, MUS 117, MUS 136, MUS 191 (E-Z)
      (3) Individual Study: MUS 190, MUS 194, MUS 195, MUS 199H
   b) Other upper-division courses (12–24 units)
      (1) Dance History (4–8 units): DNCE 130/ANTH 130, DNCE 141, DNCE 142, DNCE 171 (E-Z), DNCE 172 (E-Z), DNCE 173 (E-Z)
      (2) Anthropology or Sociology (4–8 units)
      (3) English or Media and Cultural Studies (4–8 units)
      (4) Other courses in the Social Sciences, Humanities, or Arts could count
towards these units if the students petition and an advisor’s permission is granted.

Minor

The minor in Music is designed for students who wish to continue their musical studies while pursuing another major. Within the required 24 upper-division units, the minor provides basic skills in music theory and first-level studies in music history and literature while still offering modest flexibility to pursue individual interests.

1. Lower-division preparation: (16 units)
   a) MUS 001 or equivalent
   b) MUS 030A, MUS 030B, MUS 030C

2. Upper-division requirements (24 units)
   a) Eight (8) units from MUS 112A, MUS 112B, MUS 112C
   c) Four (4) additional units in ensemble performance: MUS 160, MUS 161, MUS 162, MUS 163, MUS 164, MUS 165, MUS 166, MUS 168, MUS 169, MUS 170, MUS 171, MUS 172, MUS 174, MUS 175A, MUS 175B, MUS 176, MUS 177

As a freshman or sophomore, the student should complete MUS 030A, MUS 030B, MUS 030C (Harmony). This is a prerequisite for all later studies in the minor. Harmony has a prerequisite of MUS 001 (Introduction to Basic Musical Concepts) or the equivalent.

Two required courses from MUS 112A, MUS 112B, MUS 112C should be completed following MUS 030A, MUS 030B, MUS 030C and not later than the junior year.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program

The Department of Music offers the M.A. and Ph.D. degrees in Music with a specialization in three areas: digital composition, ethnomusicology, and musicology. Students are encouraged to view music in the broad context of culture: communication between the intradisciplinary areas is built into the program, and courses outside the department are either encouraged or required in order to develop an interdisciplinary outlook.

Admission

Students may apply for a terminal M.A. degree. Students intending to pursue a Ph.D. as their final degree objective should apply directly to the Ph.D. program. Students with a B.A. should follow the requirements for the M.A. for the first six quarters.

Students are admitted into the graduate program in the fall quarter only. Though applicants must provide GRE General Test scores, scores for the music subject area are not required. All prospective students must submit an example of their writing.

Composers must also submit musical scores, recordings, or both and include a statement on technical experience. It is required that students entering the graduate program in digital composition have 1) basic computer word-processing and spreadsheet skills, 2) demonstrated proficiency with a computer music notation program, 3) demonstrated proficiency with a sequencer and audio editor, and 4) at least one of the following: programming fluency in a computer language, fluency in a digital audio signal processing prototyping language, hardware experience, analog studio experience, nonlinear video editing experience, music production/studio recording experience, a scientific computing skill, or a multimedia design skill. Composers must also submit recorded evidence of performance ability. This may be either a recording of one or more performances on a preferred instrument or an aspect of the composition portfolio stated above in which the student has a significant performance role in either an acoustic music or digital capacity. Digital composition students may optionally include an additional non-academic writing sample which may be fiction, technical, or business writing.

Musicology and composition students must have an M.A. or undergraduate degree in music, including piano proficiency and musicianship (ear training). Digital composition students must have an M.A. in music or undergraduate degree in music.

Ethnomusicology students must have a background in music or anthropology. Evidence of superior intellectual ability in another field combined with some demonstrable expertise in any musical tradition is also viewed favorably.

Entering graduate students in digital composition and musicology must take an advisory examination. In musicology, admission to full graduate status is contingent upon the removal of any deficiencies in undergraduate preparation as shown by this advisory examination. In digital composition, deficiencies in undergraduate preparation must be completed by the time of the Comprehensive Examination.

Master’s Degree

The M.A. Degree

The Department of Music offers the M.A. degree in Music under Plan I (Thesis).

Requirements. In addition to the coursework indicated below, all students must meet the following requirements.

1. Comprehensive examination. All students must pass a written and oral comprehensive examination testing knowledge over a broad spectrum of their field of study. The ethnomusicology exam covers three broad areas: geocultural area studies, the history of ethnomusicology, and critical issues in ethnography. The digital composition and musicology exams cover three broad areas: music theory, music history and critical issues in theory and/or musicology. Digital composition students must also take a practical examination in basic computing and digital music skills, a composition test, and an entrance audition (instrumental or vocal).

The comprehensive examination can be passed at the M.A. or at the Ph.D. level. Passing the exam at the Ph.D. level is a requirement for students intending to pursue a Ph.D.. Failure to pass the comprehensive examinations after two opportunities constitutes grounds for dismissal from the program.

2. Foreign Language Requirement. Students must demonstrate a reading knowledge of a foreign language, of use in scholarship within their discipline or chosen to support their research and creative interests, with the approval of the department. The requirement can be satisfied either by examination or by enrolling in 4 quarters of a language course with a grade of “B” or better.

3. Additional track requirements. Musicology and ethnomusicology students must present a portfolio containing their CV, and representative seminar and conference papers. The portfolio offers the student a chance to organize their work in a manner that shows both their past performance and their future potential.

The portfolios will be evaluated by the ethnomusicology or musicology faculty, respectively, coordinated by the graduate advisor.

4. Coursework. Each area requires a minimum of 48 units of graduate (200 series) or upper-division undergraduate courses (100 series), these may include up to 8 units of MUS 299 (Thesis Preparation). Twenty four units must be graduate level. None may be MUS 291, MUS 301 or MUS 400.

Performance courses (MUS 160-181) do not count toward the degree, with the exception of
4 units in world music ensembles required of ethnomusicology students (see requirements below). The courses comprising the remaining required units are disposed differently in each of the three areas as specified below.

1. Digital Composition
   a) Core requirements
      MUS 200, MUS 201, MUS 206 or MUS 207B, MUS 256, MUS 258 (repeatable), MUS 265, MUS 293 (6 units), MUS 301, MUS 400
   b) Three of the following repeatable courses:
      MUS 232, MUS 249, MUS 251, MUS 257, MUS 259, MUS 264

2. Ethnomusicology
   a) Core courses
      MUS 200, MUS 207A, MUS 207B, MUS 255, MUS 301, MUS 400
   b) At least two quarters of the following courses:
      MUS 270, MUS 271
   c) Two of the following courses:
      MUS 113, MUS 117, MUS 118, MUS 119, MUS 120, MUS 122, MUS 123, MUS 124, MUS 126, MUS 127, MUS 128, MUS 140, MUS 146
   d) One course in musicology or composition/ theory
   e) Two courses outside the department; may use directed studies (MUS 290) for one.
   f) Four units in one of the following ensembles:
      MUS 168, MUS 169, MUS 170, MUS 174, MUS 175A, MUS 175B, MUS 176

3. Musicology
   a) Core requirements
      MUS 200, MUS 201, MUS 206, MUS 207B, MUS 301, MUS 400
   b) Four courses in the 260s series:
      MUS 262, MUS 263
   c) Two courses outside the Music Department; may use directed studies (MUS 290)
   d) Two of the following courses:
      MUS 118, MUS 126, MUS 137, MUS 153, MUS 207A, MUS 207B, MUS 265, MUS 255, MUS 259, MUS 270

Thesis Students whose degree objective is a terminal M.A. must write a thesis as part of the requirements for graduation. The M.A. thesis consists of an essay of substantial scope that makes an original contribution to the field. For digital composition students the thesis consists of two parts: a musical composition of substantial scope and a prose essay.

Normative time to degree 6 quarters

Doctoral Program
The Department of Music offers the Ph.D. degree in Music. Students are invited by the faculty to continue toward candidacy for the Ph.D. degree on the basis of performance in courses and seminars, the quality of their portfolios, passing the comprehensive examination at the Ph.D. level, satisfactory completion of the M.A. requirements, and the recommendation of the faculty in their track (digital composition, musicology or ethnomusicology), in consultation with the graduate advisor.

Students with an M.A. degree from other universities are eligible for admission. The process of admission is the same as for students with a B.A.

Requirements
1. Foreign language requirement
Musicology and ethnomusicology students must demonstrate a reading knowledge of a second foreign language, of use in scholarship within their discipline or chosen to support their research and creative interests. Students in these concentrations with an M.A. from other universities, who did not have to meet a foreign language requirement, must demonstrate a reading knowledge of two foreign languages during their residency at UCR. Digital composition students are required to demonstrate a reading knowledge of one foreign language.

2. Coursework
Students continuing toward the Ph.D. must take 36 additional units earned in seminars and in MUS 291 and MUS 299 studies geared toward preparation for the qualifying examinations. None may be MUS 301 or MUS 400.

Students entering with an M.A. from another institution must take a minimum of 48 units earned in seminars and directed studies (MUS 290). These must include the following required courses, although waiver may be granted for specific courses on an individual basis, depending on the student’s prior graduate training and pending faculty approval. Students are encouraged to take additional seminars and MUS 291 and MUS 299 courses geared toward preparation for the qualifying examinations.

Ethnomusicology students must meet the course requirements of the M.A. as stated above.

Digital composition students are required to take:
   a) Core requirements
      MUS 200, MUS 201, MUS 206 or MUS 207B, MUS 255, MUS 258 (repeatable), MUS 265, MUS 293 (6 units), MUS 301, MUS 400
   b) Two of the following repeatable courses:
      MUS 232, MUS 249, MUS 251, MUS 257, MUS 259, MUS 264

Musicology students are required to take:
   a) Core requirements
      MUS 200, MUS 201, MUS 206, MUS 207B or MUS 255, MUS 301, MUS 400
   b) Four courses in the 260s series:
      MUS 262, MUS 263

3. Qualifying examinations
Students must take the qualifying examinations, both written and oral, supervised by a faculty committee as stipulated in the regulations of the Graduate Division. The qualifying examinations concentrate on testing advanced skills and knowledge of specialized fields. Digital composition students are also expected to pass a test containing ear-training, keyboard, and basic compositional skills. Qualifying examinations are normally taken in the ninth quarter for students entering with a B.A., and in the sixth quarter, for students entering with an M.A.

4. Dissertation prospectus
Students must write a dissertation prospectus as part of the written qualifying examinations.

Advancement to candidacy for the Ph.D. degree
Students advance to candidacy for the Ph.D. degree once they have passed all coursework and the written and oral qualifying examinations.

Dissertation and final oral examination
A dissertation to be presented as prescribed by the Graduate Council is prepared under the direction of the candidate’s dissertation committee. After completion of the dissertation, the candidate may be examined in its defense by the dissertation committee.

Normative time to degree
For students in Digital Composition and Musicology: 15 quarters for students entering with a B.A. degree; 12 quarters for students entering with an M.A. degree. For students in Ethnomusicology: 21 quarters for students entering with a B.A. degree; 15 quarters for students entering with an M.A. degree.

The descriptions of many courses listed below carry the phrase “or consent of instructor.” This is meant to encourage musically qualified students who are not majors to participate in the courses and activities of the department. Any nonmajor having interest in a specific course should confer with the instructor about the qualifications for enrollment.

Lower-Division Courses
MUS 001 Basic Musical Concepts (4) Lecture, 3 hours; discussion, 1 hour. Fundamentals of music, including notation, rhythm, major and minor scales, intervals, tonality, triads. Includes ear training, sight singing, and elementary analysis. Designed for students who need basic musical literacy. Open to nonmajors and those with no previous musical background.

MUS 002 Introduction to Western Music (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of the major styles and genres of Western music. Emphasis on creative and analytical listening without the use of musical notation. Designed for the general student with an interest in music and cultural practice. No previous musical background required.

MUS 003 Introduction to Opera (4) Seminar, 3 hours; assigned listening, 1 hour. Prerequisite(s): none. A survey of major operas between the seventeenth and twentieth centuries. Introduces dramatic and musical structures of opera, value of performance, and operatic conventions shared by composers, singers, and audience.

MUS 005 Women in Music (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey
MUS 006 Introduction to World Music (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A survey of people, identity, and music making. Includes listening to music from many cultural contexts. Also covers a variety of scholarly topics in world music. Cross-listed with ANTH 006.

MUS 007 Music in Movies and TV (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An exploration of popular film and TV soundtrack music, emphasizing drama and musical style. Scene study features such films as The Matrix, Casablanca, The X-Files, and Altered States. Cross-listed with MCS 009.

MUS 008 Popular Music Cultures of the United States (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Explores the so-called popular musics and music cultures of the United States and the social history of these cultures to provide students with a sonic understanding of these extremely fractured, ever reconstituted “United States.”

MUS 009 Introduction to Digital Music (4) Lecture, 2 hours; workshop, 2 hours. Teaches basic theory and practical skills regarding digital audio, recording, editing, and processing sound. Students work with audio and MIDI sequencers with the goal of writing musical compositions with computer notation programs.

MUS 010 Advanced Fundamentals (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 001 or a passing score on an equivalent examination or consent of instructor. A study of advanced musical fundamentals.

MUS 011 Interactive Digital Music and Multimedia Performance (4) Lecture, 3 hours; individual study, 4 hours. An introduction to interactive digital music and multimedia performance. Includes development of individual and collaborative projects using sound, video, dance, and interactive technology. Requires a laptop and a license of the software Max/Msp/Jitter. No previous knowledge of music or technology required. Course is repeatable to a maximum of 12 units.

MUS 012 Introduction to Music and Culture (4) Lecture, 3 hours; extra activity, 2 hours; activity, 1 hour; listening activity, 1 hour per week. Prerequisite(s): none. Introduces methods and skills for understanding music in society. Includes an overview of music’s social roles, including personal identity, nationalism, and political movements. Students listen to music of multiple genres and geocultural areas, participate in activities and workshops, and develop writing skills to describe and analyze musical practices.

MUS 013 Popular Music Analysis: Text and Context (4) Colloquium, 2 hours; seminar, 1 hour; workshop, 1 hour. Prerequisite(s): none. A textual and critical analysis of mass-mediated popular music. Explores theories of popular culture and traditional approaches from Western music theory as applied to the study of creation, interpretation, and reception of popular music.

MUS 014 Popular Musics of the World (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces issues surrounding popular and urban musics of the world, focusing on three major geocultural areas: Africa, Asia, and the Americas. Emphasizes the relationship between mass-mediated music and issues of cultural hegemony, resistance, and subversion. Analyzes the cultural impact of media technology on music performance and reception. Cross-listed with ETST 014 and URST 014.

MUS 015 Latin American Folk and Popular Styles (4) Lecture, 2 hours; discussion, 1 hour; assigned listening, 3 hours. Prerequisite(s): none. Introduction to the vast array of folk and popular styles of music in Latin America, with an emphasis on cultural and ethnic interaction and exchange in the context of Latin American history, politics, and society. Cross-listed with LNST 015.

MUS 016 Latin American Classical Heritage (4) Lecture, 2 hours; discussion, 1 hour; assigned listening, 3 hours. Prerequisite(s): none. Survey of the rich heritage of Latin American classical music from Renaissance sacred polyphony to contemporary styles. Emphasis on the gradual emergence of Latin American music from European domination and the establishment of distinctive national traditions in the post-colonial era. Cross-listed with LNST 016.

MUS 017 Music of Mexico (4) Lecture, 3 hours; discussion, 1 hour; assigned listening, 2 hours. Prerequisite(s): musical training and knowledge of Spanish is useful, but not required. Covers music from 1521 to the present day. Explores the rich musical tradition of Mexico, as well as the relationship between its art and popular music. Cross-listed with LNST 017.

MUS 018 Music of Spain (4) Lecture, 3 hours; term paper, 1 hour; extra reading, 2 hours. Prerequisite(s): none. A survey of Spanish music from the Middle Ages to the present, covering folk and popular styles (especially flamenco) as well as developments in classical music through the major periods. Examines music in its historical and cultural context. Knowledge of Spanish and music not required.

MUS 020 Music of Scotland (4) Seminar, 3 hours; term paper, 1 hour; assigned listening, 2 hours. Examines the rich heritage of Scottish music from the Middle Ages to the modern day, including folk, popular, and classical traditions on the music of the Scottish highlands and the bagpipe. Explores the role of music during war and peace within the context of Scottish history.

MUS 021 Cantaireachd: Scottish Classical Music (4) Lecture, 3 hours; term paper, 1 hour per quarter; practice, 3 hours per week. Prerequisite(s): none. Examines the Scottish classical music called Cantaireachd. In-depth study of the music, its leading performers and composers, within the context of Scottish history and culture. Special emphasis on the singing of the music as solos and as a choir.

MUS 030A Harmony (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 010 or a passing score on an equivalent examination or consent of instructor; concurrent enrollment in MUS 031A or MUS 031B or MUS 031C or MUS 131A or MUS 131B or MUS 131C. The study of harmony through melodic and rhythmic practices.

MUS 030B Harmony (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 030A or consent of instructor; concurrent enrollment in MUS 031A or MUS 031B or MUS 031C or MUS 131A or MUS 131B or MUS 131C. Diatonic and chromatic harmony of the common practice period.

MUS 030C Harmony (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 030B or consent of instructor; concurrent enrollment in MUS 031A or MUS 031B or MUS 031C or MUS 131A or MUS 131B or MUS 131C. Diatonic and chromatic harmony of the common practice period.

MUS 031A Music Theory and Musicianship I (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 001 or consent of instructor. Study and practice of music theory. Includes ear training, sight singing, melodic and harmonic dictation, rhythm skills, keyboard skills, diatonic and chromatic harmony, and music styles of different periods.

MUS 031B Music Theory and Musicianship II (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 031A or consent of instructor. Study and practice of music theory. Includes ear training, sight singing, melodic and harmonic dictation, rhythm skills, keyboard skills, diatonic and chromatic harmony, and music styles of different periods.

MUS 031C Music Theory and Musicianship III (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 031B or consent of instructor. Study and practice of music theory. Includes ear training, sight singing, melodic and harmonic dictation, rhythm skills, keyboard skills, diatonic and chromatic harmony, and music styles of different periods.

MUS 073A Dance of Mexico (2) Studio, 3 hours; extra reading, 1 hour; screening, 1 hour; individual studio, 1 hour. Prerequisite(s): none. Covers the traditional dances of Mexico at the beginning level. Includes attendance at dance concerts outside of class. Recommended for both nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with LNST 073A.

MUS 073B Dance of Mexico (2) Studio, 3 hours; extra reading, 1 hour; screening, 1 hour; individual studio, 1 hour. Prerequisite(s): LNST 073A/MUS 073A is recommended. Covers the traditional dances of Mexico at the beginning level. Includes attendance at dance concerts outside of class. Recommended for both nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with LNST 073B.

MUS 080 (E-Z) Private Instruction: Voice, Keyboard, and Strings (1) Studio, .5 hours; individual study, 5-10 hours. Prerequisite(s): consent of instructor. Consists of a half-hour lesson and practice for 5 to 10 hours each week per (<i>see the note regarding fees under the Major Requirements section</i>). Offered as demand indicates. E. Voice; F. Classical Piano; G. Jazz Piano; H. Harpsichord; I. Carillon; K. Jazz Guitar; L. Electronic Bass Guitar; M. Lute; N. Classical Guitar; O. Violin da gamba; P. Piano Proficiency; Q. Organ; R. Violin; S. Violà; T. Violoncello; U. Double Bass Vol; V. Harp. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of performance before a jury or at a recital. Segments are repeatable.

MUS 081 (E-Z) Private Instruction: Brass, Woodwinds, Percussion, and Other Instruments (1) Studio, .5 hours; individual study, .5 hours. Prerequisite(s): consent of instructor. Consists of a half-hour lesson and practice for 5 to 10 hours each week (<i>see the note regarding fees under the Major Requirements section</i>). Offered as demand indicates. E. Trumpet; F. Trombone; G. Tuba; I. French Horn; K. Flute; M. Oboe; L. Clarinet; M. Bassoon; N. Saxophone; O. Recorder; P. Percussion; R. Bagpipe; S. Scottish Drums; T. Caribbean Steel Pan. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of performance before a jury or at a recital. Segments are repeatable.

Upper-Division Courses

MUS 111 Music Resources and References (2) Studio, 2 hours; extra reading, 1 hour; individual study, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor and/or successful completion of one or more introductory course(s) in the discipline. Introduces the methods of finding and using music resources and references. Explores the musical resources of the UCR libraries and beyond. Topics include but are not limited to UCR’s music collections (print, online, and audio formats) including scores, databases, reference sources, journals, and multimedia.
MUS 112 History of Western Music: Middle Ages to 1700 (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 030A, MUS 030B, MUS 030C; or consent of instructor. An intensive survey of music history and literature from the Middle Ages to 1700. Involves score reading, listening, and analysis of pieces with emphasis on historical characteristics.

MUS 112 History of Western Music: Twentieth Century (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 030A, MUS 030B, MUS 030C; or consent of instructor. An intensive survey of music history and literature from the 1700 to 1900. Involves score reading, listening, and analysis of pieces with emphasis on historical characteristics.

MUS 113 Brazilian Music (4) Lecture, 3 hours; extra reading, 2 hours; assigned listening, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the role of music in achieving altered states (dreams, meditation, trance, and possession), as a constitutive site for ethnic identities and emergent politics of Asian America. Examines expressive culture in the musical styles of these regions. A background in Western music is not required.

MUS 114 Opera (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Study of selected operas from the Western repertory for 1600 to the present.

MUS 115 Renaissance and Baroque Music of Latin Europe and Latin America (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): MUS 112A, MUS 112B, MUS 112C; or upper-division standing and consent of instructor. Study of the sacred and secular musics of Italy, France, the Iberian Peninsula, and Latin America, 1450-1750. Emphasis is on the repertoires, styles, and genres that are relevant to understanding the musical past of the Americas, from (Alta) California to South America.

MUS 117 Music and Ritual (4) Lecture, 3 hours; written work, 1 hour; fieldwork, 20 hours per quarter. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of music in cultural practices in a ritual context. Incorporates readings ethnomusicology, anthropology, folklore, and performance studies. Addresses how music operates within specific rituals and how it relates to cosmology. Also examines the role of music in ceremonial acts (dreams, meditation, trance, and possession), as well as its function as a constituent site for ethnic identities and emergent politics of Asian America.

MUS 118 Music, Politics, and Social Movements (4) Lecture, 3 hours; extra reading, 2 hours; assigned listening, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of music in social and political movements. Emphasis is on understanding the textual and musical features of politico-cultural music within its historical, social, and cultural context.

MUS 119 Javanese Music and Culture (4) Lecture, 3 hours; term paper, 1 hour; online discussion and listening, 2 hours per week. Prerequisite(s): upper-division standing or consent of instructor. Examines Javanese traditional and contemporary music. Focuses on the music of the Javanese gamelan and its relation to larger cosmological themes. Other topics include rural versus court traditions, popular music, mass media, Hindu roots, modernity, and local practices versus global trends.

MUS 120 Contemporary Native American Music (4) Lecture, 3 hours; extra reading, 2 hours; listening to prepared audio examples of music, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the music of Native American peoples today, the contexts and behaviors with which such music is associated, and the ways these elements are discussed within Native communities. Emphasis is on “Pan Indian” music, including music for pow wows and syncretic religious music, and Native popular music, including folk, country, rock, and hip-hop.

MUS 122 Music and Performance in the Andes (4) Lecture, 3 hours; extra reading, 2 hours; assigned listening, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the music of the central Andean countries, including indigenous, mestizo, Creole, and Afro-Andean traditions. Music is presented as part of a broader realm of performance in the Andes, incorporating dance, ritual, drama, and popular culture, and its relationship with notions of identity, nationalism, modernity, folklore, and politics.

MUS 123 Southeast Asian Performance (4) Lecture, 3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces the music of Southeast Asia in a cross-cultural context. Incorporates readings from ethnomusicology, anthropology, folklore, and performance studies. Addresses how music operates within specific rituals and how it relates to cosmology. Also examines the role of music in ceremonial acts (dreams, meditation, trance, and possession), as well as its function as a constituent site for ethnic identities and emergent politics of Asian America.

MUS 124 Music of Asian America (4) Lecture, 3 hours; music listening, 1 hour; individual study, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores music as a window on the cultural politics of Asian America. Examines music cross-culturally in a ritual context. Incorporates readings from ethnomusicology, anthropology, folklore, and performance studies. Addresses how music operates within specific rituals and how it relates to cosmology. Also examines the role of music in ceremonial acts (dreams, meditation, trance, and possession), as well as its function as a constituent site for ethnic identities and emergent politics of Asian America.

MUS 126 Gender, Sexuality, and Music in Cross-Cultural Perspectives (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of gendered perceptions from a number of cultures. Explores gender-specific music and notions of gender that are often constructed, maintained, transmitted, and transformed through music and performance cross-culturally. Cross-listed with ANTH 177 and GSST 126.

MUS 127 Music Cultures of Southeast Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre and ritual in the Philippines, Indonesia, Malaysia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Designed for the student interested in the performing arts and cultures of mainland and insular Southeast Asia. Cross-listed with ANTH 176, AST 127, DNCE 127, and ETST 172.

MUS 130A Counterpoint (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 138; concurrent enrollment in MUS 031A or MUS 031B or MUS 031C or MUS 131A or MUS 131B or MUS 131C. Study of counterpoint techniques. Analysis of models of counterpoint developed in the sixteenth century, with exercises to develop manipulative skills in modal counterpoint.

MUS 130B Counterpoint (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): concurrent enrollment in MUS 031A or MUS 031B or MUS 031C or MUS 131A or MUS 131B or MUS 131C. Study of contrapuntal techniques. Analysis of models of counterpoint developed in the sixteenth century, with exercises to develop manipulative skills in modal counterpoint.

MUS 131A Music Theory and Musicianship II (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 031C. Study and practice of music theory. Includes advanced ear training, sight singing, melodic and harmonic dictation, rhythm, keyboard skills, twentieth-century harmony, twelve-tone serialism, atonality, and electronic and computer music.

MUS 131B Music Theory and Musicianship II (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 131A. Study and practice of music theory. Includes advanced ear training, sight singing, melodic and harmonic dictation, rhythm, keyboard skills, twentieth-century harmony, twelve-tone serialism, atonality, and electronic and computer music.

MUS 131C Music Theory and Musicianship II (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MUS 131A. Study and practice of music theory. Includes advanced ear training, sight singing, melodic and harmonic dictation, rhythm, keyboard skills, twentieth-century harmony, twelve-tone serialism, atonality, and electronic and computer music.

MUS 132 Opera (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 030A, MUS 030B, MUS 030C; or consent of instructor. Investigation of the technical and color possibilities of various instruments with scoring projects.

MUS 134 Orchestration (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): MUS 133 or consent of instructor. Advanced scoring projects with emphasis on stylistic aspects and relationship of orchestral color to form.

MUS 136 Jazz Theory (4) Lecture, 3 hours; extra reading and listening to music tapers, 3 hours. Prerequisite(s): MUS 030A, MUS 031A or MUS 031B or MUS 031C; or consent of instructor. Examines concepts and practices in harmony, melody, rhythm, and form as they relate to jazz and other popular idioms. Provides basic ear training for the recognition of changes in traditional jazz tunes, primary blues forms, modulations, and classic jazz bridges.

MUS 137 Composition Seminar (4) Seminar, 3 hours; individual study. Prerequisite(s): MUS 030A, MUS 030B, MUS 030C; or consent of instructor. Assists in the successful composition of pieces in a variety of genres and media. Includes compositional models and the creation of musical scores. Course is repeatable to a maximum of 12 units.

MUS 138 Form and Analysis in Western Music (4) Lecture, 3 hours; assigned special projects, 3 hours. Prerequisite(s): MUS 030A, MUS 030B, MUS 030C; or consent of instructor. Different approaches to analysis using works in contrasting styles. Study of the dynamic design produced by the musical elements functioning in context.

MUS 140 American Musical Subcultures: A Genealogy of Rock (4) Lecture, 3 hours; extra reading, 0-2 hours; listening, 2-3 hours. Prerequisite(s): upper-division standing or consent of instructor. A historical and cultural overview of the genre of American popular music known as “rock.” Covers voices ranging from musical form and structure, aesthetics, and audio technology to community and individualism, gender and racial identity, political resistance, and the music industry. Cross-listed with HISA 139.

MUS 145A Digital Audio and Sound (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. College math is recommended. An introduction to the theory and practice of manipulating digital sound. Provides an understanding of digital audio devices associated with
MUS 145B Digital Audio and Sound (4) Lecture, 3 hours; laboratory, 4 hours. Prerequisite(s): MUS 145A or theory proficiency and practical experience in digital audio. Advanced theory and practice of manipulating digital sound. Includes sound processing, synthesis, and composition, as well as multimedia and audio-visual composition and interactive media production. Provides an understanding of dedicated software for sound, music, and multimedia, including the programming environment Max/MSP. Course is repeatable to a maximum of 8 units.

MUS 147 Advanced Contemporary Analysis: Music after 1945 (4) Lecture, 3 hours; activity, 3 hours. Prerequisite(s): MUS 138 or consent of instructor. A study of the diverse and sometimes contradictory developments that shaped the history of music in the West. Cross-listed with DNTC 155 (E-Z).

MUS 150A Instrumental Technique: Strings (2) Lecture, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Study of basic techniques of orchestral string instruments.

MUS 150B Instrumental Technique: Woodwinds (2) Lecture, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Study of basic techniques of orchestral woodwind instruments.

MUS 150C Instrumental Technique: Brass (2) Lecture, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Study of basic techniques of orchestral brass instruments.

MUS 150D Instrumental Technique: Percussion (2) Lecture, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Study of basic techniques of orchestral percussion instruments.

MUS 150E Instrumental Technique: Voice Studio (2) Studio, 4 hours. Prerequisite(s): MUS 60E and MUS 180E. An introduction to performance that provides singers an opportunity to present and perform the material on which they are currently working. Also reviews the International Phonetic Alphabet and how it may be applied to improve a singer’s pronunciation and understandability by an audience. Course is repeatable to a maximum of 4 units.

MUS 151 Orchestral Conducting (4) Lecture, 3 hours; studio, 2-3 hours. Prerequisite(s): consent of instructor. Study of choral repertoire, rehearsal methods, voice production, and techniques of conducting.

MUS 152 Choral Conducting (4) Lecture, 3 hours; studio, 2-3 hours. Prerequisite(s): consent of instructor. Study of choral repertoire, rehearsal methods, voice production, and techniques of conducting.

MUS 153 Homosexuality and Music (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Study of choral repertoire, rehearsal methods, voice production, and techniques of conducting.

MUS 154 (E-2) Critical Approaches to the Western Canon (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): MUS 112A, MUS 112B, MUS 112C, or upper-division standing and consent of instructor. Critical study of selected repertoires within Western music, and the multiple and potentially problematic aspects of their construction as iconic and paradigmatic. E. Beethoven: The Music and the Myth.

MUS 155 (E-2) Seminar in Dance and Music (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces relationships and representations between music and dance. East literature. Normal and graph-ic form, compositional strategies, hybridization of style, cultural meanings and registers in which these were made, the agencies such representations enabled, interpretive communities, and cross-cultural interac-tions. Cross-listed with DNTC 155 (E-2).

MUS 160 Orchestra (1-2) Studio, 2-6 hours. Prerequisite(s): consent of instructor. Study and performance of standard orchestral literature. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. May be repeated for credit.

MUS 161 Collegium Musicum (1-2) Activity, 2-6 hours. Prerequisite(s): consent of instructor. Study and performance of Medieval, Renaissance, and Baroque music. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. May be repeated for credit.

MUS 162 Choral Society (1-2) Studio, 2-6 hours. Prerequisite(s): consent of instructor. Study and performance of standard choral literature. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. May be repeated for credit.

MUS 163 Chamber Singers (1-2) Studio, 2-6 hours. Prerequisite(s): consent of instructor. Study and performance of works selected from different genres and periods. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 164 Jazz Ensemble (1-2) Studio, 2-6 hours. Prerequisite(s): consent of instructor. Study and performance of literature for large jazz ensemble and stage band, and preparation of improvised solos. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 165 Concert Band (1-2) Studio, 2-6 hours. Prerequisite(s): consent of instructor. Study and performance of literature for the concert band. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 166 (E-2) Chamber Music (1-2) Studio, 2-3 hours. Prerequisite(s): admission by audition. Study and performance in varied small ensembles. E. Musical Instrument Digital Interface (MIDI) Ensemble; F. Improvisatory Ensemble; G. Chamber Music. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 167 Recital (1-2) rehearsals, 6-12 hours. Prerequisite(s): approval of music faculty; limited to advanced performers only. Preparation and perfor-mation of a formal recital. Graded Satisfactory (S) or No Credit (NC).

MUS 168 Javanese Gamelan Ensemble: Beginning (2) Studio, 6 hours. Prerequisite(s): upper-division standing and consent of instructor. Study and performance of the Central Javanese gamelan, consisting mainly of gongs and gong-chime instruments. Readings and discussions focus on Javanese culture. Course is repeatable. Cross-listed with AST 168 and SEAS 168.

MUS 169 Taiko Ensemble (1) Studio, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of Japanese drumming. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with AST 169.

MUS 170 Rondalla Ensemble (1-2) Studio, 2-4 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of the Filipino rondalla, an ensemble consisting of various sizes of lute-like guitar-like instruments. Discussions focus on Filipino culture. Course is repeatable. Cross-listed with AST 170 and SEAS 170.

MUS 172 Chamber Orchestra (1) Studio, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Participation in a performance ensemble comprised mainly of strings, with occasional winds and horns as needed. Includes string techniques instruction. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 4 units.

MUS 174 Latin American Music Ensemble (1-2) Studio, 2-6 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of select Latin American folk music traditions, with special emphasis on music of the Andean region. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 175A Beginning Mariachi Ensemble (1-2) Studio, 3 hours; individual studio, 1-2 hours. Prerequisite(s): upper-division standing or consent of instructor. A study and performance of selections from the Mexican folk music tradition. Emphasizes mariachi and son jarocho. Includes popular corridos and rancheras. Students who participate in a performance submit a written review receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

MUS 175B Intermediate Mariachi Ensemble (1-2) Studio, 3 hours; individual studio, 1-2 hours. Prerequisite(s): MUS 175A or consent of instructor. A study and performance of selections from the Mexican folk music tradition. Emphasizes mariachi and son jarocho. Includes popular corridos and rancheras. Students who participate in a performance receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

MUS 176 Bagpipe Ensemble (1) Studio, 2 hours. Prerequisite(s): consent of instructor. Study and performance of Scottish bagpipe music. Students who participate in a performance receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

MUS 177 Music of North India:Tabla (drums) (1-2) Studio, 2-4 hours. Prerequisite(s): upper-division standing and consent of instructor. Study and performance of the tradition of the Hindustani/North Indian tabla, which are a pair of drums that accompany improvised solos on melody instruments such as the sitar. Considers the tabla as a virtuosic solo instrument. Course is repeatable.

MUS 178 Bluegrass Ensemble (1) Studio, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. The study and performance of bluegrass music (instrumental and vocal) from the Appalachian region. Explores both traditional and contemporary styles. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MUS 179 Music Improvisation Ensemble (1-2) Studio, 3-6 hours. Prerequisite(s): upper division standing and consent of instructor. Participation in an improvisation-
al ensemble comprised of electronic (preferably laptop computer based) and/or electro-acoustic musical instruments. rehearsals will cover a range of improvisational techniques from highly-structured to free form and from tonality to noise experimentation. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 24 units.

MUS 180 (E-Z) Private Instruction: Voice, Keyboard, and Strings (2) Studio, 1 hour; individual study, 5-10 hours. Prerequisite(s): consent of instructor. Consists of an one-hour lesson and practice for 5 to 10 hours each week (<see note regarding fees under the Major Requirements section>), offered as demand indicates. E. Voice; F. Classical Piano; G. Jazz Piano; I. Harpsichord; J. Clarion; K. Jazz Guitar; L. Electric Bass Guitar; M. Lute; N. Classical Guitar; O. Viola da gamba; P. Piano; Q. Organ; R. Double Bass; S. Viola; T. Violoncello; U. Double Bass Viol; V. Harp. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of performance before a jury or at a recital. Segments are repeatable.

MUS 181 (E-Z) Private Instruction: Brass, Woodwinds, Percussion, and Other Instruments (2) Studio, 1 hour; individual study, 5-10 hours. Prerequisite(s): consent of instructor. Consists of an one-hour lesson and practice for 5 to 10 hours each week (<see note regarding fees under the Major Requirements section>), offered as demand indicates. E. Trumpet; F. Trombone; G. French Horn; H. Flute; K. Oboe; L. Clarinet; M. Bassoon; N. Saxophone; O. Recorder; P. Percussion; R. Bagpipe; S. Scottish Drums; Z. Caribbean Steel Pan Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of performance before a jury or at a recital. Segments are repeatable.

MUS 182 UCR Chorale (1-2) Studio, 3-6 hours. Prerequisite(s): consent of instructor. Introduces the practice of choral singing and expression. Explores a broad variety of repertoire, genres, and styles of choral music from the Renaissance to the contemporary period. Also addresses vocal techniques and musical notation. Course is repeatable as content changes to a maximum of 24 units.

MUS 183 Percussion Ensemble (1-2) Studio, 2-4 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of percussion ensemble literature. Course is repeatable.

MUS 184 Genealogy of Hip Hop (4) Lecture, 3 hours; extra reading, 3 hours; listening, 2 hours per week. Prerequisite(s): upper-division standing or consent of instructor. Introduces hip hop culture from its origins to its contemporary global spread. Focuses particularly on rap music, addressing themes evolved in hip hop practice, particularly regionalism, feminism, gender identity, racialization, and globalization.

MUS 185 Arts, Management, and Community (4) Lecture, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to business and arts management including the study of film and television production, stage management, and music production. Offers hands-on experience for practicing management skills working in partnership with local organizations and artists of Riverside and the Inland Empire. Cross-listed with TFDP 185S, Credit is awarded for only one of MUS 185/TFDP 185 or MUS 185S/TFDP 185S.

MUS 185S Arts, Management, and Community (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to business and arts management including the study of film and television production, stage management, and music production. Offers hands-on experience for practicing management skills working in partnership with local organizations and artists...
MUS 258 Composition Seminar (4) Seminar, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Individual projects and issues in musical composition. Course is repeatable.

MUS 259 Musical Semiotics: Approaches to Meaning and Form (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Study of musical semiotics focusing on recent theories and related areas such as cybernetics, cognitive science, and related fields. Emphasis is usually on theory and methodology or the study of particular regions or performance traditions. Theme varies each quarter. Course is repeatable to a maximum of 8 units.

MUS 270 Special Topics in Ethnomusicology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on current scholarship in ethnomusicology and related fields. Emphasis is usually on theory and methodology or the study of particular regions or performance traditions. Theme varies each quarter. Course is repeatable to a maximum of 8 units.

MUS 271 Area Studies Research in Music (4) Seminar, 3 hours; extra reading, 2 hours; listening, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Focuses on historical and ethnographic literature of particular geographical areas. Discusses scholarly literature on music (and expressive culture generally, including dance, theater, and ritual) of a particular geo-cultural region. Course is repeatable as topics change to a maximum of 8 units.

MUS 290 Directed Studies (1-6) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MUS 291 Individual Study in Coordinated Areas (1-6) Individual study, 6-25 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. A program of study designed to assist graduate candidates who are preparing for M.A. comprehensive or Ph.D. qualifying examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

MUS 292 Concurrent Analytical Studies in Music (1-4) Prerequisite(s): graduate standing; approval of instructor and graduate advisor. Each 292 course will be taken concurrently with some 100-series course but on an individual basis. It will be devoted to research, criticism, and written work of a graduate order commensurate with the number of units elected. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

MUS 293 Composition Practicum (1) Lecture, 1 hour; practicum, 8 hours per quarter; individual study, 3 hours; studio, 16 hours per quarter. Prerequisite(s): graduate standing or consent of instructor. A series of performance activities and appreciation for composers. Includes production of a composition concert and attendance at designated presentations in music and scholarship. Addresses career and job market guidance. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

MUS 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor; graduate advisor. Individual graduate student research under the sponsorship of specific faculty members. Addresses topics and selected problems in the theoretical and historical research in music not directly related to student's thesis. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MUS 299 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MUS 301 Directed Studies in the Teaching of Music (3) Seminar, 2 hours; consultation, 1 hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluation required of new Music teaching assistants. Covers instructional methods and classroom/section activities. Conducted by department faculty. Graded Satisfactory (S) or No Credit (NC).

MUS 302 Teaching Practicum (1-4) Clinic, 1 hour; practicum, 1 hour; lecture, 2 hours. Prerequisite(s): appointment as a teaching assistant in Music; graduate standing. Supervised teaching in undergraduate Music courses. Requirements of all Music teaching assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

MUS 400 Research and Professional Development Workshop (1) Workshop, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Addresses recent trends and methods of research. Covers strategies for job placement and public speaking. Organized in conjunction with the Music Graduate Students Association. Topics presented by faculty and guest lecturers. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 18 units.
NASC 191S Seminar in Sacramento (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor; admission to the UCR Center at Sacramento Program. Examines aspects of the Sacramento area, including cultural, political, and governmental institutions and the sciences, arts, and media. Requires a substantial research paper or project. The student is guided independent work drawing on the unique aspects of Sacramento. Required of participants in the UCR Center at Sacramento Program. Cross-listed with ENGR 191S and HASS 191S.

NASC 192 Careers in Science and Mathematics Education (1) Seminar, 1 hour. Prerequisite(s): upper-division standing or consent of instructor; consent of instructor is required for students repeating the course. Covers preparation for a career in mathematics and science teaching. Includes job search strategies. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 2 units.

NASC 198 R’Course - Variable Topics (1) activity hours vary per R’Course proposal. Prerequisite(s): permission needed from department. An opportunity for UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change for a maximum of 8 units.

NASC 198-I Individual Internship in the Natural and Agricultural Sciences (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): upper-division standing in the College of Natural and Agricultural Sciences (CNAS); consent of instructor. An internship to provide CNAS students with on-the-job experience in government, industry, or clinical laboratories. Each individual project must be approved by the CNAS associate dean and the laboratory director where the internship is to be carried out. Requires a written report. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

Nematology

Subject abbreviation: NEM

College of Natural and Agricultural Sciences

Isgouhi Kaloshian, Ph.D. Chair
Department Office, 2317 Webber Hall
(951) 827-3913
nematology.ucr.edu

Professors
Isgouhi Kaloshian, Ph.D.
Philip A. Roberts, Ph.D.

Professors Emeriti
James G. Baldwin, Ph.D.
Reinhold Mandava, Ph.D.
Edward G. Plater, Ph.D. (Nematology/Biology)
Seymour D. Van Gundy, Ph.D. (Nematology/Plant Pathology)

Associate Professor
Paul De Ley, Ph.D.

Assistant Professors
Holly M. Bik, Ph.D.
Adler R. Dillman, Ph.D.

**

Lecturers
J. O. Becker, Ph.D.
Antoon T. Plieeg, Ph.D.
Andreas Westphal, Ph.D.

Affiliated Faculty
Michael V. McKenny, Ph.D. (Emeritus)

Cooperating Faculty
Morris F. Maduro, Ph.D. (Biology)

Nematology is the study of roundworms, the most genetically diverse invertebrate phylum that occurs worldwide in virtually every environment. Only about 3 percent of all species have been studied or identified, and these include significant parasites of humans, animals, and plants. A primary mission of the Department of Nematology is to develop environmentally sound approaches to manage nematodes that worldwide cause nearly $100 billion annual damage to crops. Other objectives are to use nematodes that benefit agriculture and the environment as agents of nutrient cycling and soil fertility and for biological control of some insect pests. Additional objectives focus on nematodes as fundamental models for addressing basic biological questions in genetics, development, and molecular biology. The department offers graduate and postgraduate opportunities in biocatalysis, ecology, genetics, molecular biology, physiology, and systematics. It offers specific expertise in applied nematode problems of subtropical and desert agriculture.

A graduate program in Nematology is offered within a broad biological context. Students are enrolled in a more general department or interdepartmental program that provides a core of graduate courses. The general departments may include Biology, Botany and Plant Sciences, Entomology, Plant Pathology and Microbiology, and Environmental Sciences as well as a wide range of interdepartmental programs. Dissertation research opportunities, major research professor, curriculum advisor, and specific courses are provided by the Department of Nematology. Consent of instructor is required.

Upper-Division Courses

NEM 120 Soil Ecology (3) Lecture, 3 hours. Prerequisite(s): BIOL 002; or both BIOL 005A and BIOL 05LA; both CHEM 010LC and CHEM 011; or both CHEM 010HC and CHEM 011HC; ENSC 100; or consent of instructor. Examination of soil biota and their relationships with plants and the soil environment. Emphasizes soil biotic interactions that influence soil fertility, plant disease, and plant growth. Examines the importance of the different microbial and fungal groups from the rhizosphere to the ecosystem level. Cross-listed with ENSC 120, De Ley

NEM 159 Biology of Nematodes (3) W Lecture, 2 hours; discussion and demonstration, 1 hour per week. Prerequisite(s): BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 010HC, CHEM 006C and CHEM 058LC or CHEM 088HC and CHEM 088LC; MATH 007B or MATH 009B or MATH 091B; PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics. An introduction to the biology of nematodes. Topics include the morphology, physiology, development, genetics, behavior, and ecology of nematodes from parasitic and free-living habitats. In the discussion and demonstration section, students observe the comparative morphology and biology of nematodes and give oral presentations on selected nematode life histories. Cross-listed with BIOL 159, Bik, De Ley

NEM 190 Special Studies (1-4) Individual study, 3-12 hours. Prerequisite(s): consent of instructor and Department Chair. Individual study, directed by a faculty member, to meet special curricular needs. A written report is required. Course is repeatable.

NEM 197 Research for Undergraduates (1-4) Laboratory, 3-12 hours. Prerequisite(s): departmental research standing or consent of instructor. Research in nematology with the guidance of a Nematology faculty member. A written report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

NEM 199 Senior Research (2-4) F, W, S Laboratory, 6-12 hours. Prerequisite(s): senior standing, a grade of “B+” or better in an upper-division Nematology course, a grade of “B+” or better in an upper-division Nematology course; or consent of instructor. Individual research on a problem relating to Nematology. A written proposal signed by the supervising faculty member must be approved by the major advisor and the department chair and a written report filed with the supervising faculty member. Course is repeatable to a maximum of 9 units.

Graduate Courses

NEM 205 Identification of Plant Parasitic Nematodes (1) Summer (one week only) Lecture, 5 hours; laboratory, 25 hours. Prerequisite(s): graduate standing or consent of instructor; consent of instructor. Course on morphological identification of economically important plant parasitic nematodes in Tylenchida and Dorylaimida using dissecting and bright field microscopy. Includes preparation of microscope slides, diagnosis of field samples, and use of diagnostic keys. Offered in summer only. Baldwin

NEM 206 Phytopathogens: Nematodes (2) S Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examination of plant-parasitic nematodes; biology, pathogenesis. Cross-listed with PLPA 206. Roberts

NEM 250 Seminar in Nematology (1) Seminar, 1 hour. Prerequisite(s): consent of instructor. Lectures and discussions by visiting scientists, staff and graduate students on topics in nematology. Normally graded Satisfactory (S) or No Credit (NC), but students may petition instructor for a letter grade on the basis of presentation of a formal seminar.

NEM 270 Special Topics in Nematology (1) Seminar, 2 hours. Prerequisite(s): consent of instructor. Discussion of current literature within special areas of nematology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

NEM 290 Directed Studies (1-6) Individual studies on specially selected topics in nematology under the direction of a staff member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

NEM 297 Directed Research (1-6) Experimental studies on specially selected topics in nematology under the direction of a staff member. Graded Satisfactory (S) or No Credit (NC).

Neuroscience

Undergraduate Major

Subject abbreviation: CBNS

College of Humanities, Arts, and Social Sciences

College of Natural and Agricultural Sciences

Peter Hickmott, Ph.D. Chair
College of Humanities, Arts, and Social Sciences
2111H Psychology, (951) 827-7308

College of Natural and Agricultural Sciences
1223 Pierce Hall; (951) 827-7294

neuromajor.ucr.edu

Committee in Charge
Michael Adams (Cell Biology and Neuroscience, Entomology)
Margarita Curras-Colazo (Cell Biology and Neuroscience)
Neuroscience major.

For the College of Humanities, Arts, and Social Sciences

Humanities Language for level 4 or above for the B.A. may be used to fulfill up to 8 units of the Humanities breadth requirement.

Social Sciences Psychology courses may not be used as part of the Social Sciences breadth requirement if a Biology course is used to meet any part of the Natural Sciences and Mathematics breadth requirement.

Foreign Language In fulfilling the Foreign Language breadth requirement for both the B.A. and B.S. degrees, a modern language such as Spanish, Russian, Chinese, German, or French must be used.

Natural Sciences and Mathematics The Neuroscience Core in the Neuroscience major satisfies the Natural Sciences and Mathematics breadth requirement.

For the College of Natural and Agricultural Sciences

Humanities For the B.S. degree, 16 units instead of 12 units are required to fulfill the Humanities breadth requirement. PHIL 134 and PHIL 137 are recommended.

Social Sciences For the B.S. degree, 16 units instead of 12 units are required to fulfill the Social Sciences breadth requirement. Psychology courses not required or approved for the Neuroscience major may be used in meeting the Social Sciences breadth requirement.

Foreign Language In fulfilling the Foreign Language breadth requirement for the B.A. degree, a modern language such as Spanish, Russian, Chinese, German, or French must be used. Further, fourth-quarter level proficiency in one foreign language (not level 2 in two languages) is required.

Natural Sciences and Mathematics The Neuroscience Core in the Neuroscience major satisfies the Natural Sciences and Mathematics breadth requirement.

Major Requirements

1. Neuroscience Core (66-72 units; satisfies the Life Sciences Core required for some majors in the College of Natural and Agricultural Sciences). Up to 12 units of upper-division life sciences courses (for this major, courses from the departments of Biochemistry, Biology, Cell Biology and Neuroscience, and Entomology) not being used to satisfy the core may be taken prior to completion of the core; permission from the program chair or the program chair’s designate is required to take upper-division units in excess of these 12 units.

Students must complete all required Life Science Core courses with a grade of “C-” or better and with a cumulative GPA in the courses of at least 2.0. Grades of “D” or “F” in two required courses, either separate
courses or repetitions of the same course, are grounds for discontinuation from the major.

a) BIOL 005A, BIOL 005A or BIOL 005B, BIOL 005B, BIOL 005C, and BIOL 003 may be substituted for BIOL 005A, BIOL 005A, BIOL 005A, and BIOL 005B with advisor’s approval.

b) PSYC 011 or STAT 040 or STAT 100A

c) MATH 006B or MATH 007A or MATH 007B or MATH 009B or MATH 09HB

d) CHEM 001A, CHEM 001C, CHEM 001A, CHEM 001A, CHEM 001B, CHEM 001A, CHEM 001B, CHEM 001C

b) BCH 100 or BCH 110A

2. Upper-division requirements

Students must complete all required First Tier and Second Tier courses with a grade of “C-” or better and with a cumulative GPA in the courses of at least 2.0. Grades of “D” or “F” in two required courses, either separate courses or repetitions of the same course, are grounds for discontinuation from the major.

a) First Tier (14 units)

(1) CBNS 106

(2) CBNS 120/PSYC 120

(3) CBNS 120/PSYC 120 or CBNS 130L

(4) CBNS 124/PSYC 124

b) Second Tier (at least 12 units for the B.A. or at least 20 units for the B.S.)

BIOL 178; CBNS 101, CBNS 116, CBNS 121/PSYC 121, CBNS 125/PSYC 125, CBNS 126/PSYC 126, CBNS 127/PSYC 127; CBNS 129, PSYC 112, PSYC 117, PSYC 129

c) Third Tier (additional units to reach a total of 36 units for the B.A. or 44 units for the B.S.) Select from upper-division courses listed under Neuroscience Core, Second Tier above not used to satisfy those requirements, and the additional courses listed below. The combined number of units taken under First Tier, Second Tier, and Third Tier must total either 36 if the B.A. is sought or 44 if the B.S. is sought.

BIOL 102, BIOL 110B, BIOL 110C, BIOL 120, BIO 100/ENTM 100, BIO 102, BIO 105, BIO 107A, BIO 108, BIO 109, BIO 110, BIO 151, BIO 160, BIO 161A, BIO 161B; BIO 162/ENTM 104; BIO 171, BIO 171L, BIO 173/ ENTM 173, BIO 175, BIO 185P; CBNS 108, CBNS 150/ENTX 150, CBNS 165, CBNS 169; up to 9 units from CBNS 194, CBNS 197 and/or CBNS 199; CS 170; PHYS 139L; PSYC 115, PSYC 130, PSYC 132, PSYC 134, PSYC 135, ANTH 146/PSYC 146

Note: No courses other than those listed may be used in the major unless specifically approved by the program chair or the program chair’s designee.

Sample Program

Bachelor of Arts

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 001A, CHEM 001B, CHEM 001C, CHEM 001A, CHEM 001A, CHEM 001B, CHEM 001C</td>
<td>4,1</td>
<td>4,1</td>
<td>4,1</td>
</tr>
<tr>
<td>BIOL 005A, BIOL 005A, BIOL 005A, CHEM 001C, CHEM 001C</td>
<td>3,1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL 001A, ENGL 001B, ENGL 001C</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MATH 007A or MATH 009A, MATH 007B or MATH 009B</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td>13</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 008A and CHEM 008A, CHEM 008B, CHEM 008C and CHEM 008LC</td>
<td>3,1</td>
<td>3,1</td>
</tr>
<tr>
<td>BIOL 106</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PSYC 001, PSYC 002</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>General Physics</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>General Physics Lab</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>1,2</td>
<td>4</td>
</tr>
<tr>
<td>Total Units</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCH 100 or BCH 110A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PSYC 011</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Upper-division BIOL, CBNS, or PSYC</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total Units</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper-division BIOL, CBNS, or PSYC</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total Units</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Bachelor of Science

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 001A, CHEM 001B, CHEM 001C, CHEM 001A, CHEM 001B, CHEM 001C</td>
<td>4,1</td>
<td>4,1</td>
<td>4,1</td>
</tr>
<tr>
<td>MATH 007A or MATH 009A, MATH 007B or MATH 009B</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BIOL 005A, BIOL 005A, BIOL 005A, CHEM 001C, CHEM 001C</td>
<td>3,1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGL 001A, ENGL 001B, ENGL 001C</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Neuroscience Graduate Program

Subject abbreviation: NRSC

College of Natural and Agricultural Sciences

Michael E. Adams, Ph.D. Director

Biological Sciences Bldg.

(951) 827-4746; fax: (951) 827-3087
Program Office, 1140 Batchelor Hall North
(951) 827-4716; (800) 735-0717
neuro.ucr.edu

Professors
Michael E. Adams, Ph.D.
(Cell Biology and Neuroscience/Entomology)
John Andersen, Ph.D. (Psychology)
Curt Bergossi, Ph.D. (Psychology)
Monica J. Carson, Ph.D. (Biomedical Sciences)
Christine Chiarello, Ph.D. (Psychology)
Iryna M. Eftel, Ph.D. (Biomedical Sciences)
Byron D. Ford, Ph.D. (Biomedical Sciences)
Theodore Garland, Jr., Ph.D. (Biology)
Xiaoping Hu, Ph.D. (Bioengineering)
Marcus Kaul, Ph.D. (Biomedical Sciences)
Manuela Martins-Green, Ph.D. (Cell Biology and Neuroscience)
Thomas H. Morton, Ph.D. (Chemistry)
Wendy G. Saltzman, Ph.D. (Biology)
Aaron Seitz, Ph.D. (Psychology)
B. Glenn Stanley, Ph.D.

Associate Professors
Devin Binder, M.D., Ph.D. (Biomedical Sciences)
Djurjica Coss, Ph.D. (Biomedical Sciences)
Margaret C. Curris-Colazo, Ph.D. (Cell Biology and Neuroscience)
Scott N. Currie, Ph.D. (Cell Biology and Neuroscience)
Anupama Dahanukar, Ph.D. (Entomology)
Todd Fiacco, Ph.D. (Cell Biology and Neuroscience)
Martin I. Garcia-Castro, Ph.D. (Biomedical Sciences)
Peter W. Hickmott, Ph.D. (Psychology)
Kelly J. Huffman, Ph.D. (Psychology)
Edward Korzus, Ph.D. (Psychology)
Anandasankar Ray, Ph.D. (Psychology)
Khaleel Razak, Ph.D. (Psychology)
Seema Tiwari-Woodruff, Ph.D. (Biomedical Sciences)
Emma Wilson, Ph.D. (Biomedical Sciences)

Assistant Professors
Jun-Hyeong Cho, Ph.D. (Cell Biology and Neuroscience)
Ilana Bennett, Ph.D. (Psychology)
Nicholas V. DiPatrizio, Ph.D. (Biomedical Sciences)
Sachiko Haga-Yamanaka, Ph.D. (Cell Biology and Neuroscience)
Timothy Higham, Ph.D. (Biology)
Sara Mednick, Ph.D. (Psychology)
Kalina Michalska, Ph.D. (Psychology)
Martin Riccomagno, Ph.D. (Cell Biology and Neuroscience)
Jon A. Willits, Ph.D. (Psychology)
Rachel Wu, Ph.D. (Psychology)
Naoko Yamanaka, Ph.D. (Entomology)
Hongtian Yang, Ph.D. (Cell, Biology and Neuroscience)
Edward Zagha, Ph.D. (Psychology)
Weiwei Zhang, Ph.D. (Psychology)
Sika Zheng, Ph.D. (Biomedical Sciences)

Adjunct Professor
Andre Obenhaus, Ph.D.
Shu-Wei (Richard) Sun, Ph.D.

Graduate Program
The multidisciplinary interdepartmental graduate program in Neuroscience offers instruction and research training leading to the Ph.D. degree in Neuroscience. A Thesis Plan (Plan I) or Non-Thesis Plan (Plan II) M.S. degree in Neuroscience is available under special circumstances, when the work leading to the Ph.D. degree cannot be completed. Whether either of these options is appropriate will be decided by the student’s Guidance Committee typically either at the end of the first year, or at the time of the qualifying examination. See General University requirements for Plan I and Plan II M.S. degrees: graduate.ucr.edu/masters.html.

The goal of this program is to prepare students for careers in research, teaching and scientific administration. The program is aimed at providing high-quality graduate training for students who come from a variety of undergraduate backgrounds but share a commitment and an intense interest in nervous system research. Students are expected to learn the fundamentals of neuroscience, starting with a required core sequence, become knowledge-able concerning a range of research methods as taught in neuroscience laboratories and demonstrate capability in original research. Graduate student training reflects the research competence and specialties of the faculty. That is, the specific research training received by a graduate student is the responsibility of the major professor/mentor in whose laboratory the student carries out the research projects leading to the degree. Students benefit from an interdisciplinary training approach, tailored by the major advisor but enriched by the readily available expertise and laboratory facilities of program faculty with backgrounds ranging from chemistry to psychology.

Current UCR Neuroscience faculty have major appointments in several different departments but have a considerable degree of common interest in research problems and techniques. Furthermore, the three chief levels of analysis at which nervous systems are currently studied (molecular/cellular, systems, and behavioral) are more or less evenly represented by the interests and expertise of the faculty. Some faculty, as may be expected, carry out research programs that combine two or more of these levels of analysis. These levels of analysis, which characterize the faculty’s research, indicate the breadth of integrated neuroscience at UCR but do not represent “fields of emphasis” in which students are to be trained.

Areas that faculty investigate include the following:
- Glial-neuron interactions
- Physiological actions of ion channel toxins
- Modulation of ion channels by neurotransmitters and hormones
- Synaptic transmission and neural plasticity in mammalian nervous systems
- Signal transduction in excitable cells
- Sensory and perceptual processes
- Molecular biology of ion channel structure and function
- Receptor–channel interactions
- Function of ligand-gated ion channels in neurons
- Influence of specific receptor proteins on function
- Synaptic and non-synaptic mechanisms in neuroendocrine systems
- Plasticity in adult central nervous system
- Regulation of genes specifying neuronal connections in developing and mature nervous systems
- Molecular mechanisms that trigger dendritic spine formation

Areas involving behaviors and diseases include the following:
- Roles of glial cells in neurological disease
- Neural control of eating, locomotory, and social behaviors
- Neuroendocrine regulation of innate and social behaviors
- Neural basis of language and reading
- Neural networks controlling locomotion in the spinal cord and brainstem
- Auditory function in Fragile X Syndrome and age-related hearing loss
- Neurolinguistics
- Individual differences in cortical anatomy and relation to behavior
- Learning and memory
- Mechanisms of neuronal death in Alzheimer’s disease, stroke, and other disorders

Admission
Applicants must meet the general admissions requirements of the Riverside Division of the Academic Senate and the UCR Graduate Council as set forth in the Graduate Studies section of this catalog, including completion of an undergraduate degree (B.S. or B.A.). They should have an adequate background in biological and physical sciences, ideally including courses in the following or equivalent areas: General Biology, Genetics, General Chemistry, Organic Chemistry, Physics, Calculus, and Statistics. Additionally, at least 20 quarter-units of courses distributed among the following areas are required, although applicants may be admitted with limited course work deficiencies and required to make up deficiencies as specified by the admissions committee: Biochemistry; Cell Biology; Molecular Biology; Physiology; Animal Behavior; Learning and Memory; Perception; Computer Science; and Neuroscience, Neurobiology, or Physiological Psychology, with laboratory.

Doctoral Degree

Course Work
Core requirements include:
1. NRSC 200A/PSYC 200A (Cell/Molecular Neuroscience)
NRSC 200B/PSYC 200B (Systems Neuroscience)
NRSC 200C/PSYC 200C (Behavioral Neuroscience)
2. One Research Methods course selected from CBNS 120L/PSYC 120L, CHEM 125, CHEM 221A, CHEM 221B, CHEM 221C, CHEM 221D, NRSC 201, PHYS 139L, PSYC 211
3. Two courses or one course sequence selected from the following: BCH 110A, BCH 110B, BCH 110C, BCH 241/CHEM 241, BIOL 200/CMB 200, BIOL 201/CMB 201,
The course option most appropriate to the student’s career goals is determined by the student in consultation with his/her guidance committee, which is formed during the first year.

4. During each quarter in academic residence every student enrolls and participates in the Colloquium in Neuroscience (CMD 257 or NRSC 287/PSYC 287), and, until passing the oral qualifying examination, every student takes at least two seminars, Special Topics in Neuroscience (NRSC 289, 2 units), during each year of academic residence. One seminar per year is required after the qualifying examination is passed.

5. After completing the course requirements and no later than the ninth quarter in residence, the student is given a two-part qualifying examination, one written and one oral.

6. Regardless of whether financial support comes from fellowships or research assistantships, etc., students must be teaching assistants for at least two quarters in Neuroscience or related-area courses, such as those taught by their mentors.

7. Within three months of advancement to candidacy, the student must submit a written dissertation proposal to the dissertation committee for comments and approval. Before the dissertation is given final approval, the student must present a public lecture on the dissertation research to faculty and students in the program. Following the public lecture, the student meets with the dissertation committee for an oral defense in accordance with the regulations of the Graduate Division.

Normative Time to Degree
16 quarters

Graduate Courses
NRSC 200A Fundamentals of Neuroscience (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. The fundamentals of neuroscience in molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with PSYC 200A.

NRSC 200B Fundamentals of Neuroscience (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor; NRSC 200A/PSYC 200A. The fundamentals of neuroscience in molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with PSYC 200B.

NRSC 200C Fundamentals of Neuroscience (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor; NRSC 200B/PSYC 200B. The fundamentals of neuroscience in molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with PSYC 200C.

NRSC 201 Neuroscience Laboratory (4) F Laboratory, 6 hours; lecture, 2 hours. Prerequisite(s): NRSC 200A/PSYC 200A; graduate standing or consent of instructor. Presents theoretical and practical aspects of modern methods and techniques used in nervous system research. Faculty teach modules on methods in which they have special expertise. Methods include, but are not limited to, light and fluorescence microscopy, imaging ion concentrations within cells, immunocytochemistry, and electrophysiology of model systems.

NRSC 210 Computational Neurobiology: Introduction to Brain Modeling Techniques (4) S Lecture, 3 hours; written work, 18 hours per quarter; term paper, 12 hours per quarter. Prerequisite(s): NRSC 200A/PSYC 200A; graduate standing or consent of instructor. An introduction to a variety of computer modeling techniques used to study the brain at the systems level.

NRSC 287 Colloquium in Neuroscience (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Involves oral presentations on current research topics in neuroscience by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with PSYC 287.

NRSC 289 Special Topics in Neuroscience (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BCH 289, BIOL 289, CHEM 289, ENTM 289, and PSYC 289.

NRSC 290 Directed Studies (1-6) Individual study, 3-18 hours. Prerequisite(s): graduate standing or consent of instructor. Individual study, directed by a faculty member, of specially selected topics in neuroscience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

NRSC 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor. Research and experimental studies conducted under the supervision of a faculty member on specially selected topics in neuroscience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

NRSC 299 Research for the Thesis or Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Peace and Conflict Studies Minor

Subject abbreviation: PCST

College of Humanities, Arts, and Social Sciences

Julian Emmons Allison, Ph.D., Co-Chair
(951) 827-5524; julian.allison@ucr.edu

Erlith Jaffe-Berg, Ph.D., Co-Chair
(951) 827-4418; erlith.jaffe-berg@ucr.edu

Advising Office, CHASS INTS 3rd Floor
MU Academic Advising Center Lobby
peaceandconflictstudies.ucr.edu

Committee in Charge

Erlith Jaffe-Berg (Theatre, Film and Digital Production)

Committee members:

- Derek Burris (Media and Cultural Studies)
- Rickerby Hinds (Theatre, Film and Digital Production)
- Bronwyn Leebaw (Political Science)
- Georgia Warnke (Political Science)
- Milagros Peña, Ph.D.

Dean, College of Humanities, Arts, and Social Sciences, ex officio

Administered through the Interdisciplinary Studies Office, the Peace and Conflict Studies Minor provides opportunities for undergraduate students to give sustained attention to the diverse origins and expressions of conflict, to models for resolution advised by scholars and practitioners, to proactive peacemaking through the investigative and creative strategies fostered in higher education.

Students must take 5 upper-division courses as specified in sections 1 and 2 below.

1. Students must take at least one course from each of the following three rubrics plus a fourth course from the list below from any rubric:


   b) Social Scientific Perspectives ETS T 111, POSC 123, POSC 124, POSC 124S, POSC 129, POSC 142L, POSC 150, POSC 159, POSC 160, POSC 169, SOC 122

   c) Historical Perspectives HISA 114, HISA 135/ETST 112, HISA 162/INST 172, HISA 165, HISA 166, HISE 145, HISE 146, HIST 184/AST 160/SEAS 184/VNM 184, MCS 173 (E-Z)/CPTL 173 (E-Z), POSC 125, POSC 162/INST 142

2. Capstone Course; one of the following: PCST 190, PCST 197, PCST 198-I

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Upper-Division Courses

PCST 190 Special Studies (1-5) Consultation, 10 hours per quarter; extra reading, 6-9 hours; written work, 5-6 hours. Prerequisite(s): upper-division standing; consent of Peace and Conflict Studies Committee chair; consent of faculty advisor is required for students repeating the course. Individual study in the areas of conflict resolution and mediation. Examines theories in depth, as well as case studies introduced in previous courses. Course is repeatable.

PCST 197 Research for Undergraduates (4) Consultation, 10 hours per quarter; extra reading, 6 hours; written work, 3 hours. Prerequisite(s): upper-division standing; consent of Peace and Conflict Studies Committee chair. Directed research in the fields of conflict resolution, mediation, and peace studies.

PCST 198-I Internship in Peace and Conflict Studies (4) Consultation, 1 hour; internship, 8 hours; written work, 3 hours. Prerequisite(s): upper-division standing; consent of Peace and Conflict Studies Committee chair; consent of faculty advisor is required for students repeating the course. Provides internship opportunities in organizations that engage in mediation and conflict resolution. Includes supervision under an assigned faculty member. Course is repeatable to a maximum of 16 units.
Pest Management
Subject Abbreviation: PSMT
College of Natural and Agricultural Sciences
The M.S. program in Pest Management is not currently accepting new students. For further information call (800) 735-0717 or (951) 827-5621.

Philosophy
Subject abbreviation: PHIL
College of Humanities, Arts, and Social Sciences

Mark A. Wrathall, Chair
Department Office, 1604 Humanities and Social Sciences
(951) 827-5208; philosophy.ucr.edu

Professors
- Maudemarie Clark, Ph.D.
- Carl F. Cranor, Ph.D., Distinguished Professor
- Luca Ferrero, Ph.D.
- John M. Fischer, Ph.D., Distinguished Professor
- Peter J. Graham, Ph.D.
- Andrews Reath, Ph.D.
- Eric Reck, Ph.D.
- Eric Schwitzgebel, Ph.D.
- Howard K. Wettstein, Ph.D.
- Mark A. Wrathall, Ph.D.

Professors Emeriti
- David K. Gidden, Ph.D.
- David Harrah, Ph.D.
- John Perry, Ph.D., Distinguished Professor
- Larry Wright, Ph.D.

Associate Professors
- Agnieszka Jaworska, Ph.D.
- Pierre Keller, Ph.D.
- Coleen Macnamara, Ph.D.
- Michael Nelson, Ph.D.

Assistant Professors
- Adam Harmer, Ph.D.
- Jozef Müller, Ph.D.
- Andreja Novakovic, Ph.D.

Majors
The Department of Philosophy offers a major and minor in Philosophy and a major in Philosophy/Law and Society.

The Philosophy major is designed to introduce students to the important issues and arguments surrounding such subjects as morality, knowledge, the nature of the mind and of the physical world, science, and language. The program provides a rigorous background in the history of Western philosophy, and studies contemporary approaches (both analytic and Continental) to philosophical issues. The B.A. degree in Philosophy prepares students for graduate study in philosophy, and is also excellent preparation for law school. For students interested in a double major, philosophy also serves as an excellent complement to psychology, mathematics, political science, and the natural sciences.

The Philosophy/Law and Society major is open to undergraduate students with junior standing who have completed LWSO 100 with a grade of “C” or higher. The major offers students a means of understanding complex relationships between social institutions and provides a strong basis for graduate studies in areas related to law and philosophy. The Philosophy/Law and Society curriculum is sound background for students planning on pursuing the study of law.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
The department offers two majors: the traditional Philosophy major, and a Philosophy/Law and Society major.

Philosophy Major
The major requirements for the B.A. degree in Philosophy are as follows:

Fifty-six (56) units of course work in Philosophy including at least 36 upper-division units.

1. PHIL 007 or PHIL 007H and PHIL 008 or PHIL 008H
2. PHIL 100 (Sophomore-Junior Seminar)
3. Three courses in the history of philosophy, at least one of which must be in ancient Greek or Roman philosophy. Select courses from PHIL 030 (E-Z), PHIL 120 (E-Z), PHIL 121 (E-Z), PHIL 122 (E-Z); a specific list is provided by the Philosophy Department. Not more than two courses may be from PHIL 030 (E-Z)
4. At least two courses in metaphysics, epistemology, or philosophy of language: PHIL 130 through PHIL 152, PHIL 159.

Students are urged to consult the department’s undergraduate advisor in preparing their course of study each quarter while at UCR.

Philosophy/Law and Society Major
Major requirements for a B.A. degree in Philosophy/Law and Society are as follows:

1. Philosophy requirements (36 units)
   a) PHIL 007 or PHIL 007H
   b) Three courses in the history of philosophy (two of which must be upper-division): PHIL 030 (E-Z), PHIL 120 (E-Z), PHIL 121 (E-Z), PHIL 122 (E-Z)
   c) Five courses in moral and political philosophy: PHIL 108, PHIL 116, PHIL 117, PHIL 119, PHIL 153, and PHIL 161 through PHIL 169 (E-Z)

2. Law and Society requirements (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100 (with a grade of “C” or better)
   c) One course chosen from POSC 114, PSYC 012, SOC 004 (or equivalent course in research methods)
   d) Three courses chosen from ANTH 127, ECON 119, HISE 153, PHIL 165, POSC 167, PSYC 175, SOC 159
   e) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, LWSO 175 (E-Z), PHIL 164, POSC 111, POSC 166, POSC 168, POSC 186, SOC 147, SOC 149, SOC 180
   f) LWSO 193, Senior Seminar

Minor
A student may minor (24 units) in Philosophy by taking either PHIL 007, PHIL 007H, PHIL 008 or PHIL 008H, four upper-division philosophy courses, and one other philosophy course at any level.

Students may also choose to do a Philosophy minor with special emphasis, taking their four upper-division courses from one of the areas listed below:

1. Philosophy, Literature, and History of Philosophy: PHIL 120 (E-Z), PHIL 121 (E-Z), PHIL 122 (E-Z), PHIL 132, PHIL 151, PHIL 152, PHIL 150, PHIL 159
2. Philosophy and Cognitive Science: PHIL 125, PHIL 126, PHIL 130, PHIL 131, PHIL 132, PHIL 133, PHIL 134, PHIL 135
3. Philosophy and the Natural Sciences: PHIL 117, PHIL 130, PHIL 134, PHIL 137, PHIL 140, PHIL 151, PHIL 167

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Program
The Department of Philosophy offers the M.A. and Ph.D. degrees in Philosophy.

Admission
All applicants to this program must have completed a bachelor’s degree or its approved equivalent from an accredited institution and have attained an undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applications are accepted for the Fall quarter only. All applicants must submit scores from the Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit a writing
sample and three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application.

Upon entering the program, a student is assigned a faculty mentor who consults with the student each quarter to discuss the student’s individual course of study, progress in the program, and recent performance. Students also consult the Graduate Adviser regularly to discuss their course of study and progress in the program. In the first year, students (whether they have entered with an M.A. or a B.A.) take three proseminars for first-year graduate students, two in Metaphysics and Epistemology, and one in Moral Philosophy (PHIL 275A, PHIL 275B, PHIL 275C). The proseminars are designed to acquaint first-year students with the current state of discussion in central areas of contemporary philosophy and to impart the skills needed to conduct their own research.

Master’s Degree
The Department of Philosophy offers the M.A. degree in Philosophy under Plan I (Thesis).

Course Work Students must complete, with a grade of “B” or better, course work totaling 48 units of graduate credit in philosophy. Of these, 12 units must be in the three proseminars for first-year graduate students, and an additional 20 units must be seminars and workshops in the 272-283 series. Up to 16 units may be drawn from PHIL 125, courses in the PHIL 220-266 series, or PHIL 290-292, depending on the student’s interests and background. These courses are to be chosen only in consultation with the student’s advisory committee and the graduate advisor.

Courses taken on a Satisfactory (S)/No Credit (NC) basis cannot be used to satisfy course requirements. Students should note that although they need not complete distributional requirements or a language requirement to acquire the M.A. degree, there are strict distributional and language requirements for the Ph.D. degree, as well as a colloquium and professional development workshop requirement (described below under the Ph.D. requirements). Students who expect to continue on in the Ph.D. program must begin to fulfill these requirements immediately upon entering the program if they expect to acquire the Ph.D. degree within the prescribed period of time.

M.A. Logic Requirement The logic requirement for the M.A. degree is completion of PHIL 124 with a grade of “B” or better. Students may be excused from this requirement if they show sufficient knowledge of logic upon entering the graduate program, as indicated by an optional diagnostic examination administered at the start of each academic year. Students who are unsure about the adequacy of their background are encouraged to take the test for diagnostic purposes.

M.A. Paper Students select a paper to submit to the graduate advisor as their M.A. paper no later than the end of the spring quarter of their second year. M.A. papers can be seminar papers, revised seminar papers, or any other paper that the student has written (of 25 pages or less). Further information on what constitutes an acceptable paper is available from the graduate advisor.

Upon the submission of this paper, the graduate advisor selects three faculty members to serve as the M.A. committee, which conducts an oral examination on the paper. Normally the oral examination will be completed before the end of the student’s second year, but it may be postponed until the fall quarter of the student’s third year. Failure to pass the M.A. oral examination after two opportunities constitutes grounds for dismissal from the program. In addition, completion of the M.A. requirements does not guarantee permission to continue in the Ph.D. program.

Doctoral Degree
The Department of Philosophy offers the Ph.D. degree in Philosophy.

Admission Students are invited to continue toward candidacy for the Ph.D. degree on the basis of performance in courses and seminars, satisfactory completion of the M.A. requirements, and the recommendation of the graduate advisor. A student’s course of study is supervised by the student’s faculty mentor, in consultation with the graduate advisor until the student’s dissertation committee is appointed. Students with a master’s degree in Philosophy from other universities are eligible for admission. These students must enroll in the first-year proseminars.

Course Work Students must complete 12 more units in philosophy, with a grade of “B” or better, in addition to the 48 units for the M.A. degree. Of the student’s 60 graduate units in philosophy, 12 units must be in the area of the history of philosophy, with 4 of these in ancient philosophy, 4 units in addition to the proseminar (PHIL 275A, PHIL 275B) in the area of metaphysics and epistemology, and 8 units in addition to the proseminar (PHIL 275C) in the area of ethics, political philosophy, and aesthetics.

Forty of these 60 units must be seminars and workshops in the 272-283 series. Up to 20 units may be drawn from PHIL 125, courses in the PHIL 220-266 series, or PHIL 290-292. Courses taken on a Satisfactory (S)/No Credit (NC) basis cannot be used to satisfy course requirements. Students are in addition expected to take one seminar on an S/NC basis each quarter until they advance to candidacy.

Colloquia and Professional Development Workshop Requirement Students must register for the PHIL 270 (Philosophy Colloquia) during each quarter of their first and second years. Students must register for PHIL 400 (Research and Professional Development Workshop) during each quarter of their second and third years.

Language Requirement Students must show the competence necessary to work in one of four foreign languages: French, German, Latin, or Greek. Another language may be substituted upon approval of the faculty if it agrees better with the student’s area of their research.

Logic Requirement To satisfy the logic requirement, students must pass PHIL 125 (Intermediate Logic) with a grade of “B” or better.

Proposition Requirement All Ph.D. students must complete an acceptable proposition normally during their third year in the program. A proposition is a paper, no more than forty pages in length, devoted to a significant problem in philosophy. It should show the ability to mount a sustained thesis and to work with the relevant primary or secondary literature.

Written and Oral Qualifying Examinations Students must write a dissertation prospectus and pass a qualifying oral examination before advancing to candidacy. This examination, which is supervised by a faculty committee as stipulated in the regulations of the Graduate Division, concentrates on the students’ preparation for writing a dissertation as indicated by the dissertation prospectus. It must be taken after the student has passed the M.A. language and proposition requirements and normally occurs within two quarters of the completion of these requirements.

Dissertation and Final Oral Examination A dissertation to be presented as prescribed by the Graduate Council is prepared under the direction of the candidate’s dissertation committee. After completion of the dissertation, the candidate is examined in its defense by the dissertation committee.

Normative Time to Degree 18 quarters

Lower-Division Courses
PHIL 001 Introduction to Philosophy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introductory exploration into the nature of the individual, his/her place in the universe, and the forces that shape his/her destiny. Credit is awarded for only one of PHIL 001 or PHIL 001H.

PHIL 001H Honors Introduction to Philosophy (4) Lecture, 2 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 001. An introductory course designed to expose students to classical texts central to philosophy and the liberal arts and sciences. Students examine issues surrounding the nature of knowledge, the foundations of moral philosophy, and the relation of both to the development of the human and natural sciences. Texts may vary from year to year and include works by such authors as Plato, Aristotle, Descartes, Hobbes, Hume, and Kant. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 001 or PHIL 001H.

PHIL 002 Contemporary Moral Issues (4) Lecture, 2 hours; discussion, 1 hour; consultation, 1 hour. Prerequisite(s): none. Philosophical analysis of contemporary moral issues such as: abortion, discrimination, sexual morality, punishment, the obligation to obey the law, suicide, euthanasia, war, privacy. Credit is awarded for one only of PHIL 002 or PHIL 002H.

PHIL 002H Honors Contemporary Moral Issues (4) Lecture, 2 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 002. Philosophical analysis of contemporary moral issues such as abortion, discrimination, sexual morality, punishment, the obligation to obey the law, suicide, euthanasia, war, and privacy. Satisfactory (S) or No Credit (NC) grading
PHIL 003 Ethics and the Meaning of Life (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Approaches one of the basic questions of value: how should one live? Covers classical and contemporary discussions of issues such as the human good, human virtue, the role of pleasure and happiness, egoism and altruism, duty, the relativity and objectivity of value, the meaning of life, death, autonomy, integrity, and conscience. Credit is awarded for only one of PHIL 003 or PHIL 003H or PHIL 003X.

PHIL 003H Honors Ethics and the Meaning of Life (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 003. Approaches one of the basic questions of value: how should one live? Covers classical and contemporary discussions of issues such as the human good, human virtue, the role of pleasure and happiness, egoism and altruism, duty, the relativity and objectivity of value, the meaning of life, death, autonomy, integrity, and conscience. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 003 or PHIL 003H or PHIL 003X.

PHIL 003W Ethics and the Meaning of Life (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): ENGL 001B with a grade of C or better or consent of instructor. Approaches one of the basic questions of value: how should one live? Covers classical and contemporary discussions of issues such as the human good, human virtue, the role of pleasure and happiness, egoism and altruism, duty, the relativity and objectivity of value, the meaning of life, death, autonomy, integrity, and conscience. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 003 or PHIL 003H or PHIL 003X.

PHIL 003X Honors Ethics and the Meaning of Life (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program, ENGL 001B with a grade of C or better or consent of instructor. Honors course corresponding to PHIL 003. Approaches one of the basic questions of value: how should one live? Covers classical and contemporary discussions of issues such as the human good, human virtue, the role of pleasure and happiness, egoism and altruism, duty, the relativity and objectivity of value, the meaning of life, death, autonomy, integrity, and conscience. Fulfills the third-quarter writing requirement for students who earn a grade of C or better for courses that the Academic Senate designates, and that the student's college permits, as alternatives to English 001C. Credit is awarded for only one of PHIL 003 or PHIL 003H or PHIL 003X.

PHIL 004 Introduction to the Philosophy of Race (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program, ENGL 001B with a grade of C or better or consent of instructor. Honors course corresponding to PHIL003W. Approaches one of the basic questions of value: how should one live? Covers classical and contemporary discussions of issues such as the human good, human virtue, the role of pleasure and happiness, egoism and altruism, duty, the relativity and objectivity of value, the meaning of life, death, autonomy, integrity, and conscience. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL003 or PHIL003H or PHIL003X.

PHIL 005 Evil (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the nature of evil, its motivation, and its origins. Utilizes a variety of sources to examine these themes, including classical philosophical texts and contemporary films. Credit is awarded for only one of PHIL 005 or PHIL 005H.

PHIL 005H Honors Evil (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 005. An introduction to the nature of evil, its motivation, and its origins. Utilizes a variety of sources to examine these themes, including classical philosophical texts and contemporary films. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 005 or PHIL 005H.

PHIL 006 Reason, Belief, and Truth (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introductory examination of the nature of reason, rationality, argument, proof, and persuasion and the nature of theory, belief, faith and conviction, and truth and falsity. Discusses the various bodies of belief and modes of inquiry, such as the natural and social sciences, the humanities, morality, religion, and mathematics.

PHIL 007 Introduction to Critical Thinking (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A practical examination of reasoning and argument topically illustrated. Credit is awarded for only one of PHIL 007 or PHIL 007H.

PHIL 007H Honors Introduction to Critical Thinking (4) Lecture, 2 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 007. A practical examination of reasoning and argument, topically illustrated. Satisfactory (S) or No Credit (NC) grading is not available. Credit is only awarded for one of PHIL 007 or PHIL 007H.

PHIL 008 Introduction to Logic (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to symbolic logic. Teaches how to distinguish, in a precise way, valid deductive arguments from those that are invalid; includes learning to use logical symbolism, truth tables, and formal deductions. Credit is awarded for only one of PHIL 008 or PHIL 008H.

PHIL 008H Honors Introduction to Logic (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 008. An introduction to symbolic logic. Teaches how to distinguish, in a precise way, valid deductive arguments from those that are invalid; includes learning to use logical symbolism, truth tables, and formal deductions. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 008 or PHIL 008H.

PHIL 009 Medical Biomedical Ethics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces the major camps in ethical theory - utilitarianism, deontology, virtue ethics, and normative ethics. Applies these theories to critically examine contemporary issues in bioethics. Includes stem-cell research, assisted reproductive technologies, contract gestation, maternal-fetal conflicts, genetic and pharmacological enhancements, access to health care, and physician-assisted suicide. Credit is awarded for only one of PHIL 009 or PHIL 009H.

PHIL 009H Honors Medical Biomedical Ethics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 009. Introduces the major camps in ethical theory - utilitarianism, deontology, virtue ethics, and normative ethics. Applies these theories to critically examine contemporary issues in bioethics. Includes stem-cell research, assisted reproductive technologies, contract gestation, maternal-fetal conflicts, genetic and pharmacological enhancements, access to health care, and physician-assisted suicide. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 009 or PHIL 009H.

PHIL 010 Language, Mind, and Reality (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 010. Explores the nature of language, communication, and the scope of reality. Credit is awarded for only one of PHIL 010 or PHIL 010H.

PHIL 010H Honors Language, Mind, and Reality (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 010. Explores the nature of language, communication, and the scope of reality. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 010 or PHIL 010H.

PHIL 012 Introductory Seminar in Moral Philosophy (4) Seminar, 3 hours; extra reading, 2 hours. Prerequisite(s): none. An introduction to a small number of central moral issues. Small class size in order to provide for substantial discussion and close supervision of written papers.

PHIL 030 (E-Z) Introduction to the History of Philosophy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s):none. Introductory surveys of important periods and subjects in the history of Western philosophy. Topics include E. Hellenic Philosophy: Pre-Socratics through Aristotle; F. Hellenistic Philosophy: Epicureans, Stoics, and Skeptics; G. Medieval Philosophy; I. Early Modern Philosophy; J. Late Modern Philosophy; K. Nineteenth-Century Philosophy. M. History of Ethics. N. History of Political Philosophy.

Upper-Division Courses

PHIL 100 Sophomore-Junior Seminar (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): one course in philosophy; sophomore, junior, or senior standing in Philosophy or Philosophy/Law and Society. A writing-intensive seminar designed to introduce students to philosophical analysis and writing through an in-depth focus on a philosophical text or issue. Content varies. Credit is awarded for only one of PHIL 100 or PHIL 101.

PHIL 101 Sophomore-Junior Lecture (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): one course in philosophy; sophomore, junior, or senior standing in Philosophy or Philosophy/Law and Society. A writing-intensive course designed to introduce students to philosophical analysis and writing through an in-depth focus on a philosophical text or issue. Content varies. Credit is awarded for only one of PHIL 100 or PHIL 101.

PHIL 107 Languages and Minds (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): one course in philosophy or consent of instructor. An investigation of interrelated issues in the philosophy of mind and language, including the mind-body relation, theories of meaning, how thoughts and language represent states of affairs in the world, and the nature of consciousness.

PHIL 108 Philosophical Issues of Race and Gender (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates deep and fundamental philosophical issues of race and gender including the role of cultural and biological criteria in defining these concepts; roles of race and gender in personal identity; nature of racism, sexism, and their variants; and policy implications such as affirmative action and the civil status of homosexual relationships. Cross-listed with GSST 108.
PHIL 110 Asian Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of Asian traditions of philosophy. Examines questions concerning how best to live one's life, what can be known, the relation between mind and body, whether there are minds and bodies, and the nature of the universe. Cross-listed with CHIN 112.

PHIL 111 Philosophy, Film, and Reflective Popular Culture (4) Lecture, 3 hours; screening, 1 hour; extra reading, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines a number of philosophical themes as depicted in film and/or other media of reflective popular culture. Four or five films are screened; each is examined for the philosophical issues it raises. Themes may include integrity, love, spirituality, meaning, identity, and morality.

PHIL 112 Mortal Questions (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on aspects of our distinctively human capacity to lead a meaningful life, especially investigating aspects of the nature of the mind and human freedom. The nature of death and its place in the context of a meaningful life is discussed.

PHIL 113 God (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Discusses how contemporary philosophers have examined human understanding as exemplified in science.

PHIL 115 The Care of the Soul (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A historical and contemporary examination of the role philosophy has played in nurturing the human spirit in the face of other philosophical efforts to demythologize the soul into neural functions or even mere congeries of atoms in motion in the void.

PHIL 116 Business Ethics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the moral issues arising from business life, such as conflicts of interest, responsibility to consumers, corporate culture and character, and the morality of competition. Also considers the history of ethics and the history of business as an institution.

PHIL 117 Environmental Ethics (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. A philosophical consideration of what arises from the use and exploitation of the environment. Topics covered include workplace pollution hazards, environmental pollution and protection of collective natural resources, the rights of future generations, the rights of animals; the protection of endangered species.

PHIL 118 Personhood and Personal Identity (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Develops the basic elements of the concept of personhood, and how persons are alleged to be crucially different from non-human animals. Various theories are considered about what is essential to us as individuals and what makes us the same person over time. Explores the relationship between these metaphysical issues and moral issues, such as euthanasia, animals' rights, and abortion.

PHIL 119 Economics and Philosophy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 104B or consent of instructor. Examines issues on the boundary of economics and philosophy. Topics include social choice theory and economic justice; foundations of utility theory, rational choice, and economic welfare; and epistemology and the philosophies of science of Popper, Kuhn, and others. Cross-listed with ECON 117.

PHIL 120 Ancient Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. Each segment covers a major figure in ancient Greek or Roman philosophy. E. Plato; F. Aristotle; G. Plato and Aristotle; I. Cicero; J. Seneca; K. Plutarch. Credit is awarded for only one of PHIL 120 (E-Z) or PHIL 220 (E-Z).

PHIL 121 Major Philosophers (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. Each segment covers a major figure in the history of medieval, early modern, or late modern philosophy. E. Aquinas; F. Descartes; G. Leibniz; I. Spinoza; J. Locke; K. Hume; M. Reid; N. Kant; O. Hegel; Q. Nietzsche; R. Royce; S. Freud; T. Heidegger; V. Wittgenstein; X. Kripke. Credit is awarded for only one of the corresponding lettered segments of PHIL 121 (E-Z) and PHIL 221 (E-Z).

PHIL 122 Topics in History of Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. Topics include E. Ancient Philosophy; F. Medieval Philosophy; J. French Renaissance Philosophy; K. Early Modern Philosophical Theories of Hume; L. Kant; N. Nineteenth-Century Philosophy; O. Kant and Post-Kantian European Moral Philosophy; Q. Political Philosophy; R. Origins of Analytical Philosophy. Credit is awarded for only one of each of the corresponding lettered segments of PHIL 122 (E-Z) and PHIL 222 (E-Z).

PHIL 123 Readings in Classical Chinese Philosophy (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): CHIN 104 or consent of instructor. Introduces selections from key philosophical texts in classical Chinese. Focuses on a combination of Chinese reading and philosophical understanding. Cross-listed with CHIN 106.

PHIL 124 Formal Logic (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 011/011 or CS 120A/EE 120A or CS 150 or PHIL 008 or PHIL 008H or consent of instructor. An introduction to first-order logic, the core of the logic often used in contemporary philosophy, mathematics, computer science, and linguistics.

PHIL 125 Intermediate Logic (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): PHIL 124 or consent of instructor. The basic meta-theory of first-order logic; with an emphasis on the precise relation between its syntax (formulas, rules of inference, and proofs) and semantics (interpretations, truth, validity), leading to the soundness and completeness theorems.

PHIL 126 Advanced Logic (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): PHIL 125. Advanced meta-theory of first-order logic, leading to a discussion of some of the important incompleteness, undecidability and non-expressability results of twentieth-century logic (Godel, Church, Turing, etc.).

PHIL 127 Advanced Topics in Logic (4) Lecture, 3 hours; extra reading, 1 hour; problem sets, 3 hours. Prerequisite(s): PHIL 124 or PHIL 125. A study of selected non-truth-functional and nonstandard logics. Includes modal logics, tense logics, free logics, paraconsistent logics, and set theory. Course is repeatable as content changes.

PHIL 128 Introduction to Arabic Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Arabic philosophical texts. Provides close and literary reading of texts in philosophy, as well as considers the impact these texts have had or can have on Western cultural formation. Cross-listed with ARLC 154 and CPTL 154.

PHIL 130 Theory of Knowledge (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. An inquiry into the nature of human knowledge—its possibility, criteria, scope, and limitations. Credit is awarded for only one of PHIL 130 or PHIL 230.

PHIL 131 Twentieth-Century Analytic Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. A discussion of some major issues and thinkers in the tradition dominant in twentieth-century British and American philosophy. Philosophers discussed might include Frege, Russell, Carnap, Quine, Kripke, and D. Lewis. Credit is awarded for only one of PHIL 131 or PHIL 231.

PHIL 132 Philosophy of Language (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of some of the traditional issues in the philosophy of language, such as analyticity, theories of reference, truth, speech act theory, and philosophical theories of formal grammars. Credit is awarded for only one of PHIL 132 or PHIL 232.

PHIL 133 Metaphysics (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. An investigation of some of the traditional problems in Western philosophy that have been labeled metaphysical, such as the existence of God, the relationship between mind and body, the determinism versus free will debate, and the nature of time and space. Credit is awarded for only one of PHIL 133 or PHIL 233.

PHIL 134 Philosophy of Mind (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of several theories of the nature of mind and an analysis of particular issues occasioned by them: the mind-body problem, personal identity, emotions, human action, self-knowledge, knowledge of other minds, and explanations of human behavior. Credit is awarded for only one of PHIL 134 or PHIL 234.

PHIL 135 Philosophy of Psychology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. Examines philosophical issues arising in the context of empirical psychology. Topics may include moral development, artificial intelligence and the modeling of cognition, the nature of perception and memory, fallacies in human reasoning, mechanisms of self-understanding, and mental illness and personhood. Credit is awarded for only one of PHIL 135 or PHIL 235.

PHIL 137 Philosophy of Science (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. Topics discussed include understanding scientific practice in the light of history and sociology of science; realism and anti-realism about scientific theories; scientific methodology and its logic; and the nature of scientific explanation. Credit is awarded for only one of PHIL 137 or PHIL 237.

PHIL 138 Philosophy of Agency (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. An investigation of problems that arise in attempts to understand human agency: the nature and explanation of action, intention, free will and moral responsibility, and weakness of will. Credit is awarded for only one of PHIL 138 or PHIL 238.

PHIL 139 Philosophy of Mathematics (4) Lecture,
3 hours; extra reading, written work, homework problems, 3 hours. Prerequisite(s): PHIL 124 or one mathematics course or consent of instructor. Discusses topics such as the abstract nature of mathematical objects, the sources of mathematical knowledge, the relation between mathematics and logic, and the infinite in mathematics. Considers the development of some selected parts of mathematics (especially arithmetic, geometry, algebra, and set theory) and of various corresponding philosophical positions (platonism, formalism, intuitionism, structuralism). Course is repeatable as content changes. Credit is awarded for only one of PHIL 139 or PHIL 239.

PHIL 140 Topics in Metaphysics (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. An in-depth discussion of selected issues in contemporary metaphysics, such as: essence, essentialism and identity, laws of nature, free will, and determinism. Course is repeatable as content changes.

PHIL 142 Advanced Topics in the Philosophy of Language (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): PHIL 107 or PHIL 132 or consent of instructor. An in-depth study of a particular topic in the philosophy of language. Potential topics include context-sensitivity (how the meaning of a sentence depends upon nonlinguistic facts about context); theories of meaning (e.g., the Frege-Russell account in terms of propositions, the Lewis-Stalnaker possible worlds account, and Davidson’s truth theory account). Courses is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of PHIL 142 or PHIL 242.

PHIL 144 Advanced Topics in Philosophy of Mind (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): PHIL 107 or PHIL 134 or consent of instructor. Examines a selected topic in philosophy of mind. Potential topics include consciousness and self-consciousness; intentionality and theories of mental content; mental causation; consciousness and free will; introspection and knowledge of other minds; perception; emotion; imagination; concepts and rationality; artificial minds; and animal minds. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of PHIL 144 or PHIL 244.

PHIL 150 Philosophy in Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. An examination of philosophical issues raised by selected novelists, poets, and playwrights.

PHIL 151 Existentialism (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of philosophical and literary works which deal with the significance of some fundamental human experiences: identity crises, choice and commitment, anxiety and death, the experience of meaninglessness, and alienation. Credit is awarded for only one of PHIL 151 or PHIL 251.

PHIL 152 Twentieth-Century Continental Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of some of the main contemporary figures and schools of thought in continental philosophy, including hermeneutics, structuralism, deconstruction, and critical theory. Authors discussed include Heidegger, Gadamer, Habermas, Derrida, and Foucault. Credit is awarded for only one of PHIL 152 or PHIL 252.

PHIL 153 Marxist Critique (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the ideas central to the tradition of Western Marxism: ideology; critique; instrumental reason; the domination of nature, and communicative action. Theorists discussed typically include Hegel, Marx, Lukacs, Adorno, Horkheimer, Benjamin, and Habermas. Credit is awarded for only one of PHIL 153 or PHIL 253.

PHIL 155 Peace in the Middle East (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the roots of the Middle Eastern crises. Focuses on the Arab-Israeli conflict and possible solutions toward peace. Addresses problems through historical, religious, and political lines of inquiry. Cross-listed with RLST 155.

PHIL 159 Philosophy of Religion (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An in-depth critical examination of the concepts and arguments involved in the Judeo-Christian God-hypothesis, and the influence of this world view upon the ideals and values of the Western world. Credit is awarded for only one of PHIL 159 or PHIL 259.

PHIL 161 Ethics (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of the major classical and modern moral philosophers in the Western tradition and of some selected problems of metaethics. Credit is awarded for only one of PHIL 161 or PHIL 261.

PHIL 162 Human Nature and Radical Evil (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. An advanced study of theories of human nature and evil. Credit is awarded for only one of PHIL 162 or PHIL 262.

PHIL 163 Political Philosophy (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An inquiry into some of the main philosophic issues arising from political life, such as the nature and justification of authority, democracy, natural rights, justice, equality, and civil disobedience. Credit is awarded for only one of PHIL 163 or PHIL 263.

PHIL 164 Justice (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A philosophical analysis of the concept of justice. Credit is awarded for only one of PHIL 164 or PHIL 264.

PHIL 165 Philosophy of Law (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An inquiry into the nature of criminal law, the relation between law and morality, the nature of legal responsibility, and the obligation to obey the law. Credit is awarded for only one of PHIL 165 or PHIL 265.

PHIL 166 Philosophy of Feminism (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of current concepts and debates in feminist philosophy including gender equality, gender difference, and the relation of sex and gender. Situates various approaches to these topics in the history of philosophy. Credit is awarded for only one of PHIL 166 or PHIL 266.

PHIL 167 Biomedical Ethics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A philosophical discussion of newly emerging issues, both ethical and social, in biology and medicine, such as genetic engineering, euthanasia, experimentation with human subjects, abortion, behavior control, and patient’s right to know.

PHIL 168 Ethics and Families (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes ethical issues with regard to families of different kinds such as gender relations in traditional marriages; the ethics of same-sex marriage; the morality of abortion, surrogate mothering, and cloning; the justess of school vouchers; the grounds for universal health care; and possible gender inequalities in divorce. Cross-listed with GSST 141.

PHIL 169 Ethics and Values (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one course in philosophy or consent of instructor. Topics include E. Ethics; F. Aesthetics; G. Political Philosophy; I. Social Philosophy; J. Philosophy of Law.

PHIL 171 Feminist Bioethics (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): one course in philosophy or consent of instructor. An exploration of the ways in which feminist theory provides insight on contemporary issues in bioethics. Topics include: women & reproductive rights, genetics, cloning, abortion, contract gestation, fetal protection policies, and the politics of mental illness. Cross-listed with GSST 106.

PHIL 172 Reading Philosophical German (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): GER 002R or GER 004 or consent of instructor. Develops reading strategies and translation skills for German philosophical texts through a review of grammar and readings in the original language. Prepares for a graduate-level translation exam and independent research in German. Intermediate to advanced German reading proficiency required; familiarity with German philosophical terminology is recommended but not required. Cross-listed with GER 172.

PHIL 173 Philosophy of Sex and Sexuality (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): one course in philosophy or consent of instructor. Investigates philosophical issues relating to human sexual behaviors and identities. Topics include attempts to distinguish sexual from nonsexual activities; the construction and medicalization of sex and sexuality; and historical and contemporary ethical evaluations of various sexual activities and identities (homosexuality, heterosexuality, masturbation, sadomasochism, various fetishes, polyamory, and other nonmonogamies).

PHIL 190 Special Studies (1-5) To be taken with the consent of the department Chair as a means of meeting special curricular problems. Course is repeatable to a maximum of 16 units.

PHIL 193 Senior Seminar (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): two upper-division courses in philosophy; senior standing in Philosophy or Philosophy/Law and Society or consent of instructor. Advanced seminar for Philosophy majors. Course is repeatable as content changes to a maximum of 8 units.

PHIL 195 Senior Thesis (1-4) Prerequisite(s): enrollment by request of student with approval of department chair. Course is graded In Progress (IP) until the thesis is completed. Course is repeatable to a maximum of 8 units.

PHIL 198 R’Course - Variable Topics (1) activity hours vary per R’Course proposal. Prerequisite(s): permission needed from department. An opportunity for UCR undergraduate students to develop leadership skills, innovate the undergraduate curriculum, and promote democratic, experiential education. Original course topics are variable and unique from other departmental course offerings, designed to highlight the student facilitators’ expertise while working closely with a faculty mentor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

PHIL 198-I Individual Internship in Philosophy (2-8) Internship, 4-16 hours; written work, 2-8 hours. Prerequisite(s): upper-division standing; consent of instructor. An internship in government, education, science, business, or other field related to philosophy. Students write a substantive philosophical paper pertaining to the work done in the internship. Course is repeatable to a maximum of 8 units.
Graduate Courses

PHIL220 (E-Z) Ancient Philosophy (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. A study of major issues and thinkers in the tradition dominant in ancient Greek and Roman philosophy. Consideration of such works as Plato; Aristotle; Spinoza; Locke; Hume; Reid; Kant; Hegel; Nietzsche; Freud; and Heidegger. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of each of the corresponding lettered segments of PHIL 120 (E-Z) and PHIL 220 (E-Z).

PHIL 211 (E-Z) Major Philosophers (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. A discussion of the major philosophers from ancient times to the present. Possible topics include Frege, Russell, Carnap, Quine, Kripke, and Lewis. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of each of the corresponding lettered segments of PHIL 121 (E-Z) and PHIL 211 (E-Z).

PHIL 222 (E-Z) Topics in History of Philosophy (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. Topics include: Ancient Philosophy; Medieval Philosophy; French Renaissance Philosophy; Early Modern Philosophy; Moral Theories of Hume and Kant; Nineteenth-Century Philosophy; Kantian European Moral Philosophy; Political Philosophy; Origins of Analytical Philosophy. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of each of the corresponding lettered segments of PHIL 122 (E-Z) and PHIL 222 (E-Z).

PHIL 230 Theory of Knowledge (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An inquiry into the nature of human knowledge—it's possibility, criteria, scope, and limitations. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 130 or PHIL 230.

PHIL 231 Twentieth-Century Analytic Philosophy (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. A discussion of some major issues and thinkers in the tradition dominant in twentieth-century British and American philosophy. Philosophers discussed might include Frege, Russell, Carnap, Quine, Kripke, and Lewis. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 131 or PHIL 231.

PHIL 232 Philosophy of Language (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. A study of some of the traditional issues in the philosophy of language, such as analyticity, theories of reference, truth, speech act theory, and philosophical theories of formal grammars. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 132 or PHIL 232.

PHIL 233 Metaphysics (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An investigation of some of the traditional problems in Western philosophy that have been labeled metaphysical, such as the existence of God, the relationship between mind and body, the determinism versus free will debate, and the nature of time and space. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 133 or PHIL 233.

PHIL 234 Philosophy of Mind (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. A study of several theories of the nature of mind and an analysis of particular issues occasioned by them: the mind-body problem, personal identity, emotions, human action, self-knowledge, knowledge of other minds, and explanations of beliefs. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 134 or PHIL 234.

PHIL 235 Philosophy of Psychology (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. Examines philosophical issues arising in the context of empirical psychology. Topics may include mental development, artificial intelligence and the modeling of cognition, the nature of perception and memory, fallacies in human reasoning, mechanisms of self-understanding, and mental illness and personality. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 135 or PHIL 235.

PHIL 236 Philosophy of Science (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. Topics discussed include understanding scientific objectivity in the light of the history and sociology of science; theism and science; science and language; scientific methodology and its logic; and the nature of scientific explanation. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 136 or PHIL 236.

PHIL 237 Philosophy of Agency (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An investigation of the problems involved in the understanding of human agency, such as the nature and explanation of action, intention, free will and moral responsibility, and the possibility of human action. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 137 or PHIL 237.

PHIL 238 Philosophy of Action (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An investigation of philosophical issues involved in understanding human agency, such as the nature and explanation of action, intention, free will and moral responsibility, and the possibility of human action. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 138 or PHIL 238.

PHIL 239 Philosophy of Mathematics (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. Discusses topics such as the abstract nature of mathematical objects, the sources of mathematical knowledge, the relation between mathematics and logic, the structure and universality of mathematics. Consideration of the development of some selected parts of mathematics (especially arithmetic, geometry, algebra, and set theory) and of various corresponding philosophical positions (platonism, formalism, intuitionism, structuralism). Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 139 or PHIL 239.

PHIL 244 Advanced Topics in Philosophy of Mind (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An advanced study of topics in the philosophy of mind. Potential topics include consciousness and self-consciousness; intentionality and theories of mental content; mental causation; consciousness and free will; introspection and knowledge of other minds; perception; emotion; imagination; concepts and rationality; artificial minds; and animal minds. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable as content changes to a maximum of 8 units. Credit is awarded for only one of PHIL 144 or PHIL 244.

PHIL 251 Existentialism (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An examination of the philosophical works which deal with the significance of some fundamental human experiences: identity crises, choice and commitment, anxiety and death, the experience of meaningfulness, and alienation. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 151 or PHIL 251.

PHIL 252 Twentieth-Century Continental Philosophy (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An examination of the ideas central to the tradition of Western Marxism: ideology, critique, refutation, instrumental reason, the domination of nature, and communicative action. Theorists discussed typically include Heidegger, Gadamer, Habermas, Derrida, and Foucault. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 152 or PHIL 252.

PHIL 253 Marxist Critique (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An examination of the ideas central to the tradition of Western Marxism: ideology, critique, refutation, instrumental reason, the domination of nature, and communicative action. Theorists discussed typically include Marx, Lukacs, Adorno, Horkheimer, Benjamin, and Habermas. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 153 or PHIL 253.

PHIL 259 Philosophy of Religion (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An historical, critical examination of the concepts and arguments involved in the study of religion. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 159 or PHIL 259.

PHIL 261 Ethics (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. A study of the major classical moral philosophers in the Western tradition and of some of the same problems of metatheory. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 161 or PHIL 261.

PHIL 262 Human Nature and Radical Evil (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): graduate standing. An advanced study of theories of human nature and evil. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 162 or PHIL 262.
PHIL 263 Political Philosophy (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): standing in graduate school. An inquiry into some of the main philosophical issues arising from political life, such as the nature and justification of authority, democracy, natural rights, justice, equality, and civil disobedience. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 163 or PHIL 263.

PHIL 264 Justice (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): standing in graduate school. A philosophical analysis of the concept of justice. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 164 or PHIL 264.

PHIL 265 Philosophy of Law (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): standing in graduate school. An inquiry into the nature of criminal law, the relation between law and morality, the nature of legal responsibility, and the obligation to obey the law. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 165 or PHIL 265.

PHIL 266 Philosophy of Feminism (4) Lecture, 3 hours; seminar, 1 hour. Prerequisite(s): standing in graduate school. An analysis of current concepts and debates in feminist philosophy including gender equality, gender difference, and the relation of sex and gender. Situates various approaches to these topics in the history of philosophy. Students who complete all writing assignments, including a term paper, receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Credit is awarded for only one of PHIL 166 or PHIL 266.

PHIL 270 Philosophy Colloquia (1) Colloquium, 1 hour. Prerequisite(s): standing in graduate school. Visiting scholars give oral reports on current research in philosophy and discuss them with students and faculty. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 272A Workshop in Philosophy (2-4) Workshop, 2-3 hours; outside research, 1-2 hours. Prerequisite(s): standing in graduate school; consent of instructor. Close reading of a philosophical text or texts on a single topic. May be undertaken as a one-, two-, or three-quarter course (PHIL 272A, PHIL 272B, PHIL 272C). Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned. PHIL 272A, PHIL 272B, and PHIL 272C are repeatable as their contents change to a maximum of 12 units on one topic and to a maximum of 36 units for the three courses.

PHIL 272B Workshop in Philosophy (2-4) Workshop, 2-3 hours; outside research, 1-3 hours. Prerequisite(s): PHIL 272A; consent of instructor. Close reading of a philosophical text or texts on a single topic. May be undertaken as a one-, two-, or three-quarter course (PHIL 272A, PHIL 272B, PHIL 272C). Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned. PHIL 272A, PHIL 272B, and PHIL 272C are repeatable as their contents change to a maximum of 12 units on one topic and to a maximum of 36 units for the three courses.

PHIL 272C Workshop in Philosophy (2-4) Workshop, 2-3 hours; outside research, 1-3 hours. Prerequisite(s): PHIL 272A; consent of instructor. Close reading of a philosophical text or texts on a single topic. May be undertaken as a one-, two-, or three-quarter course (PHIL 272A, PHIL 272B, PHIL 272C). Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned. PHIL 272A, PHIL 272B, and PHIL 272C are repeatable as their contents change to a maximum of 12 units on one topic and to a maximum of 36 units for the three courses.

PHIL 275A Proseminar for First-Year Graduate Students: Metaphysics and Epistemology (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): first-year standing in the graduate program in Philosophy. One course in a three-term sequence designed to introduce new graduate students to current issues and methods of research in metaphysics and epistemology.

PHIL 275B Proseminar for First-Year Graduate Students: Metaphysics and Epistemology (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): PHIL 275A, first-year standing in the graduate program in Philosophy. One course in a three-term sequence designed to introduce new graduate students to current issues and methods of research.

PHIL 275C Proseminar for First-Year Graduate Students: Moral Philosophy (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): standing in graduate school; consent of instructor. Consider an important philosophical problem. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

PHIL 280 Seminar in Philosophical Problems (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): standing in graduate school; consent of instructor. Consider an important philosophical problem. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

PHIL 281 Philosophical Texts (1-4) Seminar, 1-3 hours; consultation, 1 hour. Prerequisite(s): standing in graduate school; consent of instructor. Involves focused reading and discussion of common texts on research topics in philosophy. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

PHIL 282 Seminar in Individual Philosophers (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): standing in graduate school; consent of instructor. Consider a major figure in the history of philosophy. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

PHIL 283 Seminar in Contemporary Philosophy (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): standing in graduate school; consent of instructor. Covers an aspect of contemporary philosophy. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

PHIL 290 Directed Studies (1-6) Term paper, 3-18 hours. Prerequisite(s): consent of instructor and graduate advisor. Directed study to meet special curricular needs. Course is repeatable.

PHIL 291 Individual Studies in Coordinated Areas (2-4) Prerequisite(s): standing in graduate school. A program of studies designed to advise and assist candidates who are preparing for the Comprehensive Examinations. Open to M.A. students only; does not count toward the unit requirement for the M.A. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 292 Concurrent Analytical Studies in Philosophy (1-4) Prerequisite(s): consent of instructor. Each 292 course will be taken concurrently with some 100-series course, approved by the Graduate Advisor, but on an individual basis. It will be devoted to completion of a graduate paper based on research or criticism related to the 100-series course. Faculty guidelines and evaluations will be provided throughout the quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

PHIL 295 Directed Research (1-6) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 296 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

PHIL 301 Directed Studies in the Teaching of Philosophy (1) Seminar, 1 hour. Prerequisite(s): standing in graduate school. A program of orientation, lectures, and workshops designed to enhance the Teaching Assistant’s understanding of teaching methods in philosophy and to provide opportunities to work closely with experts in college teaching in order to improve the quality of instruction. Required of all new Teaching Assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 302 Teaching Practicum (1-4) Prerequisite(s): employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses and LWSO 100. Required of all teaching assistants in philosophy. Does not count toward the unit requirement for the M.A. degree. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

PHIL 400 Research and Professional Development Workshop (1) Workshop, 8 hours per quarter; extra reading, 8 hours per quarter. Prerequisite(s): standing in graduate school. A series of presentations and workshops focused on a variety of issues in research, professional development, and teaching. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 18 units.

Physical Sciences

College of Natural and Agricultural Sciences

The Physical Sciences major is not accepting new students at this time. For more information, contact the CNSA Undergraduate Academic Advising Center, 1223 Pierce Hall, or call (951) 827-7294.

Physics and Astronomy

Subject abbreviation: PHYS

College of Natural and Agricultural Sciences

Kenneth N. Barish, Ph.D., Chair
Department Office, 3047 Physics
(951) 827-5331; physics.ucr.edu

Professors

Kenneth N. Barish, Ph.D.
E. Gabriela Canalizo, Ph.D.
Robert B. Clare, Ph.D.
John A. Ellison, Ph.D.
J. William Gary, Ph.D.
Frederick Hamann, Ph.D.
Gail G. Hanson, Ph.D.
Owen Long, Ph.D.
Allen P. Mills, Ph.D.
Brahmam Mobasher, Ph.D.
Umar Mohideen, Ph.D.
Leonid P. Pryadko, Ph.D.
Richard K. Soto, Ph.D.
Jing Shi, Ph.D.
Kirill Stentzel, Ph.D.
Harry W. K. Tom, Ph.D.
Chandra M. Varma, Ph.D.
and development, system modeling and analysis, and sales in a large variety of fields. A Physics degree provides one of the most flexible qualifications with direct applications to materials science, advanced electronics, lasers and microwave devices, computing and communications.

The federal government and national laborato-
ries employ many physicists as do industries in medical and scientific instruments, computers, audio and telecommunications equipment, financial analysis and investments, material science, and engineering.

The bachelor's degree programs in the UCR Department of Physics and Astronomy are well suited for continued education in graduate school and for preparation in technical and professional careers. Colleges or universities, national laboratories, industry, and governmental agencies employ students with graduate training.

Transfer Students

Students transferring to the Physics major must complete courses comparable to the following one-year sequences before they transfer:

1. General physics (calculus-based) equivalent to PHYS 040A, PHYS 040B, PHYS 040C, each course completed with a grade of “B-“ or better

2. First-year calculus, equivalent to MATH 009A, MATH 009B, MATH 009C, each course completed with a grade of “B-“ or better

At least one of the following one-year sequences:

1. General chemistry, equivalent to CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC, each course completed with a grade of “C“ or better

2. Second-year calculus, equivalent to MATH 010A, MATH 010B, MATH 046, each course completed with a grade of “C“ or better

3. Organic chemistry (one-year lower-division), each course completed with a grade of “B“ or better

Students must have a minimum grade point average of 2.70 in transferable college courses. UCR has articulation agreements with most of the California community colleges. These agreements list specific community college courses that have been designated as comparable to UCR courses (see the statewide articulation Web site at www.assist.org). Transfer students will usually find it advantageous to complete most or all sequences before starting at UCR. All prospective transfers should try to complete the sequences they begin rather than divide a sequence between two campuses.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.
1. First Tier (16 units)
   a) 8 additional upper-division units taken from BCH 110A, BCH 110B, BCH 110C or BIOL 107A (other upper division CHEM/BIO/BCH may be substituted upon approval)

2. Additional upper-division requirements (8 units)
   a) EDUC 003, EDUC 004
   b) LING 020 or LING 021. Note that this satisfies 4 units of the CNAS Humanities requirement.

3. No more than 4 units of 190-199 courses may be used to fulfill the upper-division units for the minor.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Community College Transfers
Students seeking an emphasis in environmental physics or chemical physics should consult with an advisor. The physics electives may be selected on an individual basis to stress one of these concentrations.

Students continuing on to graduate school are encouraged to take additional upper-division courses in Mathematics, such as MATH 146A, MATH 146B, MATH 146C, MATH 165A, MATH 165B, and MATH 113.

Students may wish to earn a Minor in Mathematics which requires an additional 24 units of upper division math.

To graduate, a minimum grade point average of 2.00 (C) is necessary overall and in the upper-division courses taken for the major (courses listed under 2).

Bachelor of Arts
For the B.A. degree, additional units are required in Humanities, Social Sciences, and foreign language to meet the breadth requirements.

Minor
The minor in Physics consists of 26 upper-division units in Physics. A minimum of 16 units must be unique to the minor and may not be used to satisfy major requirements.

1. First Tier (16 units)
   a) PHYS 130A
   b) PHYS 132
   c) PHYS 135A
   d) One Upper Division Physics elective from PHYS 111, PHYS 150A, PHYS 151, PHYS 164, PHYS 165, PHYS 166, PHYS 177

2. Second Tier: at least 10 units from any upper-division Physics courses not chosen in the First Tier. The combined units from the First and Second Tiers should add to at least 26.

Doctoral Degree
The Department of Physics and Astronomy offers the Ph.D. degree in Physics.

It is recommended that students in the Ph.D. program become associated with a research advisor by the end of Spring Quarter of their first year.

A student is recommended for advancement to candidacy for the Ph.D. degree in Physics upon completion of requirements (1), (2), and (3) below. The student is recommended for the Ph.D. degree upon completion of requirements (4) and (5) below.

1. Course Work Each course must be passed with a grade of “B-” or better. Each student must maintain an average of “B” or better for all courses.

1A. Core courses for students pursuing a program in Physics (other than Astronomy):
   - PHYS 205 (Classical Mechanics)
   - PHYS 210A, PHYS 210B, PHYS 210C (Electromagnetic Theory)
   - PHYS 212A, PHYS 212B (Thermo dynamics and Statistical Mechanics)
   - PHYS 221A, PHYS 221B, PHYS 221C (Quantum Mechanics)
   - PHYS 296 (Summer Research in Physics and Astronomy)

1B. Core courses for students pursuing a specialization in Astronomy:
   - PHYS 205 (Classical Mechanics)
   - PHYS 210A, PHYS 210B, PHYS 210C (Electromagnetic Theory)
   - PHYS 212A (Thermo dynamics and Statistical Mechanics, Part A)
   - PHYS 214 (Techniques of Observational Astrophysics)
   - PHYS 215 (Dynamics and Evolution of Galaxies)
   - PHYS 218 (Fundamentals of Astrophysics)
   - PHYS 219 (Cosmology and Galaxy Formation)
   - PHYS 296 (Summer Research in Physics and Astronomy)

In addition, students in both programs must complete at least three additional graduate lecture courses in the area of their specialization. Students pursuing program 1A should choose courses from section “a-f” below. Students pursuing program 1B should choose courses from section “g” below. The program for each student must be approved by the graduate committee and the student’s
The elective courses include the following:

**a) Nuclear and Particle Physics**
- PHYS 225A, PHYS 225B (Elementary Particles)
- PHYS 230A, PHYS 230B (Advanced Quantum Mechanics and Quantum Theory of Fields)

**b) Condensed Matter, Surface, Biophysics and Optical Physics**
- PHYS 209A, PHYS 209B (Introduction to Quantum Electronics)
- PHYS 234 (Physics of Nanoscale Systems)
- PHYS 235 (Spintronics and Nanoscale Systems)
- PHYS 236 (Advanced Imaging Techniques)
- PHYS 240A*, PHYS 240B*, PHYS 240C (Condensed Matter Physics)
- PHYS 241A, PHYS 241B, PHYS 241C (Advanced Statistical Physics and Field Theory)
- PHYS 242 (Physics at Surfaces and Interfaces)
- PHYS 246 (Biophysics)

*For specialization in this track, students are required to take PHYS 240A and PHYS 240B successively as two of their three additional courses.

**c) Astrophysics**
- PHYS 203 (Statistical Astronomy)
- PHYS 204 (Advanced Galaxy Formation and Cosmology)
- PHYS 208 (General Relativity)
- PHYS 211A (Radiative Processes in Astrophysics)
- PHYS 211B (Astrophysical Fluid Dynamics)
- PHYS 213 (Astrophysics of the Interstellar Medium)
- PHYS 216 (Star Formation)
- PHYS 217 (Stellar Structure and Evolution)
- PHYS 226 (Cosmology)

**d) Cosmology and Astroparticle Physics**
- PHYS 203 (Statistical Astronomy)
- PHYS 204 (Advanced Galaxy Formation and Cosmology)
- PHYS 208 (General Relativity)
- PHYS 225A, PHYS 225B (Elementary Particles)
- PHYS 230A (Advanced Quantum Mechanics)
- PHYS 226 (Cosmology)

**e) Environmental Physics**
Two courses chosen from track (b) and two courses chosen from below:
- SWSC 203 (Surface Chemistry of Soils)
- SWSC 213 (Soil Mineralogy)
- or other approved graduate-level courses in related fields.

**f) Materials and Nanoscale Physics**
Two courses chosen from track (b) and two additional approved courses from the departments of Chemistry, Chemical and Environmental Engineering, Mechanical Engineering, or Electrical and Computer Engineering.

**g) Astronomy**
- PHYS 203 (Statistical Astronomy)
- PHYS 204 (Advanced Galaxy Formation and Cosmology)
- PHYS 208 (General Relativity)
- PHYS 211A (Radiation)
- PHYS 213 (Astrophysics of the Interstellar Medium)
- PHYS 216 (Star Formation)
- PHYS 217 (Stellar Structure and Evolution)
- PHYS 226 (Cosmology)

**2. Written Comprehensive Examinations**
Students must have satisfactory performance on a comprehensive examination, to be taken at the end of the student's first year. In the event of a failure, a make-up exam is offered in the winter quarter of the second year. The comprehensive examination for students pursuing the physics program consists of an exam that covers Mechanics, Statistical and Thermal Physics, Quantum Mechanics, and Electromagnetism. The comprehensive examination for students pursuing the astronomy specialization consists of an exam that covers Mechanics, Statistical and Thermal Physics, Electromagnetism, and Fundamental Astrophysics.

**3. Oral Qualifying Examination in General Area of Proposed Research**
Satisfactory performance on an oral examination in the general area of the student's proposed research. This examination is conducted by a doctoral committee, charged with general supervision of the student's research. It is normally taken during the academic year following that in which the comprehensive examination requirement has been successfully completed. A student who fails this examination on the first attempt may, at the discretion of the committee, be permitted to take it a second time.

**4. Dissertation Examination**
Students must complete a dissertation containing a review of existing knowledge relevant to the area of the candidate's research, and the results of the candidate's original research. This research must be of sufficiently high quality to constitute a contribution to knowledge in the subject area.

**5. Final Oral Examination**
A final oral defense may be required.

**Normative Time to Degree**
For students pursuing program 1A: 15 quarters for theoretical physics; 18 quarters for experimental physics; 17 quarters for specialization in environmental physics (theory); 20 quarters for specialization in environmental physics (experimental). For students pursuing the astronomy program, 1B: 18 quarters.

**Lower-Division Courses**

Only one of the following sequences, PHYS 002A, PHYS 002B, PHYS 002C, or PHYS 040A, PHYS 040B, PHYS 040C may be taken for credit.

**PHYS 002A General Physics (4)**
- Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 008B or MATH 009A with a grade of "C-" or better or MATH 094A with a grade of "C-" or better; concurrent enrollment in PHYS 02LA or a grade of "C-" or better in PHYS 02LA. Covers topics in classical mechanics including Newton’s laws of motion in one and two dimensions; work, energy, and conservation of energy; momentum and collisions; rotational motion; and orbital motion. For biological sciences students. Credit is not awarded for PHYS 002A if it has been awarded for PHYS 040A or PHYS 041A.

**PHYS 002B General Physics (4)**
- Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009B or MATH 094B (may be taken concurrently); PHYS 002A with grade of "C-" or better; concurrent enrollment in PHYS 02LB or a grade of "C-" or better in PHYS 02LB is required. Covers topics in mechanics, thermodynamics, and electromagnetism. Includes fluid mechanics; temperature and heat; the laws of thermodynamics; kinetic theory of gases; electric fields and potentials; current and DC circuits; capacitance and inductance; magnetism; and Faraday’s law. For biological sciences students. Credit is not awarded for PHYS 002B if it has already been awarded for both PHYS 040B and PHYS 040C or PHYS 041B.

**PHYS 002C General Physics (4)**
- Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 002B with a grade of "C-" or better; concurrent enrollment in PHYS 02LC or a grade of "C-" or better in PHYS 02LC. Covers topics in waves and modern physics. Includes harmonic oscillations; mechanical and electromagnetic waves; geometrical optics; reflection, refraction, interference, diffraction, and polarization; and quantum, atomic, and nuclear physics. For biological sciences students. Credit is not awarded for PHYS 002C if it has already been awarded for both PHYS 040D and PHYS 040E or PHYS 041C.

**PHYS 005 History of the Universe (4)**
- Lecture, 3 hours; discussion, 1 hour. An introduction to “The Big Bang” model and its observational tests. Topics include dark energy, dark matter, rapid growth of universe at early times, leftover radiation from “The Big Bang”, galaxy formation, bending of light by gravity, black holes, extraterrestrial life, and the likely fate of the universe.

**PHYS 006 The Violent Universe (4)**
- Lecture, 3 hours; discussion, 1 hour. An introduction to violent phenomena that power the universe, specifically phenomena that illustrate basic astrophysical principles. Topics include impacts in our planetary system: explosions of stars, bursts of star formation, galaxy collisions, black holes, quasars, cosmic jets, and the “Big Bang.”

**PHYS 007 Space-Time, Relativity, and Cosmology (4)**
- Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A nontechnical presentation of the growth of modern science covering topics from Newton and gravitation, Kepler and the motion of celestial bodies, Einstein and relativity, and Planck and Bohr up to present theories on the origin and evolution of the universe. Explores the philosophical ideas, scientific
PHYS 008 Color and Sound: Dimensions in Communication (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Survey the physical principles of light and sound. Topics include visual perception and pattern recognition; the color spectrum; optical instruments; anatomy of the camera and the eye; lasers and holography; vibrations and sound waves; acoustics; reverberation; and sound production in speech, music, and high-fidelity audio devices. Involves demonstrations and illustrations.

PHYS 010 How Things Work (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Survey the physical basis of modern technology, with an emphasis on electronics and electrical devices. Topics include electricity, magnetism, and the physical sciences (xerographic copiers, magnetic levitation, electrical power distribution), communication (radio, TV, computers, tape recorders, CD players), and imaging (cameras, DVD players, x-rays, magnetic resonance imaging).

PHYS 016 Principles of Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 005 is recommended. Topics include principles of motion, force, energy, electromagnetism, properties of matter, atomic structure, waves, sound, light, heat, the Earth, and the solar system and universe. Includes demonstrations and visual illustrations. Not open to students who have completed PHYS 002A, PHYS 002B, PHYS 002C, PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, or PHYS 040E.

PHYS 018 Energy and the Environment (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Covers the physics of energy (thermal, kinetic, potential, chemical, nuclear), its storage and use, primary sources of energy (fossil fuel, nuclear, wind, solar) and their relative effects on the environment. Particular emphasis on determining pathways toward a sustainable infrastructure.

PHYS 020 Exploring the Universe: An Adventure in Astronomy (4) Lecture, 3 hours; workshop, 3 hours. Prerequisite(s): none. An astronomy course for non-science students. The excitement of an evolving and sometimes violent universe of stars and galaxies is explored in this descriptive framework. Here, the union of modern and ancient observations with astrophysical laws will provide a sophisticated but by no means complete picture of the universe. Special topics such as Astrology and Extraterrestrial Life will be discussed.

PHYS 024 DNA in Your Life: The Physical Basis for Structure, Function, and Control (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to various medical, biological, and commercial aspects of physical DNA science.

PHYS 02LA General Physics Laboratory (1) Laboratory, 3 hours. Prerequisite(s): concurrent enrollment in PHYS 002A or a grade of "C-" or better in PHYS 002A. Illustrates the experimental foundations of physics presented in PHYS 002A. Covers the basic principles of classical mechanics.

PHYS 02LB General Physics Laboratory (1) Laboratory, 3 hours. Prerequisite(s): PHYS 002A and PHYS 002B with a grade of "C-" or better; concurrent enrollment in PHYS 002B or a grade of "C-" or better in PHYS 002B. Illustrates the experimental foundations of physics presented in PHYS 002B. Covers the basic principles of fluid and rotational mechanics, temperature, heat, and electromagnetism.

PHYS 02LC General Physics Laboratory (1) Laboratory, 3 hours. Prerequisite(s): PHYS 002B and PHYS 002B with a grade of "C-" or better; concurrent enrollment in PHYS 002C or a grade of "C-" or better in PHYS 002C. Illustrates the experimental foundations of physics presented in PHYS 002C. Covers the basic principles of oscillations, waves, optics, and radioactivity.

PHYS 037 The Origins (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Explores the most fundamental questions in cosmology, physics, and chemical sciences through their origins. Topics include the origin of the Universe, origin of matter, first generation of stars and galaxies, origin of chemical elements, chemistry of life, and astrobiology.

PHYS 039 Adventures in Physics (3) Lecture, 3 hours. Prerequisite(s): none. Covers professional development including physics major and provides pathways to undergraduate research opportunities. Includes aspects of physics relevant to current social and political issues. Graded Satisfactory (S) or No Credit (NC).

PHYS 040A General Physics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): MATH 009A with a grade of "C-" or better or MATH 09HA with a grade of "C-" or better, MATH 009B or MATH 09HB (MATH 009B or MATH 09HB may be taken concurrently). Designed for engineering and physical sciences students. Covers topics in classical mechanics including Newton's laws of motion; friction; circular motion; conservation of energy; dynamics of particles; collisions; rigid-body motion; torque; and angular momentum. Laboratories provide exercises illustrating experimental foundations of physical principles and selected applications. Credit is not awarded for PHYS 040A if it has already been awarded for PHYS 002A or PHYS 002B.

PHYS 040B General Physics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): MATH 009C or MATH 09HC (may be taken concurrently); PHYS 040A with a grade of "C-" or better. Designed for engineering and physical sciences students. Covers topics in mechanics and thermodynamics including elasticity, oscillations, gravitation, fluids; mechanics of energy, and conservation of energy, waves, fluid motion; and particle physics. Laboratories provide exercises illustrating the experimental foundations of physical principles and selected applications.

PHYS 04OCC General Physics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): MATH 009C or MATH 09HC; PHYS 040B with a grade of "C-" or better or concurrent, and circuits. Laboratories provide exercises illustrating the experimental foundations of physical principles and selected applications. Credit is not awarded for PHYS 040C if it has been awarded for PHYS 002B or PHYS 041B.

PHYS 040D General Physics (5) Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): PHYS 040C with a grade of "C-" or better or consent of instructor. For engineering and physical sciences students. Topics include electromagnetism, geometric and wave optics, and modern physics. Credit is not awarded for PHYS 041C if it has already been awarded for both PHYS 040D and PHYS 040E.

PHYS 097 Lower-Division Research (1-4) Individual study, 3-12 hours. Prerequisite(s): consent of instructor. Special research projects in physics performed under the supervision of a member of the staff. This course may not be used to satisfy the undergraduate unit requirements in the major. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

Upper-Division Courses

PHYS 111 Astrophysics and Stellar Astronomy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B, MATH 046, or equivalent. One of the following: PHYS 040D with a grade of C- or better, PHYS 041C with a grade of C- or better, PHYS 002C with a grade of B- or better. Covers stellar interiors, radiations, and evolution; the origin of the elements; particle and electromagnetic radiation; pulsars, quasars, and other unusual objects; and galactic structure and cosmology.

PHYS 130A Classical Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 009C, MATH 010A (may be taken concurrently); one of the following: PHYS 002A with a grade of B- or better, PHYS 040A with a grade of C- or better, PHYS 041A with a grade of C- or better. Explores vector calculus, single-particle motion, particle and electromagnetic radiation; Lagrangian and Hamiltonian dynamics, central-forces motion, and celestial mechanics.

PHYS 130B Classical Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010A, MATH 010B (may be taken concurrently). PHYS 130A. Topics include dynamics of a system of particles, motion in non-inertial reference systems, dynamics of rigid bodies, coupled oscillations, and special theory of relativity.

PHYS 132 Thermal Physics (4) Lecture, 3 hours; dis-
PHYS 133 Advanced Statistical Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 100B; PHYS 040E with a C- or better; PHYS 041B with a C- or better. Covers physical modeling of the structure of proteins; protein folding; structure of nucleic acids; electrostatic potential of DNA; dynamics of biomolecules; structure of a biological cell; osmotic pressures of cells; non-equilibrium thermodynamics; and biochemical reactions.

PHYS 145A Biophysics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 002A with a grade of B- or better, PHYS 040C with a grade of C- or better. Topics include wave-particle duality, the Schrödinger equation, superposition, the uncertainty principle, and one-dimensional harmonic oscillator.

PHYS 156B Quantum Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 156A. Topics include the hydrogen atom, angular momentum and spin representations, many-electron systems, the Pauli exclusion principle, and perturbation theory.

PHYS 156C Quantum Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 156B. Applications in quantum mechanics. Includes perturbation theory and other approximations, scattering, and an introduction to advanced topics such as relativistic quantum mechanics.

PHYS 163 Atomic Physics and Spectroscopy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 113 or equivalent; one of the following: PHYS 002A with a grade of B- or better, PHYS 040A with a grade of C- or better; or consent of instructor. Covers fine structure and spin-orbit coupling in single-electron atoms; atomic structure and momentum coupling and magnetic moments in many-electron atoms; Hartree-Fock solution to many-electron problem; hyperfine structure; atoms in the various electromagnetic fields; the two-level atom; electron spin and nuclear magnetic resonance spectroscopy; laser spectroscopy; and fundamentals of chemical bonding in molecules.

PHYS 164 Introduction to Nuclear Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): One of the following: PHYS 002C with a grade of B- or better, PHYS 040E with a grade of C- or better, PHYS 041C with a grade of C- or better. Addresses the basic nuclear properties, as well as the nuclear building blocks and structure. Explores nuclear interactions, the strong force, the confinement and chiral phase transitions, the quantum chromodynamics (QCD) vacuum, and matter at extreme temperatures and densities.

PHYS 165 Introduction to Particle Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 156A. Explores the classification of particles in terms of the Standard Model. Includes methods and techniques for particle acceleration and detection; conservation laws and symmetries; the basic interactions of particles (electromagnetic, strong, weak); and electroweak unification.

PHYS 166 Cosmology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 156A. Discusses current topics in astrophysics and cosmology from the perspective of elementary particle physics. Topics include the development and structure of the early universe, dark matter and dark energy, cosmic radiation, and particle physics in the stars.

PHYS 168 Environmental Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 040C; one of the following: CHEM 110B, PHYS 002C with a B- or better, PHYS 040D and PHYS 040E both with a grade of C- or better, PHYS 041C with a grade of C- or better. Covers the application of physics to environmental problems. Includes global climate, energy for human use, transport of pollutants, noise, environmental spectroscopy, and the evaluation of...
environmental issues in the context of society.

PHYS 177 Computational Methods for Physical Sciences (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 010 or CS 012 or CS 030. Review of one of the following: PHYS 020C with a grade of B- or better, PHYS 040E with a grade of C- or better, PHYS 041C with a grade of C- or better; or consent of instructor. Covers computer applications for solving problems in physical sciences. Addresses symbolic manipulation languages such as Mathematica, mathematical operations, plotting, and symbolic and numerical techniques in calculus. Includes numerical methods such as histogramming, the Monte-Carlo method for modeling experiments, statistical analysis, curve fitting, and numerical algorithms.

PHYS 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): consent of department chair. Individual study to meet special curriculum needs. Course is repeatable to a maximum of 16 units.

PHYS 195A Senior Thesis (1-4) Thesis, 3-12 hours. Prerequisite(s): senior standing; consent of instructor. A thesis written on research conducted under the supervision of a faculty member. May be undertaken as a one-, two-, three-, or four-quarter course (PHYS 195A, PHYS 195B, PHYS 195C, PHYS 195D). Total credit awarded for PHYS 195A plus PHYS 195B plus PHYS 195C plus PHYS 195D may not exceed 8 units; a maximum of 4 units may be used to satisfy the unit requirement for the major, and a maximum of any combination of PHYS 195A, PHYS 195B, PHYS 195C, and PHYS 195D). Total credit awarded for PHYS 195A plus PHYS 195B plus PHYS 195C plus PHYS 195D may not exceed 8 units; a maximum of 4 units may be used to satisfy the unit requirement for the major, and a maximum of 5 units of any combination of PHYS 195A, PHYS 195B, PHYS 195C, and PHYS 195D may be used to substitute for PHYS 142L. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned; a Satisfactory (S) or No Credit (NC) grade is awarded unless the course is taken to substitute for PHYS 142L.

PHYS 195D Senior Thesis (1-4) Thesis, 3-12 hours. Prerequisite(s): senior standing; consent of instructor; PHYS 195C. A thesis written on research conducted under the supervision of a faculty member. May be undertaken as a one-, two-, three-, or four-quarter course (PHYS 195A, PHYS 195B, PHYS 195C, PHYS 195D). Total credit awarded for PHYS 195A plus PHYS 195B plus PHYS 195C plus PHYS 195D may not exceed 8 units; a maximum of 4 units may be used to satisfy the unit requirement for the major, and a maximum of 5 units of any combination of PHYS 195A, PHYS 195B, PHYS 195C, and PHYS 195D may be used to substitute for PHYS 142L. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned; a Satisfactory (S) or No Credit (NC) grade is awarded unless the course is taken to substitute for PHYS 142L.

PHYS 195B Senior Thesis (1-4) Thesis, 3-12 hours. Prerequisite(s): senior standing; consent of instructor; PHYS 195A. A thesis written on research conducted under the supervision of a faculty member. May be undertaken as a one-, two-, three-, or four-quarter course (PHYS 195A, PHYS 195B, PHYS 195C, PHYS 195D). Total credit awarded for PHYS 195A plus PHYS 195B plus PHYS 195C plus PHYS 195D may not exceed 8 units; a maximum of 4 units may be used to satisfy the unit requirement for the major, and a maximum of 5 units of any combination of PHYS 195A, PHYS 195B, PHYS 195C, and PHYS 195D may be used to substitute for PHYS 142L. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned; a Satisfactory (S) or No Credit (NC) grade is awarded unless the course is taken to substitute for PHYS 142L.

PHYS 197 Research for Undergraduates (1-4) Individual study, 3-12 hours. Prerequisite(s): upper-division standing; consent of instructor. Special research projects in physics performed under the supervision of a member of the faculty. May be undertaken as a one-, two-, three-, or four-quarter course. Course is repeatable to a maximum of 8 units. Prerequisite(s): upper-division standing; consent of department chair. Individual study to meet special curriculum needs. Course is repeatable to a maximum of 16 units.

Graduate Courses

PHYS 202 Interdisciplinary Overview of Current Issues in Semiconductor Processing (3) Lecture, 3 hours. Prerequisite(s): upper-division standing; consent of instructor; PHYS 195A. A thesis written on research conducted under the supervision of a faculty member. May be undertaken as a one-, two-, three-, or four-quarter course (PHYS 195A, PHYS 195B, PHYS 195C, PHYS 195D). Total credit awarded for PHYS 195A plus PHYS 195B plus PHYS 195C plus PHYS 195D may not exceed 8 units; a maximum of 4 units may be used to satisfy the unit requirement for the major, and a maximum of 5 units of any combination of PHYS 195A, PHYS 195B, PHYS 195C, and PHYS 195D may be used to substitute for PHYS 142L. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned; a Satisfactory (S) or No Credit (NC) grade is awarded unless the course is taken to substitute for PHYS 142L.

PHYS 198-199 Individual Internship in Physics (1-12) Written work, 1-2 hours; internship, 2-4 hours. Prerequisite(s): upper-division standing; consent of department chair. Provides experience as a practicing scientist in a government or industrial laboratory. Includes an interdisciplinary overview of present-day semiconductor processing. Introduces topics such as properties of semiconductors, cleanroom environment, epitaxy, ion implantation, etching, lithography, device architecture, testing, and fault detection. May offer field trips. Cross-listed with CHEM 208 and MSE 245D.

PHYS 203 Statistical Astronomy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 218. Introduces statistical methods needed to analyze astronomical data. Provides case examples of problems in observational astronomy and applies statistical techniques to solve them. Covers probability, correlation and association, hypothesis testing, data modelling, maximum likelihood technique, detection and surveys, sequential data, and surface distribution.

PHYS 204 Advanced Galaxy Formation and Cosmology (4) Lecture, 3 hours; laboratory, 1 hour. Prerequisite(s): PHYS 211A and PHYS 211B. Covers the formation of galaxies, star formation, galaxy evolution, and the large-scale structure of the universe. Topics include: the formation of galaxies, star formation, galaxy evolution, and the large-scale structure of the universe. Prerequisite(s): PHYS 209A or consent of instructor.

PHYS 205 Classical Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite: graduate standing in Physics. Covers the Lagrangian formulation, calculus of variations, Hamilton’s principle, conservation principles and symmetry properties, the two-body central force problem, the Kepler problem, and scattering. Also examines orthogonal transformations, rigid body motion, the inertia tensor, Euler’s equations, Hamiltonian formulation, canonical transformations, and complex integration.

PHYS 208 General Relativity (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 205. Covers tensors, covariant derivative, the Riemann curvature tensor and Einstein’s equation; geodesics, geodesic deviation; applications to the solar system and black holes. Gravity waves and expanding universe.

PHYS 209A Quantum Electronics (4) Lecture, 4.5 hours. Prerequisite(s): PHYS 138B, PHYS 156A; consent of instructor. Quantum theory of light and interaction of light with atoms. Density matrix formulation of atomic susceptibility. Propagation of light in matter and optical waveguides. Optical resonators. Topics include: the theory of light, lasers, and nonlinear optical effects. Letter grades are assigned to students whose research is related to atomic, molecular, or optical physics. Other students receive either a letter or Satisfactory (S) or No Credit (NC) grade.

PHYS 209B Nonlinear Optics (4) Lecture, 4.5 hours. Prerequisite(s): PHYS 209A or consent of instructor. Wave propagation in nonlinear media. Electro-optic effect, three- and four-wave mixing, high-intensity femtosecond nonlinear spectroscopies, rare atom and molecule detection, laser manipulation of particles, high-intensity laser physics, laser-plasma interactions. Letter grades are assigned to students whose research is related to atomic, molecular, or optical physics. Other students receive either a letter or Satisfactory (S) or No Credit (NC) grade.

PHYS 210A Electromagnetic Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Covers topics in electrostatics, including Coulomb potential, boundary value problems, multipole, and dielectric media. Also addresses Laplace’s equation and Green’s function in Cartesian, spherical, and cylindrical coordinates.

PHYS 210B Electromagnetic Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 210A; graduate standing; consent of instructor. Covers topics in electromagnetism. Includes magnetostatics, quasistationary electromagnetism, Maxwell’s equations, gauge transformations, Maxwell’s stress tensor, analytically of dielectric susceptibility, and electromagnetic waves in uniform media and waveguides.

PHYS 210C Electromagnetic Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 210A or consent of instructor. Covers electromagnetic radiation and scattering of electromagnetic fields in non-uniform media (geometrical optics, interference, and diffraction); special theory of relativity; Lagrangian formalism; and dynamics of relativistic particles in external fields. Also examines Cherenkov radiation and magnetic monopoles.

PHYS 211A Radiative Processes in Astrophysics (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 135A, PHYS 135B, PHYS 136, PHYS 156A, PHYS 201A, PHYS 201B. Radiative transfer by an off-axis line radiation, Einstein coefficients, photopionization equilibria, radiation by free electrons, bremsstrahlung and synchrotron emission, Compton and inverse Compton scattering, wave propagation through magnetized plasma, atomic and molecular structure and spectra, atomic fine structure, and hyperfine levels. Letter grades are assigned to students whose research is related to astrophysics. Other students receive either a letter or Satisfactory (S) or No Credit (NC) grade.

PHYS 211B Astrophysical Fluid Dynamics (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 211A. Covers hydrodynamics, sound waves, turbulence, supersonic turbulence, magnetohydrodynamics, Alfvén waves, extragalactic relativistic jets, supersonic jets, galactic spiral structure and densi-
ty-wave theory, accretion disk theory, Balbus-Hawley instability, and stellar winds. Students whose research is related to astrophysics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 212A Thermodynamics and Statistical Mechanics
(4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Covers classical thermodynamics, ideal Bose systems, ideal Fermi systems, and bulk motion. Cross-listed with MSE 204. Wudka

PHYS 212B Thermodynamics and Statistical Mechanics
(4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MSE 204/PHYS 212A; graduate standing; consent of instructor. Addresses functional integrals and approximation techniques. Provides an introduction to phase transitions and the renormalization group.

PHYS 213 Astrophysics of the Interstellar Medium
(4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. An overview of the interstellar medium and relevant physical processes. Covers the structure and evolution of ionized hydrogen regions associated with massive stars and supernovae. Also addresses the neutral and ionized phases of the interstellar medium, as well as cooling processes. Includes the interpretation of spectral lines. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PHYS 214 Techniques of Observational Astrophysics
(4) Lecture, 2 hours; laboratory, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing. An introduction to the basic tools of observational astronomy. Topics include astronomical telescopes and detectors, observing techniques, calibration, and error analysis. Students whose research is related to astronomy receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 215 Dynamics and Evolution of Galaxies
(4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. Discusses the structure, stability, and dynamic and cosmological evolution of galaxies. Interprets observational data on galaxies within a coherent theoretical framework. Topics include potential theory, orbits, collisionless systems, and the structure and evolutionary history of galaxies. Students whose research is related to astronomy receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 216 Star Formation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. An introduction to the basic tools of observational astronomy. Topics include astronomical telescopes and detectors, observing techniques, calibration, and error analysis. Students whose research is related to astronomy receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 217 Stellar Structure and Evolution (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. An introduction to the basic tools of observational astronomy. Topics include potential theory, orbits, collisionless systems, and the structure and evolutionary history of galaxies. Students whose research is related to astronomy receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 218 Quantum Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 217; graduate standing; consent of instructor. Examines the fundamental concepts of quantum mechanics and the quantum properties of the universe. Topics include quantum mechanics, wave functions, and the uncertainty principle. Students whose research is related to quantum mechanics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 219 Cosmology and Galaxy Formation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 218; graduate standing; consent of instructor. Examines the fundamental concepts of quantum mechanics and the quantum properties of the universe. Topics include quantum mechanics, wave functions, and the uncertainty principle. Students whose research is related to quantum mechanics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 220 Quantum Computing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 201/MSE 207 or equivalent; graduate standing; consent of instructor. An introduction to quantum computing. Topics include qubits, entanglement, quantum gates, quantum circuit diagrams, simple quantum algorithms, quantum teleportation, quantum cryptography, Shor’s factorization algorithm, Grover’s search algorithm, and quantum error correction. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with EE 214.

PHYS 221A Quantum Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 218; graduate standing; consent of instructor. Examines the fundamental concepts of quantum mechanics and the quantum properties of the universe. Topics include quantum mechanics, wave functions, and the uncertainty principle. Students whose research is related to quantum mechanics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 221B Quantum Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 218; graduate standing; consent of instructor. Covers angular momentum and approximation methods, including perturbation theory.

PHYS 221C Quantum Mechanics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 218B; graduate standing; consent of instructor. Covers symmetries in quantum mechanics, identical particles, and scattering theory. Desai

PHYS 225A Elementary Particles (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 218A, PHYS 218B; or consent of instructor. An introduction to the basic tools of observational astronomy. Topics include potential theory, orbits, collisionless systems, and the structure and evolutionary history of galaxies. Students whose research is related to astronomy receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 225B Elementary Particles (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 225A; graduate standing; consent of instructor. Covers advanced topics in particle physics, such as the Standard model, Charge-Parity (CP) violation and conservation laws, and mixing in the neutrino sector and lepton number. Students whose research is related to high-energy physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 226 Cosmology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. An overview of contemporary topics in particle cosmology. Discusses advanced topics in cosmology: Friedmann models and the large-scale structure of the universe, Hubble constant and deceleration parameter, and galaxy clustering and the physics of the early universe. Also covers vacuum phase transitions, inflation, baryon number generation, fluctuations, topological defects and textures, primordial nucleosynthesis, density fluctuations, dark matter candidates, and the age of the universe. Students whose research is related to cosmology or astrophysical processes receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 227 Particle Astrophysics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; PHYS 226. An introduction to particle astrophysics: the early universe, the origin of matter, primordial perturbations, the origin of structure, the nature of dark matter, vacuum energy, matter-antimatter asymmetry, neutrino astrophysics, gravitational radiation, the origin of ultrahigh energy cosmic rays, and Hawking radiation. Students whose research is related to cosmology or astrophysical processes receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 230A Advanced Quantum Mechanics and Quantum Theory of Fields (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 221A, PHYS 221B, or consent of instructor. Topics include quantization of fields for particles with spins 0, 1/2, and 1; path integrals; Feynman diagrams; and scattering amplitudes and cross sections. Students whose research is related to quantum mechanics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 230B Advanced Quantum Mechanics and Quantum Theory of Fields (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 220A or consent of instructor. Topics include quantization of fields for particles with spins 0, 1/2, and 1; path integrals; Feynman diagrams; and scattering amplitudes and cross sections. Students whose research is related to quantum mechanics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 230C Advanced Quantum Mechanics and Quantum Theory of Fields (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): PHYS 230B or consent of instructor. A study of current topics in quantum field theory, including solitons and instantons, supersymmetry, and the unification of all forces. Students whose research is related to quantum mechanics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 231 Methods of Theoretical Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. A study of analytic functions, Cauchy’s theorem, Taylor series, Laurent series, expansions, the residue theorem, and analytic continuation.

PHYS 234 Physics of Nanoscale Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. A study of analytic functions, Cauchy’s theorem, Taylor series, Laurent series, expansions, the residue theorem, and analytic continuation.

PHYS 235 Spintronics and Nanoscale Magnetism (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Provides an overview of contemporary topics in nanoscale magnetism and spin-dependent phenomena in solids, including the fundamentals of magnetism, magnetism in reduced dimensions, novel magnetic materials, spin-polarized transport, spin coherence in semiconductors, magnetization dynamics, and device applications. Students whose research is related to
materials and nanoscale systems physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with MSE 234B.

PHYS 236 Advanced Imaging Techniques (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Discusses techniques for imaging and structural characterizations of nanoscale materials and devices, including the techniques of X-ray diffraction, electron diffraction, and electron microscopy. Students whose research is related to materials and nanoscale systems physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with MSE 214.

PHYS 240A Condensed Matter Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 221C; graduate standing or consent of instructor. Topics include classical and quantum theories of the electron gas, crystal and reciprocal lattices, X-ray diffraction, crystal symmetries, electrons in a periodic potential, nearly free electrons, tight binding, semiclasical dynamics, and semiclassical transport. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade. Cross-listed with MSE 214.

PHYS 240B Condensed Matter Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 240A or consent of instructor. Topics include measuring the Fermi surface, band structure, electron scattering, electron-electron interactions, surface effects, classification of solids, cohesive energy, classical and quantum harmonic crystals, and phonon dispersion relations. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 240C Condensed Matter Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 240B or consent of instructor. Topics include anharmonic phonon effects, phonons in metals, dielectric properties, homogenous and inhomogeneous semiconductors, defects, diamagnetism, paramagnetism, magnetic interactions, magnetic ordering, and superconductivity. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 240D Advanced Solid State Physics (4) W Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PHYS 240C. Discusses the techniques of group theory and symmetry considerations applied to solid state physics. Uses these techniques to analyze and develop the theory and experiments of ferro and anti-ferromagnetism, ferroelectricity, spintronics, and correlated fermions. Students whose research is related to condensed solid state physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 241A Advanced Statistical Physics and Field Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; PHYS 212B or consent of instructor; PHYS 221C or consent of instructor. PHYS 240A, PHYS 240B, and PHYS 240C are prerequisites. Students who give group presentations in this course are required to present a final paper or project. Outside research, 12-20 hours. Prerequisite(s): graduate standing; consent of instructor. Options for advanced students, faculty, and students on current research topics in physics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable within the following 60 units: Up to 6 units may be taken toward the award of the Master’s degree, such units to be in addition to minimum unit requirements for the degree. Up to 12 additional units may be taken (continued) prior to advancement to candidacy for the Ph.D.

PHYS 241C Advanced Statistical Physics and Field Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; PHYS 241A. Topics include advanced field-theory techniques applied to many-body systems, exactly soluble classical and quantum models in one and two dimensions, quantum Hall effect, and other advanced topics in condensed matter physics. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 241D Advanced Statistical Physics and Field Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing; PHYS 241B. Topics include quantum magnetism, unconventional superconductivity, localization phenomena, mesoscopic systems, nonequilibrium phenomena, and advanced field-theory methods, such as methods for treating disorder. Students whose research is related to condensed matter physics receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

PHYS 242 Physics at Surfaces and Interfaces (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Overview of surface science, electronic and geometric structure of clean surfaces, techniques for investigating structure, electron spectroscopy of surfaces, adsorption on surfaces, vibrational and electronic excitations in many-body systems, critical phenomena, and applications of surface science. Letter grades will be assigned to students whose research is related to surface physics. Other students will receive either a letter or Satisfactory (S) or No Credit (NC) grade.

PHYS 246 Biological Physics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduces topics at the interface of physics and biology, cell physiology, probability and information, diffusion, random walks, electrostatics, elasticity of biopolymers and membranes, DNA topology, friction in fluids, and low Reynolds numbers. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PHYS 250 Special Topics Seminar in Physics and Astronomy (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Physics and Astronomy or consent of instructor. Includes oral presentations and intensive small-group discussion of selected topics in the area of specialization of each faculty member. Emphasizes recent advances in the special topic area; course content varies accordingly. Students who present a seminar receive a letter grade. Students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 99 units.

PHYS 253 (E-Z) Special Topics (3) Seminar, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Additional prerequisites may be required for segments of this course; see department. Discusses subjects such as magnetohydrodynamics, astrophysics, and high-energy physics. Graded Satisfactory (S) or No Credit (NC). Some segments of this course may be repeatable; see Department. Yzch

PHYS 256 Advances in Nanoscale Physics (1 or 2) Seminar, 1 hour; individual study, 0-3 hours. Prerequisite(s): graduate standing or consent of instructor. Seminar on current topics in nanoscale physics and materials science, including nanoelectronic devices, nanoelectromechanical systems, nanoscale biophysics, spintronics, nanoscale magnetism, nanophotonic systems, and advanced characterization techniques. Students who give group presentations receive credit for 2 units; other students receive credit for 1 unit. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 258 Seminar in Surface Science (1) Seminar, 1 hour. Prerequisite(s): graduate standing in Physics or Chemistry or consent of instructor. Oral presentations by participating visiting scholars, postdoctoral researchers, students, and UCR faculty on current research topics in surface science. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with CHEM 258. Yarmoff

PHYS 288 Current Research Themes in Physics (2) F Seminar, 1 hour; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduces first-year graduate students to current issues in physics research at UCR. Involves seminars by faculty on their research and interactions with advanced students and postdoctoral researchers. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 289 Colloquium in Physics (1) Colloquium, 1 hour. Prerequisite(s): graduate standing; consent of instructor. Specialized discussions by visiting scientists, faculty, and students on current research topics in physics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Chair in charge

PHYS 290 Directed Studies (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor; consent of advisor or Department Chair. Individual study, directed by a faculty member, of specially selected topics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 291 Individual Study in Coordinated Areas (1-6) Individual study, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor. Faculty-assisted programs of individual study for candidates who are preparing for examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable within the following 60 units: Up to 6 units may be taken (continued) prior to advancement to candidacy for the Ph.D.

PHYS 296 Summer Research in Physics (2) Summer Outside research, 12-20 hours. Prerequisite(s): graduate standing. Introduces first-year graduate students to current issues in physics research at UCR. Involves mentoring by faculty on research and interaction with advanced students and postdoctoral researchers. Offered in summer only. Graded Satisfactory (S) or No Credit (NC).

PHYS 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing; consent of instructor. Original research, in an area selected for the advanced degree, performed under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 299 Research for Thesis or Dissertation (1-12) Thesis, 3-36 hours. Prerequisite(s): graduate standing; consent of instructor. Original research, in an area selected for the advanced degree, performed under the direction of a faculty member. This research is to be included as a part of the dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

PHYS 301 Teaching of Physics at the College Level (2) Lecture, 2 hours. Prerequisite(s): graduate standing in Physics or consent of instructor. Required of all Teaching Assistants in the Department. Designed to introduce effective methods for teaching physics and to evaluate and improve teaching skills. Topics covered include lecture techniques, effective visual aids, improving laboratory and recitation section learning situations. Credit not applicable toward degree course requirements. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Chair in charge

PHYS 302 Teaching Practicum (1-4) Consultation, 1 hour; laboratory, 3-12 hours; practicum, 3-12 hours. Prerequisite(s): Appointment as a departmental Teaching Assistant; graduate standing; consent of instructor. Supervised teaching in Physics courses and regular consultation with faculty supervisor(s) regarding teaching responsibilities. Credit not applicable toward degree course

Cash
Plant Biology
See Botany and Plant Sciences

Plant Pathology and Microbiology

Subject abbreviation: PLPA
College of Natural and Agricultural Sciences

Katherine A. Borkovich, Ph.D., Chair
Department Office, 1463 Boyce Hall
(800) 735-0717 or (951) 827-2753
plantpathology.ucr.edu

Professors Emeriti

Michael F. Allen, Ph.D.
Salomon Barthinki-Garcia, Ph.D.
Donald A. Cooksey, Ph.D.
J. Allan Dodds, Ph.D.
Joseph W. Eckert, Ph.D.
Donald C. Erwin, Ph.D.
Dennis F. Focht, Ph.D.
John A. Menge, Ph.D.
Donald E. Munnecke, Ph.D.
Howard Orr, Ph.D.
Alberto O. Paulus, Ph.D.
Joseph S. Semancik, Ph.D.
James J. Sims, Ph.D.
Michael E. Stanghellini, Ph.D.
Peter H. Tsao, Ph.D.
Georgios Vidalakis, Ph.D.

Professors

James E. Adaskaveg, Ph.D.
Katherine A. Borkovich, Ph.D.
James Borneman, Ph.D.
Michael D. Coffey, Ph.D.
Shou-Wei Ding, Ph.D.
Hailing Jin, Ph.D.
Howard S. Juddelson, Ph.D.
Wenbo Ma, Ph.D.
A. L. N. Rao, Ph.D.
Jason E. Stajich, Ph.D.

Undergraduate Curriculum

The Department of Microbiology and Plant Pathology participates in the Microbiology and Botany and Plant Sciences majors leading to the baccalaureate degree. See the Microbiology or Botany and Plant Sciences section of this catalog.

Graduate Program

The Department of Microbiology and Plant Pathology offers the M.S. and Ph.D. degrees in Plant Pathology.

Admission
In addition to meeting the requirements for admission to the Graduate Division, students typically have a baccalaureate major in a biological science or training equivalent to that given in the Plant Science curriculum of the College of Natural and Agricultural Sciences. Majors in the physical sciences are welcomed, but students must be prepared to augment their undergraduate preparation with courses in the biological sciences. All applicants must provide GRE General Test scores (verbal, quantitative, analytical).

All candidates for the M.S. or the Ph.D. degree should have good basic preparation in chemistry and biology. It is common for students to have completed courses in biochemistry, organic chemistry, cell and molecular biology, elementary college mathematics, general physics, general botany, microbiology, statistics, genetics, plant physiology, mycology, and plant pathology. If these courses have been completed as an undergraduate, graduate study is facilitated. If students have not completed these courses prior to admission, they may be required to take them early in their graduate career.

Master's Degree

The Department of Microbiology and Plant Pathology offers the M.S. degree in Plant Pathology.

General university requirements are given in the Graduate Studies section of this catalog. The master's degree in Plant Pathology is offered under Plans I or II.

Plan I (Thesis)

Requires 36 units of upper-division and graduate courses, of which at least 24 must be in the 200-series courses in Plant Pathology or Nematology. A maximum of 12 units may be in graduate research for the thesis.

Plan II (Comprehensive Examination)

Requires 36 units of upper-division and graduate courses, of which at least 18 must be in the 200-series courses in Plant Pathology or Nematology, excluding graduate research for a thesis or dissertation, and a comprehensive final examination in the major subject.

The departmental graduate advisory committee, in consultation with the student's major professor or curriculum advisor, is responsible for prescribing the course of study, which requires as a minimum PLPA 120, PLPA 120L, PLPA 200, PLPA 206/NEM 206, PLPA 207, PLPA 234, PLPA 250 and PLPA 265.

Doctoral Degree

The Department of Microbiology and Plant Pathology offers the Ph.D. degree in Plant Pathology.

In accord with the student's preparation and specific interests, the departmental graduate advisory committee, in consultation with the student's major professor or curriculum advisor, prescribes areas where study is required. In addition to selected subjects in plant pathology, related fields in which some degree of competence may be expected is drawn normally from biochemistry, biology, chemistry, cell and molecular biology, entomology, genetics, mathematics, microbiology, nematology, plant physiology, soils, and statistics.

The departmental graduate advisory committee, in consultation with the student's major professor or curriculum advisor, is responsible for prescribing the course of study.

Course Work
The course of study requires as a minimum PLPA 200, PLPA 206/NEM 206, PLPA 207, PLPA 210, PLPA 234, PLPA 250 and PLPA 265.

Written and Oral Qualifying Examinations
Students must demonstrate to the departmental graduate advisory committee, by written and oral examination, adequate preparation in the fields fundamental to plant pathology and in any area in which students have placed special emphasis in their training. A written dissertation research proposal is to be prepared before the qualifying examination and defended during the oral examination. After successful completion of the qualifying examination and all other formal requirements to the satisfaction of the dean of the Graduate Division, the student is advanced to candidacy for the Ph.D. degree.

Dissertation and Final Oral Examination
A dissertation is required of every candidate. The dissertation must be approved by the dissertation committee before the candidate may take the final oral examination. The final oral examination deals primarily with defense of the dissertation and its relation to the field in which its subject lies.

Normative Time to Degree

18 quarters

Lower-Division Course

PLPA 010 Microbes and Society: A Window into the Microbial World around Us (4) F, W Lecture; 3 hours; extra reading, 3 hours. An introduction to the remarkable diversity and biology of microorganisms. Emphasizes the areas microorganisms impact human affairs, including food production, agriculture, medicine, and history. Includes cheese-, yogurt-, wine-, beer- and bread-making; the Irish potato famine; tulipomania; antibiotics; mushrooms and mushroom lore; food preparation; microbial toxins and food poisoning; and vaccines and useful viruses. Ng

Upper-Division Courses

PLPA 120 Introduction to Plant Pathology (3) F Lecture, 3 hours. Prerequisite(s): BIOL 005A, BIOL 05LA or BIOL 020, BIOL 05LB, BIOL 005G, CHEM 001C or CHEM 011C, CHEM 008C, and CHEM 08LC. or CHEM 08HC and CHEM 08HL, MATH 007B or MATH 009B or MATH 09HB, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. An introduction to the study of plant
plants. Topics include diseases and disease-causing agents, host-pathogen interaction during disease development, and strategies for disease management. An optional, separate laboratory is offered. Cross-listed with BIOL 120 and MCLB 120. Credit is not awarded for PLPA 210 if it has already been awarded for BIOL 120/MCLB 120/PLPA 120 and/or BIOL 120/ MCLB 120/PLPA120L. Manosalva

PLPA 210L Introduction to Plant Pathology Laboratory (1) F Laboratory, 4 hours. Prerequisite(s): BIOL 005A, BIOL 005B; concurrent enrollment in BIOL 120/MCLB 120/PLPA 120 or consent of instructor; BIOL 121/ MCLB 121 and BIOL 124/MCLB 124 recommended. Covers fundamentals in the use of laboratory instru- ments and techniques for the detection, isolation, and identification of representative infectious agents that cause disease in plants. Cross-listed with BIOL 120L and MCLB 120L. Credit is not awarded for PLPA 210 if it has already been awarded for BIOL 120/MCLB 120/PLPA 120 and/or BIOL 120/MCLB 120/PLPA 120L. Manosalva

PLPA 123 Introduction to Comparative Virology (4) S Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 051A or BIOL 020, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LB or CHEM 08HC and CHEM 08HL, MATH 009B or MATH 009H, PHYS 002C, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Considers viruses as infectious agents of bacteria, plants, and animals (vertebrates and invertebrates). Compares the major groups of viruses to each other with respect to their biological and biochemical properties, molecular and genetic characteristics, and modes of replication. Cross-listed with BIOL 123 and MCLB 123. Rao

PLPA 125 Pesticides, Biological Organisms, and the Environment (3) Lecture, 3 hours. Prerequisite(s): two of the following courses; BIOL 005A, BIOL 005B, BIOL 005C, CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08HLB; CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC. An introduction to the chemistry, mode of action, and use of insecticides, acaricides, herbicides, and biopesti- cides from discovery to environmental interactions. Includes genetics of pesticide resistance development and government regulation. Cross-listed with ENTM 125 and ENTX 125. Miller

PLPA 134 Introduction to Mycology (3) F Lecture, 3 hours. Prerequisite(s): BIOL 005A, BIOL 051A or BIOL 020, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 008C and CHEM 08LB, or CHEM 08HC and CHEM 08HL, MATH 009B or MATH 009H, MATH 09HB, PHYS 02LC, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Introduction to the morphology, taxonomy, genetics, physiology, ecology, and economic importance of the major groups of the fungi. Cross-listed with BIOL 134. Adaskaveg

PLPA 134L Introduction to Mycology Laboratory (1) F Laboratory, 3 hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or equivalents; concurrent enrollment in BIOL 134 or consent of instructor. Introduces fundamentals in the use of laboratory instru- ments and techniques for the isolation, cultivation, and identification of representatives of the major taxa of fungi. Cross-listed with BIOL 134L. Adaskaveg

PLPA 190 Special Studies (1-5) Prerequisite(s): consent of instructor. To be taken as a means of meeting special curricular problems.

PLPA 197 Research for Undergraduates (1-4) Prerequisite(s): consent of instructor. Individual research in plant pathology performed under the guidance of members of the staff.

Graduate Courses

PLPA 200 Fungal Diseases of Plants (3) F Lecture, 2 hours; laboratory, 3 hours. Prerequisite(s): BIOL 134/ PLPA 134 or consent of instructor. A study of impor- tant fungal diseases of plants including biology of development of pathogens, host-parasite relations, and survival strategies. Emphasizes disease physiology, epidemiology, etiology, and control measures including breeding for resistance and chemical and biological control. Gachomo

PLPA 205 Signal Transduction Pathways in Microbes and Plants (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in the biological sciences, BIOL 107A or BIOL 113 or BIOL 114 or CHEM 101; or consent of instructor. Advanced topics in signal transduction pathways that regulate growth and development in plants and prokaryotic and eukary- otic microbes. Topics will include two-component regulatory systems; quorum sensing; signaling via small and heterotrimeric G proteins; mitogen-activated protein kinase cascades; cAMP signaling; photoreceptors; plant hormone signaling; responses to low-oxygen stress; calcium signaling; and plant pathogenesis. Cross-listed with BCH 205, BPSC 205, CMDB 205, GEN 205, and MCLB 205. Borkovich

PLPA 206 Phytopathogens: Nematodes (2) S, Odd Years Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Recognition of nematodes, life cycle, natural history of nematode symbiotic and parasitic diseases of plants. Laboratory covers identification techniques, soil sampling and processing techniques, and process of pathogenesis. Cross-listed with NEM 205. Roberts

PLPA 207 Viral and Bacterial Diseases of Plants (3) W Lecture, 2 hours; laboratory, 3 hours. Prerequisite(s): BIOL 120, MCLB120, or PLPA 120; or consent of in- structor. An extensive introduction to bacterial diseas- es of plants including symptomatology, epidemiology, diagnosis, control, and the physiology and biochemis- try of plant-bacterial interactions. Ma, Ng, Roper

PLPA 219 Molecular Plant Virology (3) Lecture, 3 hours. Prerequisite(s): PLPA 207. Molecular biology of plant, animal, and bacterial viruses and viroids. Emphasizes plant viruses, replication strategies, evolution, genetics, viruses as genetic vectors, and recombination. Rao

PLPA 221 Chemical Control of Plant Diseases (3) W, Even Years Lecture, 3 hours. Prerequisite(s): consent of instructor. A study of the principles of selective toxicity as applied to the control of plant diseases; the chemistry and mechanism of action of antimicrobial agents. 

PLPA 220 Microbial Genetics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 110C, BIOL 110D, BIOL 107A; BIOL 102. In-depth coverage of the genetics of microorganisms. Emphasizes the primary data and the foundation of modern techniques using viruses, ar- chae, prokaryotes, and eukaryotes. Includes genome sequences and organization, plasmids and other vec- tors, and mutation and genetic screens. Also covers transposable elements, recombination, and regulation of gene expression, development, and pathogenesis. Cross-listed with BIOL 221 and MCLB 221. Borkovich

PLPA 230 Molecular Plant-Microbial Interactions (3) F, Odd Years Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): BCH 100, BIOL 120/MCLB 120/ PLPA 120, or equivalents. A study of the physiology of host-pathogen interactions with emphasis on the metabolism of diseased plants, nature of pathogenic- ity, and defense mechanisms in plants. Cross-listed with BPSC 230, CMDB 230, and GEN 230. Eulgem, Jin, Khaloshian

PLPA 234 Introduction to Mycology (5) F Lecture, 3 hours; laboratory, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing in Plant Pathol- ogy, introduction fungi and related kingdoms of organisms. Includes overview of major taxonomic groups of fungi and their morphology, physiology, classical genetics, and ecology. Discusses the economic importance of fungi as related to plant pathology. Credit is not awarded for PLPA 234 if it has already been awarded for BIOL 134/PLPA 134 or BIOL 134/PLPA 134L. Adaskaveg

PLPA 235 Epidemiology of Plant Disease (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 120/ MCLB 120/PLPA 120. An introduction to the study of plant disease epidemiology and management. Topics will include: temporal, spatial, and genetic aspects of disease development in plant populations; assessment and prediction of disease and crop loss; inoculum density-disease relationships; and modeling. Adaskaveg

PLPA 240 Field Plant Pathology (1) F field trips. Prerequisite(s): consent of instructor. This course will deal with diagnosis of plant disease in the field, collection of data, and reports and control methods. Graded Satisfactory (S) or No Credit (NC). Adaskaveg, Vidalakis

PLPA 241 Special Topics (2) Lecture, 2 hours. Prerequisite(s): graduate standing or consent of in- structor. Oral presentations and intensive small-group discussion of selected topics in each faculty member's area of specialization. Course content emphasizes research advances in the special topic area and varies accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with MCLB 241.

PLPA 245 Field Mycology (1) field trips. Prerequi- site(s): BIOL 134/PLPA 134 or consent of instructor. This course will deal with observation, collection and identification of fungi both in the field and the labora- tory. Graded Satisfactory (S) or No Credit (NC).

PLPA 246 Diagnosis of Plant Disease (2) W Lecture, 1 hour; laboratory, 1 hour; field, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Field trips to observe symptomatology of diseases in nature, identification by laboratory and greenhouse tests, approaches to control, plant culture practices for major California crops, and influences of crop management on disease development. Adaskaveg

PLPA 250 Seminar in Plant Pathology (1) Seminar, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Reports and discussions of selected topics in plant pathology by graduate students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PLPA 260 Current Research in Plant Pathology (1) Seminar, 1 hour. Prerequisite(s): graduate standing. Topics in plant pathology will be discussed by outstanding workers in the field from this and other areas not covered by formal course work under a professor who will direct the amount and judge the
quality of the work. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PLPA 291 Individual Study in Coordinated Areas (1-6) Outside research, 1-6 hours. Prerequisite(s): graduate status. A program of study designed to advise and assist candidates who are preparing for examinations. A student may take up to 12 additional units prior to successful completion of the Ph.D. qualifying examination. Graded Satisfactory (S) or No Credit (NC).

PLPA 297 Directed Research (1-6) Graded Satisfactory (S) or No Credit (NC).

PLPA 299 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Political Science
Subject abbreviation: POSC
College of Humanities, Arts, and Social Sciences
John Medearis, Ph.D., Chair
Department Office, 2206 Watkins Hall
(951) 827-5312; politicalscience.ucr.edu

Professors
Benjamin Bishin, Ph.D.
Shaun Bowler, Ph.D. Distinguished Professor
Paul D’Arienzi, Ph.D.
Kevin M. Esterling, Ph.D.
John C. Laursen, Ph.D.
John N. Medearis, Ph.D.
Jennifer Merolla, Ph.D.
David S. Pion-Berlin, Ph.D.
S. Karthick Ramakrishnan, Ph.D.
Georgia Warnke, Ph.D. Distinguished Professor

Professors Emeriti
Francis M. Carney, Ph.D.
Max Neiman, Ph.D.
Frank Way, Ph.D. (Political Science/Religious Studies)

Associate Professors
John W. Ciolfi, Ph.D.
Farah Godrej, Ph.D.
Indridi Indridason, Ph.D.
Bronwyn A. Leebaw, Ph.D.
Ronald O. Loveridge, Ph.D.

Assistant Professors
Daniel Biggers, Ph.D.
Mariissa Brookes, Ph.D.
Miguel Carreras, Ph.D.
Loren Collingwood, Ph.D.
Jana Grittersova, Ph.D.
Steven Liao, Ph.D.
Melinda Ritchie, Ph.D.
Ajay Verghese, Ph.D.
Nicholas Weller, Ph.D.

Majors
The Political Science Department offers undergraduate majors leading to B.A. degrees in Political Science, Political Science/ Administrative Studies, Political Science/ International Affairs, Political Science/Law and Society, and Political Science/Public Service. In addition, the department offers minors in Political Science and International Relations.

Counseling Counseling on graduation and departmental requirements and on enrollment is handled in the department office by the student affairs staff.

For more information about the undergraduate programs, call or write the Department of Political Science, (951) 827-5502 or (951) 827-5312.

Political Science Major
The study of political science provides undergraduates with career opportunities in law, government service, education, journalism, and business. Because career goals may vary, the department offers two distinct majors. For students planning careers in such areas as law, journalism, or teaching, the traditional major in Political Science is appropriate. For students considering careers in government service, especially for such positions as program and budget analyst, urban planner, and executive or administrative assistant, the appropriate major is the Political Science/Public Service major.

Further information on the study of law or the legal profession may be obtained from the departmental prelaw counselor.

Political Science/Administrative Studies Major
The Political Science/Administrative Studies major combines the disciplinary interests of political science with a particular focus on administrative behavior, tools of decision making, and politics of public policy. The Administrative Studies component provides an interdisciplinary approach to training in administrative analytical skills and, more importantly, to the study of the policies, politics, and theories of public administration. The Business Administration courses provide a variety of perspectives on these objectives. In addition, they should be of particular value to those planning to enter directly into public administration (federal, state, or local levels) or attend a professional school of administration.

Political Science/International Affairs Major
The Political Science/International Affairs major offers a challenging opportunity to observe and participate in the dynamics of global interaction. As versatile as it is valuable, a degree in international affairs prepares the student for work in many diverse careers in the private sector, government, and academia. From diplomatic missions to the United Nations to private businesses, a degree in international studies will equip students to seek out and understand and influence the world in which we live.

Political Science/Law and Society Major
The Law and Society major is open to undergraduate students with junior standing who have completed LWSO 100 with a grade of “C” or higher. The major combines the breadth of a political science major with a particular focus on the theme of law and law-like relationships. The major provides a multidisciplinary approach to the study of legal and law-like institutions and relationships and focuses on relationships that have formed the core of political science: the emergence and development of law, the relationship between law and values, and the growth of the power of the state, among others. The courses provide a variety of perspectives on this theme, and the range of courses should be of particular benefit to those who plan to attend law school.

Political Science/Public Service Major
The Political Science/Public Service major introduces students to knowledge and skills associated with managerial career positions in government, without sacrifice of either a broad knowledge of politics or a liberal arts education.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
The Political Science Department offers undergraduate majors leading to B.A. degrees in Political Science, Political Science/ Administrative Studies, Political Science/ International Affairs, Political Science/Law and Society, and Political Science/Public Service.

Political Science Major
The major requirements for the B.A. degree in Political Science are as follows:

1. Lower-division requirements (four courses [at least 20 units]): one course from a, b, c, and d.

   Students in the major must complete two of the four lower-division Political Science courses with a grade of “C” or better in order to take upper-division Political Science courses.

   a) POSC 005 or POSC 005H or POSC 005W or POSC 007
   b) POSC 010 or POSC 010H or POSC 010W
   c) POSC 015 or POSC 015H or POSC 017
   d) POSC 020 or POSC 020W

   Upper-division requirements (nine courses [at least 40 units]):

   a) One course from each of the following areas:

      (1) U.S. Government and Politics: POSC 100, POSC 101, POSC 104 or 104S, POSC 108, POSC 143, POSC 144 or 144S, POSC 145, POSC 146, POSC 148 or POSC 148H or POSC 148S, POSC 149, POSC 166, POSC 167, POSC 168, POSC 170, POSC 171, POSC 172/URST 172, POSC 173 or POSC 173S, POSC 180 or POSC 180S, POSC 181, POSC 182, POSC 183, POSC 184 or POSC 184S, POSC 186

      (2) Comparative Government and Politics: POSC 120, POSC 131, POSC 133, POSC 151, POSC 152, POSC 153, POSC 154, POSC 155 or POSC 155S, POSC 156, POSC 157, POSC 158/ LNST 148, POSC 159 or POSC 159S, POSC 160 or POSC 160S, POSC 161/ LNST 188, POSC 162/LNST142 or POSC 162S/LNST 142S, POSC 163 or POSC 163S, POSC 164 or POSC 164S, POSC 165 or POSC 165S, POSC 178 or POSC 178S, POSC 188 or POSC 188S
A course in statistics is strongly recommended.

**Political Science/ Administrative Studies Major**

The major requirements for the B.A. degree in Political Science/Administrative Studies are as follows. Note that the prerequisite for POSC 198-I is a GPA of 2.70 or better.

**Political Science requirements (48 units)**

1. Lower-division requirements
   Three courses from POSC 005 or POSC 005H or POSC 005W or POSC 007; POSC 010 or POSC 010H or POSC 010W; POSC 015 or POSC 015H or POSC 017; POSC 020 or POSC 020H

   Students in the major must complete two of the three lower-division Political Science courses with a grade of "C" or better in order to take upper-division political science courses.

2. Upper-division requirements
   a) Three courses from POSC 181, POSC 182, POSC 183, POSC 186
   b) At least one course from each of the following:
      (1) U.S. Government and Politics:
         POSC 100, POSC 101, POSC 104 or POSC 104S, POSC 108, POSC 143, POSC 144 or POSC 144S, POSC 145, POSC 146, POSC 148 or POSC 148H or POSC 148S, POSC 149, POSC 166, POSC 167, POSC 168, POSC 170, POSC 171, POSC 172/URST 172, POSC 173 or POSC 173S, POSC 180 or POSC 180S, POSC 181, POSC 182, POSC 183, POSC 184 or POSC 184S, POSC 186
      (2) Comparative Government and Politics:
         POSC 120, POSC 131, POSC 133, POSC 151, POSC 152, POSC 153, POSC 154, POSC 155 or POSC 155S, POSC 156, POSC 157, POSC 158/LNST 148, POSC 159 or POSC 159S, POSC 160 or POSC 160S, POSC 161/LNST 188, POSC 162/LNST 142 or POSC 162S/LNST 142S, POSC 163 or POSC 163S, POSC 164 or POSC 164S, POSC 165 or POSC 165S, POSC 178 or POSC 178S, POSC 188 or POSC 188S
      (3) International Relations and Foreign Policy:
         POSC 123, POSC 124 or POSC 124S, POSC 125, POSC 126 or POSC 126S, POSC 127 or POSC 127S, POSC 129, POSC 130, POSC 132 or POSC 132S, POSC 134 or POSC 134S, POSC 135 or POSC 135S, POSC 137, POSC 138 or POSC 138S, POSC 139S, POSC 139S, POSC 140 or POSC 140S, POSC 147S, POSC 150 or POSC 150S, POSC 153, POSC 169, POSC 189

   b) Five additional courses in Political Science course work (Not more than 2 courses from the 190 series and POSC 142L and POSC 142M are allowed toward the nine-course upper-division requirement.)

   c) Four (4) units from POSC 198 or POSC 198-I (prerequisite: GPA of 2.70 or better)

   d) Additional four (4) units in any upper-division Political Science course

   **Administrative Studies requirements (37 units)**

   1. Lower-division courses (17 units)
      a) BUS 010, BUS 020
      b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
      c) CS 008 (may be used to satisfy breadth requirements)

   2. Upper-division requirements (20 units)
      a) Two courses (8 units) from the list below:
         1) ECON 102 or ECON 104A or ECON 130 or ECON 162/BUS 162
         2) PSYC 140 or PSYC 142
         3) SOC 150 or SOC 151 or SOC 171
         4) POSC 181 or POSC 182 or POSC 183
         5) ANTH 127 or ANTH 131

      These two courses must be outside the discipline of Political Science and cannot be courses included as part of the three course Business Administration track or their cross-listed equivalents.

      b) A three-course track (12 units) in Business Administration courses from one of the following:
         1) Organizations (General): BUS 100, BUS 107, BUS 176/SOC 176, BUS 158/ANTH 105, SOC 150, SOC 151
         2) Human Resources Management/ Labor Relations: BUS 100, BUS 107, BUS 152/ECON 152, BUS 153/ECON 153, BUS 155, BUS 157, PSYC 142
         3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, POSC 186
         4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114, BUS 117
         5) Managerial Accounting/Taxation: BUS 108, and two from BUS 166, BUS 168A, BUS 168B
         7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
         8) Management Information Systems: BUS 101, BUS 171, BUS 173
         9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127

   Note in filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (Political Science requirements and Administrative Studies requirements).

**Political Science/International Affairs Major**

The major requirements for the B.A. degree in Political Science/International Affairs are as follows:

1. Lower-division requirements (two courses [at least 10 units]): One course from a and one course from b:
   a) POSC 015 or POSC 015H or POSC 017
   b) POSC 020 or POSC 020H

   Students in the major must complete two lower-division Political Science courses with a grade of "C" or better in order to take upper-division political science courses.

   Upper-division requirements (11 courses, 44-55 units):
   a) International Relations (three courses) POSC 123, POSC 124 or POSC 124S, POSC 125, POSC 126 or POSC 126S, POSC 127 or POSC 127S, POSC 128, POSC 129, POSC 130 or POSC 130S, POSC 132 or POSC 132S, POSC 134 or POSC 134S, POSC 135 or POSC 135S, POSC 137 or POSC 137S, POSC 138 or POSC 138S, POSC 139 or POSC 139S, POSC 147 or POSC 147S, POSC 150 or POSC 150S, POSC 150S, POSC 169, POSC 189
   b) Comparative Politics (three courses) POSC 120, POSC 131, POSC 133, POSC 152, POSC 152, POSC 154, POSC 155 or POSC 155S, POSC 156, POSC 157, POSC 158/LNST 148, POSC 159 or POSC 159S, POSC 160 or POSC 160S, POSC 161/LNST 188, POSC 162/LNST 148, POSC 162S/LNST 142S, BUS 163 or POSC 163S, POSC 164 or POSC 164S, POSC 165 or POSC 165S, POSC 178 or POSC 178S, POSC 188 or POSC 188S
   c) General Political Science (three other political science courses in any subfield)

   d) In addition, students must take two courses from the following:
ANTH109/GEET 109, ANTH 122, ANTH 127, ANTH 136/SEAS 136, ANTH 139, ANTH 161/LNSTD 161, ANTH 163, ANTH 164/LNSTD 164/GEET 164, ANTH168/ ETSI148/LNSTD168, ANTH 169/GSEST 169, ANTH 182, ANTH 186/LNSTD 166, ANTH 188/GSEST 151

ECON 171, ECON 175, ECON 178/ BUS 178, ECON 181, ECON 182, ECON 185/ LNSTD 185

HISA 117A, HISA 117B, HISA 140, HISA 161, HISA 162, HISA 163B, HISA 164A, HISA 164B, HISA 165, HISA 166, HISE 141, HISE 142, HISE 145 or HISE 145S, HISE 146 or HISE 146S, HISE 147, HISE 152, HISE 162, HISE 174, HIST 125, HIST 127, HIST 182, HIST 184, HIST 186

SOCI 135, SOCI 136, SOCI 137, SOCI 161, SOCI 181, SOCI 185

Political Science/International Affairs majors are strongly encouraged to learn a language other than English. The university offers language instruction in Chinese, French, German, Greek, Italian, Japanese, Korean, Latin, Portuguese, Spanish, and Vietnamese.

Political Science/Law and Society Major

The major requirements for the B.A. degree in Political Science/Law and Society are as follows:

1. Political Science requirements (60 units)
   All major requirements for the B.A. in Political Science

2. Law and Society requirements (36 units)
   a) PHIL 007 or PHIL 007H
   b) WSLO 100 (with a grade of “C” or better)
   c) One course chosen from POSC 114, PSYC 012, SOCI 004 (or equivalent course in research methods)
   d) Three courses chosen from ANTH 127, ECON 119, HISE 153, PHIL 165, POSC 167, PSYC 175, SOCI 159
   e) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, LWSO 175 (E-Z), PHIL 164, POSC 111, POSC 166, POSC 168, PSYC 186, SOCI 147, SOCI 149, SOCI 180
   f) WSLO 193, Senior Seminar

Note: For sections 2.d) and 2.e) combined, not more than two courses may be taken from the same department in filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (Political Science requirements and Law and Society requirements).

Political Science/Public Service Major

The major requirements for the B.A. degree in Political Science/Public Service are as follows. Note that the prerequisite for POSC 198-I is a GPA of 2.70 or better.

1. Lower-division requirements (five courses [at least 20 units])
   a) POSC 010 or POSC 010H or POSC 010W
   b) One course from POSC 005 or POSC 005H or POSC 005W or POSC 007, POSC 015 or POSC 015H or POSC 017, POSC 020 or POSC 020H
   c) ECON 003
   d) SOCI 004
   e) SOCI 005 or STAT 040

Students in the major must complete two of the lower-division Political Science courses with a grade of “C” or better in order to take upper-division political science courses.

2. Upper-division requirements (11 courses [at least 44 units])
   a) Political Science distribution: choose one course from each group
      (1) Comparative Government and Politics Group: POSC 123, POSC 124 or POSC 124S, POSC 125, POSC 126, POSC 127, POSC 128, POSC 129, POSC 130, POSC 132 or POSC 132S, POSC 134 or POSC 134S, POSC 135, POSC 137 or POSC 137S, POSC 138 or POSC 138S, POSC 139 or POSC 139S, POSC 140 or POSC 140S, POSC 141, POSC 142, POSC 143 or POSC 143S, POSC 145 or POSC 145S, POSC 146 or POSC 146S, POSC 150 or POSC 150S, POSC 169, POSC 189
      (2) International Relations and Foreign Policy Group: POSC 106 or POSC 106S, POSC 110 or POSC 110S, POSC 112 or POSC 112S, POSC 113 or POSC 113S, POSC 115 or POSC 115S, POSC 116, POSC 117, POSC 119, POSC 121/CLA 121/CPAC 121 or POSC 121S/CLA 121S/CPAC 121S, POSC 122 or POSC 122S
   b) Public Service requirement
      (1) POSC 181, POSC 183
      (2) Eight (8) units from POSC 198G and POSC 198-I (prerequisite: GPA of 2.70 or better)
      (3) An additional four courses from POSC 118, POSC 170, POSC 171, POSC 172/URST 172, POSC 182, POSC 186

Minor

The Political Science Department offers a minor in Political Science.

1. One lower-division course (at least 5 units) in political science, selected from POSC 005 or POSC 005H or POSC 005W or POSC 007; POSC 010 or POSC 010H or POSC 010W; POSC 015 or POSC 015H or POSC 017; POSC 020 or POSC 020H

2. Five upper-division courses (at least 20 units) to be selected as follows:
   a) One course in each of the following areas (4 courses):
      (1) American Politics: POSC 100, POSC 101, POSC 104 or POSC 104S, POSC 108, POSC 143, POSC 144 or POSC 144S, POSC 145, POSC 146, POSC 148 or POSC 148H or POSC 148S, POSC 149, POSC 166, POSC 167, POSC 168, POSC 170, POSC 171, POSC 172/URST 172, POSC 173 or POSC 173S, POSC 180 or POSC 180S, POSC 181, POSC 182, POSC 183, POSC 184 or POSC 184S, POSC 186
      (2) Comparative Politics: POSC 120, POSC 131, POSC 133, POSC 151, POSC 152, POSC 153, POSC 154, POSC 155 or POSC 155S, POSC 156, POSC 157, POSC 158/LNSTD 148, POSC 159 or POSC 159S, POSC 160 or POSC 160S, POSC 161/LNSTD 188, POSC 162/LNSTD 142 or POSC 162S/LNSTD 142S, POSC 163 or POSC 163S, POSC 164 or POSC 164S, POSC 165 or POSC 165S, POSC 178 or POSC 178S, POSC 188 or POSC 188S
      (3) International Relations: POSC 123, POSC 124 or POSC 124S, POSC 125, POSC 126 or POSC 126S, POSC 127 or POSC 127S, POSC 128, POSC 129, POSC 130, POSC 132 or POSC 132S, POSC 134 or POSC 134S, POSC 135, POSC 137 or POSC 137S, POSC 139 or POSC 139S, POSC 140 or POSC 140S, POSC 147 or POSC 147S, POSC 150 or POSC 150S, POSC 169, POSC 189
      (4) Political Theory: POSC 106 or POSC 106S, POSC 110 or POSC 110S, POSC 111 or POSC 111S, POSC 112 or POSC 112S, POSC 113 or POSC 113S, POSC 115 or POSC 115S, POSC 116, POSC 117, POSC 119, POSC 121/CLA 121/CPAC 121 or POSC 121S/CLA 121S/CPAC 121S, POSC 122
   b) One additional course selected by the student from among those listed in (1) through (4) above.

The Political Science Department also offers a minor in International Relations (listed elsewhere in this catalog). Also, see Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Honors Program

The Political Science undergraduate Honors Program is designed to provide qualified upper-division Political Science majors with opportunities to engage in upper-division course work in the field in an intensive seminar format and to obtain the necessary training to engage in independent research in the field.

Upon successful completion of the program, students are awarded and have posted on their
transcripts, the designation Honors, Department of Political Science Undergraduate Honors Program. Complete details and an application are available from the Political Science Student Affairs Officer.

**Prerequisites for the Honors Program**

1. Submission of an application during the last quarter of the sophomore or junior year
2. Junior standing (completion of a minimum of 86 units)
3. Minimum GPA requirements or consent of director
   a) Cumulative GPA of 3.50
   b) A GPA of 3.50 in upper-division major courses
4. Statistics or methods course required. One course chosen from POSC 114 or POSC 114S, PSYC 012, SOC 004 (or an equivalent course in research methods)

**Requirements for the Honors Program**

Twelve (12) units/three courses from the following:
- POSC 175H (Introduction to the Honors Thesis)
- POSC 176H (Seminar on Writing the Honors Thesis)
- POSC 177H (Honors Thesis)
- POSC 199 (Senior Research|Thesis Optional)

**Model United Nations (MUN)**

The Model United Nations (MUN) program is a campuswide activity that combines academic and social aspects. The academic preparation takes place within the Political Science Department, with one course, POSC 142L. The simulation preparation takes place within the UCRMUN organization, for participation in external conferences. Each year, the UCRMUN organization hosts a two-day MUN conference, which attracts over a thousand high school students. In recent years, the UCRMUN High School MUN has been the third largest in the nation. Planning and running this conference is entirely in the hands of UCR students participating in the UCRMUN program. The program provides training in administration and diplomacy. In the spring, a UCRMUN delegation attends either a local conference or the National Model United Nations Conference in New York City.

**Education Abroad Program**

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

**Graduate Program**

The Department of Political Science offers the M.A. and Ph.D. degrees in Political Science.

**Admission**

Admission to both the M.A. and Ph.D. degrees is based on the quality and character of previous academic work, scores on the GRE, and letters of evaluation from previous instructors. Applications are accepted for the Fall quarter only.

**Master's Degree**

The Department of Political Science offers the M.A. degree in Political Science. Usually, the department operates under Plan II.

**Plan II (Comprehensive Examination)**

Students must complete 36 units, of which at least 32 units must be in 200-level Political Science courses, including POSC 201, POSC 202A, and POSC 203. In addition, students must complete at least one course from at least three of the five fields offered by the department (see listing below). Up to 4 units of academic work in related fields may be approved by the graduate advisor as part of the 36 units.

The examination must be passed in one of the following fields:

1. **Comparative Politics** Students must complete the core course POSC 217 and at least one additional course in the field.
2. **International Relations** Students must complete the core course POSC 216 and at least one additional course in the field.
3. **American Politics** Students must complete the core course POSC 249 and at least one additional course in the field.
4. **Mass Political Behavior** Students must complete a core course, either POSC 255 or POSC 256, and at least one additional course in the field.
5. **Political Theory** Students must complete the core course POSC 212 and at least one additional course in the field.

Permission to complete the M.A. program under Plan I (Thesis) is restricted to students who can demonstrate a readiness to undertake advanced independent research and who can identify a faculty member willing to supervise preparation of the thesis.

**Doctoral Degree**

The Department of Political Science offers the Ph.D. degree in Political Science.

The first two years of the program are devoted to course work and preparation for the Ph.D. examination. During this period, students obtain substantive background in the discipline through completion of three graduate courses per quarter. Course work, which will usually continue beyond the second year, includes the following required components:

1. Selecting two major fields of concentration from the five fields listed below.
2. Satisfying course requirements for the major fields, which requires a total of eight graduate courses. (This is the Major Field Requirement; see details below.)
3. Taking one course in each of the three fields of study not selected by the student as a major field. (This is the Distribution Requirement.)
4. Taking three additional graduate courses in any field of study, according to the student’s choice, in consultation with the faculty advisors. With permission of the Graduate Advisor, one or more of these courses may be graduate-level courses outside of Political Science. (This is the Depth Requirement.)
5. Completing four required methods courses: POSC 201, POSC 202A, POSC 202B, and POSC 203. (This is the Methods Requirement.)
6. Enrollment each quarter in POSC 230. Students must be enrolled in the course while in residence, until completion of 15 units. Exceptions only by permission of Graduate Advisor. (This is the Research Colloquium Requirement.)

The major fields may be chosen from among American Politics, Mass Political Behavior, Comparative Politics, International Relations, and Political Theory.

1. **Comparative Politics** Students must complete the core course POSC 217 and at least three additional courses in the field.
2. **International Relations** Students must complete the core course POSC 216 and at least three additional courses in the field.
3. **American Politics** Students must complete the core course POSC 249 and at least three additional courses in the field.
4. **Mass Political Behavior** Students must complete a core course, either POSC 255 or POSC 256, and at least three additional courses in the field.
5. **Political Theory** Students must complete the core course POSC 212 and at least three additional courses in the field.

One POSC 290 course may be accepted in lieu of a seminar. This limit may be exceeded by permission of Graduate Advisor if course staffing or scheduling problems require it. All POSC 290 courses must have prior approval of the graduate advisor. A POSC 290 course should only be taken if the material to be covered is not available in a scheduled course.

**Written Qualifying Examination**

Students should ordinarily complete major field course requirements during Years One and Two. In the fall quarter of Year Three, the student continues to enroll in POSC 230, while also enrolling in POSC 291 (Individual Coordinated Study), which is designed to aid preparation for the comprehensive examination. Written examinations in the two major fields are normally taken at the end of the fall quarter of the third year. Postponements to this schedule are allowed in exceptional circumstances; all
409 / Programs and Courses

delays in taking comprehensive examinations must be approved by the Graduate Committee.

Oral Defense of Prospectus The winter and spring quarters of Year Three are devoted to Directed Research (POSC 297) to prepare a dissertation prospectus under the direction of the principal advisor; to additional substantive seminars; and to continued participation in POSC 230. The choice of substantive seminars during this time should be made in conjunction with faculty advisors and should usually be applicable either to the distribution or depth requirements, although students may also take courses in excess of these requirements. In the spring quarter, students are advanced to candidacy upon successful completion of the oral defense of their dissertation prospectus.

Normative time to completion of the program is six years. Additional time is provided if circumstances warrant it. Whether circumstances justify additional time is to be determined by the Graduate Committee, in cooperation with the thesis advisor.

Students who do not complete their degree requirements during this two-year period are closely reviewed on a biannual basis. These reviews are provided by the graduate advisor, after consultation with the dissertation advisor. Until completion of the Ph.D. requirements, each review includes targeted amounts of required progress, to be completed prior to the next review. Students who fail to complete their scheduled work are reviewed by the Graduate Program Committee for a recommendation of termination from the Political Science graduate program.

Normative Time to Degree 18 quarters.

General regulations applying to the dissertation and qualifying examinations are found in the Graduate Studies section of this catalog and in other Graduate Division and department publications.

For further information, contact the graduate advisor, Department of Political Science.

Lower-Division Courses

POSC 005 Political Ideologies (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. An introductory study of the ideologies of the modern era. Explores selected thinkers and texts representative of liberalism, conservatism, socialism, fascism, nationalism, nonviolence, and feminism, as well as various non-Western ideologies. Credit is awarded for only one of POSC 005, POSC 005H, or POSC 005W.

POSC 005H Honors Political Ideologies (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to POSC 005 and POSC 005W. An introductory study of the ideologies of the modern era. Explores selected thinkers and texts representative of liberalism, conservatism, socialism, fascism, nationalism, nonviolence, and feminism, as well as various non-Western ideologies. Satisticy (S) or No Credit (NC) grading is not available. Credit is awarded for only one of POSC 005 or POSC 005H or POSC 005W.

POSC 006W Political Ideologies (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. An introductory study of the ideologies of the modern era. Explores selected thinkers and texts representative of liberalism, conservatism, socialism, fascism, nationalism, nonviolence, and feminism, as well as various non-Western ideologies. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Credit is awarded for only one of POSC 005 or POSC 005H or POSC 005W.

POSC 007 Introduction to Political Theory (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. An introductory exploration of political theory from the ancient world to the present. Covers either Western theorists (from Aristotle to Rawls) or non-Western theorists (from Confucius to Gandhi). Topics include citizenship, community, political change, and human flourishing.

POSC 010 American Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. An introductory to the principles and practices of government. Focuses on the policy process and selected political issues in the United States. Credit is awarded for only one of POSC 010 or POSC 010H or POSC 010W.

POSC 010H Honors American Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to POSC 010. An introduction to the principles and practices of government. Focuses on the policy process and selected political issues in the United States. Credit is awarded for only one of POSC 010 or POSC 010H or POSC 010W.

POSC 010W American Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisites: ENGL 001B with a grade of “C” or better or consent of instructor. An introduction to the principles and practices of government. Focuses on the policy process and selected political issues in the United States. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits, as alternatives to English 001C. Credit is awarded for only one of POSC 010 or POSC 010H or POSC 010W.

POSC 015 Comparative Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. A comparative analysis of contemporary political systems, practices, and institutions. Credit is awarded for only one of POSC 015 or POSC 015H.

POSC 015H Honors Comparative Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to POSC 015. A comparative analysis of contemporary political systems, practices, and institutions. Credit is awarded for only one of POSC 015 or POSC 015H.

POSC 100 Presidential Politics (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing; POSC 010 or POSC 010H or POSC 010W or consent of instructor. Analyzes modern presidential leaders at the national and international levels. Topics include the institutional presidency, presidential selection, and the presidency’s relationships with the bureaucracy, Congress, interest groups, the press, and the public. Consider what makes presidents popular and what determines the effectiveness of presidential leadership.

POSC 101 The U.S. Congress (4) Lecture, 3 hours; outside research, 1 hour; individual study, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Analyzes the politics of the contemporary U.S. Congress, with an emphasis on the historical roots of the institution. Topics include representation, elections, parties and leaders, committees, public policy, and the relationships between Congress and the other branches of government.

POSC 104S Special Topics in the Politics of Race, Immigration, and Ethnicity (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing; POSC 010 or POSC 010H or POSC 010W or consent of instructor. Provides an in-depth examination of the politics of race, immigration, and ethnicity in the United States. Topics include the role of political institutions and political behavior. Covers one of the following topics: African American Politics, Asian American Politics, Latino Politics, Native American Politics. Course is repeatable as topics change to a maximum of 12 units. Credit is not awarded to POSC 104 if it has already been awarded to POSC 1045 if the content or topic are the same.

POSC 104S Special Topics in the Politics of Race, Immigration, and Ethnicity (5) Lecture, 3 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): upper-division standing; POSC 010 or POSC 010H or POSC 010W or consent of instructor. Provides an in-depth examination of the politics of race, immigration, and ethnicity in the United States. Emphasizes the role of political institutions and political behavior. Covers one of the following topics: African American Politics, Asian American Politics, Latino Politics, Native American Politics. Course is repeatable as topics change to a maximum of 15 units. Credit is not awarded to POSC 104 if it has already been awarded to POSC 1045 if the content or topic are the same.

POSC 106 Environmental Political Thought (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Addresses various philosophical aspects of the human relationship to the environment from social, political, and economic perspectives. Includes debates related to issues such as how should human beings interact with their environment, as well as the relationship of environmental practice to liberalism, democracy, and capitalism. Credit is awarded for only one of POSC 106 or POSC 106S.

POSC 106S Environmental Political Thought (5) Lecture, 3 hours; discussion, 1 hour; extra read-
POSC 107 Non-Western Political Thought (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing; exposes students to some of the key political ideas of the non-Western world. Familiarizes students with both the cultural-religious legacies and the political thought endemic to non-Western societies. Follows an overview of key non-Western civilizations and addresses crucial problems in the study of non-Western politics. Focuses on issues such as individualism versus community, consent of instructor. Examines the political role of religion and politics, such as the sacralization of political authority in South Asia, and the conformity of the polity to religious values. Cross-listed with RLST 173.

POSC 110 The Origins of Political Ideas (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the major schools of political thought of ancient times. Covers political philosophers such as Plato, Aristotle, Confucius, and Mohandas Gandhi. Credit is awarded for only one of POSC 110 or POSC 110S.

POSC 110S The Origins of Political Ideas (5) Lecture, 3 hours; discussion, 1 hour; term paper, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing; POSC 010 or POSC 010W or consent of instructor; examines the politics of race, immigration, and ethnicity in the United States including comparisons between African Americans and Latino, Asian, and European immigrants. Emphasizes the role of institutions in shaping the importance of race to politics in the United States.

POSC 109 Political Religions and Religious Politics (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates major themes and issues in the intersection of religion and politics, such as the sacralization of politics, religious nationalism, sacerdotal kingship, reformational asceticism, “throne and altar;” civil religion, millenarianism, political myth and ritual, integralism, and the conformity of the polity to religious values. Cross-listed with RLST 173.

POSC 112 Modern Political Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Critically explores selected works of political theory from the eighteenth century to the present. Concentrates on issues such as freedom, utility, justice, nature, citizenship, toleration, equality and inequality, autonomy, democracy, power, rights, and identity. Credit is awarded for only one of POSC 112 or POSC 112S.

POSC 112S Modern Political Theory (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Critically explores selected works of political theory from the eighteenth century to the present. Concentrates on issues such as freedom, utility, justice, nature, citizenship, toleration, equality and inequality, autonomy, democracy, power, rights, and identity. Credit is awarded for only one of POSC 112 or POSC 112S.

POSC 113 American Political Thought (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of developments in American political thought from the seventeenth century to the present.

POSC 114 Theory and Methodology of Political Science (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers the development and scope of political science as a discipline. Addresses selected theoretical and methodological issues in contemporary political and social science. Credit is awarded for only one of POSC 114, POSC 114H, or POSC 114S.

POSC 114H Honors Theory and Methodology of Political Science (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers the development and scope of political science as a discipline. Addresses selected theoretical and methodological issues in contemporary political and social science. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of POSC 114, POSC 114H, or POSC 114S.

POSC 114S Theory and Methodology of Political Science (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers the development and scope of political science as a discipline. Addresses selected theoretical and methodological issues in contemporary political and social science. Credit is awarded for only one of POSC 114, POSC 114H, or POSC 114S.

POSC 115 Utopia and Dystopia (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the political theory of utopian literature from ancient Greece to the present including analysis of utopian and dystopian elements in each work. Authors include Plato, Thomas More, Charles Kingsley, Ernest Callenbach, and Katherine Forrest. Credit is awarded for only one of POSC 115 or POSC 115S.

POSC 115S Utopia and Dystopia (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the political theory of utopian literature from ancient Greece to the present including analysis of utopian and dystopian elements in each work. Authors include Plato, Thomas More, James Harrington, Ernest Callenbach, and Katherine Forrest. Credit is awarded for only one of POSC 115 or POSC 115S.

POSC 116 Capitalism, Socialism, and Political Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines debates about economic life. Focuses on issues such as markets and marketization, labor, globalization, freedom, class, corporations, democracy, the welfare state, and power. Credit is awarded for only one of POSC 116 or POSC 116S.

POSC 116S Capitalism, Socialism, and Political Theory (5) Lecture, 3 hours; discussion, 1 hour; written work, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines debates about economic life. Focuses on issues such as markets and marketization, labor, globalization, freedom, class, corporation, democracy, the welfare state, and power. Credit is awarded for only one of POSC 116 or POSC 116S.

POSC 117 Contemporary Democratic Theory (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A critical survey of the principal approaches to thinking about democracy since the World War II. May cover elite, pluralist, deliberative and participatory theories. Addresses questions about inclusiveness, and the optimal character and scope of democracy. Credit is awarded for only one of POSC 117 or POSC 117S.

POSC 117S Contemporary Democratic Theory (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A critical survey of the principal approaches to thinking about democracy since the World War II. May cover elite, pluralist, deliberative and participatory theories. Addresses questions about inclusiveness, and the optimal character and scope of democracy. Credit is awarded for only one of POSC 117 or POSC 117S.

POSC 118 Ethics in Government (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing; POSC 010 or consent of instructor. An examination of ethical issues in government. Emphasizes problems of representation in elected and administrative office, questions of political responsibility, and controversies regarding the role and nature of the public interest in government policy making.

POSC 119 Political Thinkers in Depth (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Intensive reading of one or more great political thinkers from around the world, with special attention to contested readings of each figure. Examples might include Plato, Confucius, Machiavelli, Marx and Engels, John Stuart Mill, or Gandhi.

POSC 120 The Politics of India and Pakistan (4) Lecture, 3 hours; extra reading and term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the domestic and international politics of India and Pakistan, with attention to other South Asian countries. Explores nationalist movements, struggles for development, contrasting experiences with democracy and dictatorship, and internal and external conflicts.

POSC 121 Monarchy (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the cross-cultural survey of the institution of monarchy in the ancient world and its role in political, social, economic, and religious life. Cross-listed with CLA 121 and CPAC 121. Credit is awarded for only one of CLA 121/CPAC 121/POSC 121 or CLA 121/CPAC 121/POSC 121S.

POSC 121S Monarchy (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the cross-cultural survey of the institution of monarchy in the ancient world and its role in political, social, economic, and religious life. Cross-listed with CLA 121S and CPAC 121S. Credit is awarded for only one of CLA 121S/CPAC 121S/POSC 121S or CLA 121S/CPAC 121S/POSC 121S.
POSC 122 Skepticism and Liberalism (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the origins of the modern way of thinking about politics (i.e., liberalism in a sense that includes both conservatives and liberals) by the ancient and early modern skeptics such as Montaigne, Spinoza, Hume, and Kant. Credit is awarded for only one of POSC 122 or POSC 122S.

POSC 122S Skepticism and Liberalism (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the origins of the modern way of thinking about politics (i.e., liberalism in a sense that includes both conservatives and liberals) by the ancient and early modern skeptics such as Montaigne, Spinoza, Hume, and Kant. Credit is awarded for only one of POSC 122 or POSC 122S.

POSC 123 Conflict Resolution (4) Lecture, 3 hours; extra reading, 1 hour; term paper, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of conflict resolution in international relations and domestic conflict. Topics covered include theories of conflict and conflict resolution, negotiation, the role of external powers, mediation, and peacekeeping.

POSC 124 International Relations (4) Lecture, 3 hours; term paper, 1 hour; extra reading, 2 hours. Prerequisite(s): POSC 020. An in-depth consideration of the major theories of contemporary international relations. Focuses on core issues in international security affairs, such as the causes of war and peace, cooperation and conflict, alliances, perception and misperception, ethnic conflict, and the link between democracy and war. Credit is awarded for only one of POSC 124 or POSC 124S.

POSC 124S International Relations (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): POSC 020; upper-division standing or consent of instructor. An in-depth consideration of the major theories of contemporary international relations. Focuses on core issues in international security affairs, such as the causes of war and peace, cooperation and conflict, alliances, perception and misperception, ethnic conflict, and the link between democracy and war. Credit is awarded for only one of POSC 124 or POSC 124S.

POSC 125 United States Foreign Policy Since World War II (4) Lecture, 3 hours; outside research, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): POSC 020 or POSC 020H. Studies the evolution of the politics of the United States in the postwar period. Topics include the politics of war and other forms of violent conflict. Topics include the laws of war theory, international criminal justice, truth commissions, and reparations. Credit is awarded for only one of POSC 125 or POSC 126S.

POSC 126S The Politics of International Trade, Finance, and Development (5) Lecture, 3 hours; discussion, 1 hour; term paper, 2 hours; extra reading, 1 hour. Prerequisite(s): POSC 020 or POSC 020H. The politics of international trade, finance, and development in the contemporary world. The role of multinational corporations in the world economy; the role of the International Monetary Fund and International Bank for Reconstruction and Development; the role of multinational corporations in the world economy; and role of multinational corporations in the world economy.

POSC 127 Global Environmental Politics (4) Lecture, 3 hours; field, 1 hour; individual study, 1 hour; written work, 1 hour. Prerequisite(s): POSC 020 or POSC 020H. Studies the major developments in the evolution of international environmental law and policy. Covers ozone depletion, acid rain, marine pollution and whaling, tropical deforestation, overpopulation, and the impact of environmental degradation. Credit is awarded for only one of POSC 127 or POSC 127S.

POSC 127S Global Environmental Politics (5) Lecture, 3 hours; discussion, 1 hour; field, 1 hour; individual study, 1 hour; written work, 1 hour. Prerequisite(s): POSC 020 or POSC 020H. Introduces students to the study and practice of global environmental politics. Explores the major developments in the evolution of international environmental law and policy. Covers ozone depletion, acid rain, marine pollution and whaling, tropical deforestation, overpopulation, and the impact of environmental degradation. Credit is awarded for only one of POSC 127 or POSC 127S.

POSC 128 Comparative Foreign Policy (4) Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing. Explores the major developments in the evolution of international environmental law and policy. Covers ozone depletion, acid rain, marine pollution and whaling, tropical deforestation, overpopulation, and the impact of environmental degradation. Credit is awarded for only one of POSC 127 or POSC 127S.

POSC 129 The Proliferation of Weapons of Mass Destruction (4) Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing. Explores the politics of proliferation. Credit is awarded for only one of POSC 129 or POSC 129S.

POSC 130 Politics and Economics of the Pacific Rim (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the politics of the Pacific Rim, including Japan, South Korea, Singapore, Taiwan, and China, and of their relationship to the United States. The major issues addressed include economic growth, geopolitical development, trade, and interdependence.

POSC 131 Modern Japanese Politics (4) Lecture, 3 hours; writing and extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the political system of Japan. Credit is awarded for only one of POSC 131 or POSC 131S.

POSC 132 Postconflict Justice and Reconciliation (4) Lecture, 3 hours; term paper, 2 hours; individual study, 1 hour. Prerequisite(s): upper-division standing. Explores the processes of pursuing justice and reconciliation in the aftermath of war and other forms of violent conflict. Topics include the laws of war theory, international criminal justice, truth commissions, and restorative justice. Credit is awarded for only one of POSC 132 or POSC 132S.

POSC 132S Postconflict Justice and Reconciliation (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the processes of pursuing justice and reconciliation in the aftermath of war and other forms of violent conflict. Topics include the laws of war theory, international criminal justice, truth commissions, and restorative justice. Credit is awarded for only one of POSC 132 or POSC 132S.

POSC 133 Politics of Central Asia in Comparative Perspective (4) Lecture, 3 hours; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the political and economic issues and problems, and international relations of the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Credit is awarded for only one of POSC 133 or POSC 133S.

POSC 134 Political Economy of International Finance (4) Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the political and economic issues and problems, and international relations of the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Credit is awarded for only one of POSC 133 or POSC 133S.

POSC 134S Political Economy of International Finance (5) Lecture, 3 hours; discussion, 1 hour; individual study, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the political and economic issues and problems, and international relations of the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Credit is awarded for only one of POSC 133 or POSC 133S.

POSC 135 Ethics and International Politics (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the ethical dimensions of contemporary debates in international politics. Topics include international justice, humanitarian aid, military intervention, and just war theory. Credit is awarded for only one of POSC 135 or POSC 267.

POSC 136 International Economics (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the interaction between international economics and world politics. Focuses on the evolution of the international economic institutions governing world trade and finance; role of multinational corporations; Third World debt and development; the European Union; economic reform in transitional economies; gender; economics and environment; and role of technology in international political economy. Credit is awarded for only one of POSC 126 or POSC 126S.

POSC 137 Environmental Law and Policy (5) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the interaction between international economics and world politics. Focuses on the evolution of the international economic institutions governing world trade and finance; role of multinational corporations; Third World debt and development; the European Union; economic reform in transitional economies; gender; economics and environment; and role of technology in international political economy. Credit is awarded for only one of POSC 126 or POSC 126S.

POSC 138 Labor and Globalization (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the interaction between international economics and world politics. Focuses on the evolution of the international economic institutions governing world trade and finance; role of multinational corporations; Third World debt and development; the European Union; economic reform in transitional economies; gender; economics and environment; and role of technology in international political economy. Credit is awarded for only one of POSC 126 or POSC 126S.

POSC 139S Comparative Politics of the Post-Communist States (5) Lecture, 3 hours; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the political systems of the post-communist states of Eastern Europe, the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Credit is awarded for only one of POSC 139S or POSC 139S.
POSC 138S Labor and Globalization (5) Lecture, 3 hours; discussion, 1 hour; individual study, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the relationship between globalization and labor in contemporary context. Focuses on four key political actors who shape workers’ fates in the global economy: multi-national corporations, national governments, international organizations, and workers themselves. Credit is awarded for only one of POSC 138 or POSC 138S.

POSC 139 Environment, Sustainability, and Society (4) Lecture, 3 hours; individual study, 2 hours; written work, 1 hour. Prerequisite(s): POSC 017 or POSC 020 (or POSC 020H) or SOC 020; or consent of instructor. Examines the relationship of human society to the natural environment from a multi-disciplinary approach. Considers ways in which values, paradigms, policies, technologies, and their interactions have determined humans’ current unsustainable relationship with the earth. Explores challenges inherent in moving society toward a more environmentally sustainable future. Credit is awarded for only one of POSC 139 or POSC 139S.

POSC 140 Militarism and Hegemony in the Ancient World (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): One of the following courses: CHN 030/AST 030, CHN 104, CHN 105, AST 107/CHN 107/RLST 107, CHN 108, ART 142/CHN 142/RLST 142, AST 148/CHN 148, CLA 010A, CLA 010B, CLA 010C, CLA 040, CLA 050, CLA 100/HISE 110, CLA 110/CPLT 112/RLST 112, CLA 114/CPLT 114, CLA 120 (E-Z), CLA 165, CPAC 102/CLA 102, CPAC 112/CLA 113/HISE 113, CPAC 121/CLA 121/POS 121, CPAC 132/AST 130/CLA 132, CPAC 133/HISE 134, CPAC 134/HISE 134/CPAC 143/CHN 143/RLST 143; or consent of instructor. Explores the role of military power in ancient societies, especially its relationship to mass media. Particular attention will be devoted to the role and importance of television in American politics. Credit is awarded for only one of POSC 140 or POSC 140S.

POSC 143 Elections and Political Participation (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of the effects of democracy influence the operation of government. Topics include collective action, principal-agency problems, equality, liberty, popular sovereignty, and strategic behavior. Credit is awarded for only one of POSC 143 or POSC 143S.

POSC 144 Politics through Film (5) Lecture, 3 hours; screening, 5 hours; extra reading, 1 hour; term paper, 1.5 hours. Prerequisite(s): upper-division standing. Uses film to explore the values of democracy inform the operation of government. Topics include collective action, principal-agent problems, equality, liberty, popular sovereignty, and strategic behavior. Credit is awarded for only one of POSC 144 or POSC 144S.

POSC 145 Money in American Politics (4) Lecture, 3 hours; term paper, 1 hour; extra reading, 2 hours. Prerequisite(s): POSC 010 or POSC 010H or POSC 010W or consent of instructor. Examines the role of money in federal elections and in formulation of public policy. Credit is awarded for only one of POSC 145 or POSC 145S.

POSC 146 Mass Media and Public Opinion (4) Lecture, 3 hours; term paper and reading, 1 hour. Analysis of media and public opinion in the United States with emphasis on how the phenomenon of globalization have been addressed by leading political theorists. Focuses on concepts such as cosmopolitanism, nation-states and citizenship, cultural diversity, moral universalism, and international distributive justice. Credit is awarded for only one of POSC 146 or POSC 146S.

POSC 147 Political Theory of Globalization (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing, PHIL 001 or PHIL 001H or POSC 005 or POSC 005H or POSC 005W. Examines how the phenomenon of globalization has been theorized within the discipline of political philosophy. Covers how the effects of globalization have been addressed by leading political theorists. Focuses on concepts such as cosmopolitanism, nation-states and citizenship, cultural diversity, moral universalism, and international distributive justice. Credit is awarded for only one of POSC 147 or POSC 147S.

POSC 147S Political Theory of Globalization (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing; PHIL 001 or PHIL 001H or POSC 005 or POSC 005H or POSC 005W. Examines how the phenomenon of globalization has been theorized within the discipline of political philosophy. Covers how the effects of globalization have been addressed by leading political theorists. Focuses on concepts such as cosmopolitanism, nation-states and citizenship, cultural diversity, moral universalism, and international distributive justice. Credit is awarded for only one of POSC 147 or POSC 147S.

POSC 148 Politics of Congressional Elections (4) Lecture, 3 hours; term paper, 2 hours; individual study, 1 hour. Prerequisite(s): upper-division standing, POSC 010 or POSC 010H or POSC 010W; or consent of instructor. Examines the introduction to the politics of congressional elections. Topics include campaigning for Congress, strategic behavior in the decision to run for election, incumbency, and money in congressional elections. Credit is awarded for only one of POSC 148, POSC 148H, or POSC 148S.

POSC 148H Honors Politics of Congressional Elections (5) Lecture, 3 hours; discussion, 1 hour; term paper, 2 hours; extra reading, 1 hour. Prerequisite(s): admission to the University Honors Program, upper-division standing, POSC 010 or POSC 010H or POSC 010W; or consent of instructor. Honors course corresponding to POSC 148 and POSC 148S. An introduction to the politics of Congressional elections. Topics include campaigning for Congress, strategic behavior in the decision to run for election, incumbency, and money in congressional elections. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of POSC 148, POSC 148H, or POSC 148S.

POSC 149H Honors Presidential Elections (4) Lecture, 3 hours; laboratory, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing. Investigation of presidential elections using computer simulation of presidential popularity, public opinion polling, presidential primaries, and the presidential general election. In addition, students use National Election Study data to explore individual-level voter decision making.

POSC 150 Human Rights in Theory, Law, and Politics (4) Lecture, 3 hours; written work, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the theory, politics, and law of human rights. Examines the emergence of human rights institutions since World War II. Topics include cultural relativism, criminal tribunals, truth commissions, and refugees. Credit is awarded for only one of POSC 150 or POSC 150S.

POSC 150S Honors Human Rights in Theory, Law, and Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the theory, politics, and law of human rights. Examines the emergence of human rights institutions since World War II. Topics include cultural relativism, criminal tribunals, truth commissions, and refugees. Credit is awarded for only one of POSC 150 or POSC 150S.

POSC 152 Politics of the Middle East (4) Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the theory, politics, and law of human rights. Examines the emergence of human rights institutions since World War II. Topics include cultural relativism, criminal tribunals, truth commissions, and refugees. Credit is awarded for only one of POSC 150 or POSC 150S.

POSC 153 Russian Foreign Policy in Transition (4) Lecture, 3 hours; extra reading and term paper, 3
POS C 154 The Government and Politics of the European Community (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the formation of the European Community, its institutional structure, its political processes, and its role in Europe. Explores its success in the face of Western Europe's persistent nationalism.

POS C 155 Government and Politics in Western Europe (4) Lecture, 3 hours; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of government and politics in Western Europe and how economic and cultural factors influence their formation. Analyzes how parties, bureaucracies, legislatures, and executives influence the political life of Western Europe. Focuses on the governing bodies in Britain, France, and Germany. Credit is awarded for only one of POS C 155 or POS C 155S.

POS C 155S Government and Politics in Western Europe (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of government and politics in Western Europe and how economic and cultural factors influence their formation. Analyzes how parties, bureaucracies, legislatures, and executives influence the political life of Western Europe. Focuses on the governing bodies in Britain, France, and Germany. Credit is awarded for only one of POS C 155 or POS C 155S.

POS C 156 Political Systems across Muslim Societies (5) Lecture, 3 hours; discussion, 1 hour; term paper, 1 hour; extra reading, 1 hour; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A survey of the different political systems and institutional arrangements regulating the relationship between religion and the state across the Muslim world. Includes the history and main tenets of Islam and case studies such as Iran, Indonesia, Jordan, Pakistan, Nigeria, and the United States.

POS C 157 Modern Dictatorships (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Considers how dictatorships come to power and how they function. Also explores the dilemmas dictatorships face in politics and in economic and social questions and how they met ultimate defeat. Includes study of dictatorships in Argentina, Chile, Haiti, Guatemala and Syria. Credit is awarded for only one of POS C 157 or POS C 157S.

POS C 157S Modern Dictatorships (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Considers how dictatorships come to power and how they function. Also explores the dilemmas dictatorships face in politics and in economic and social questions and how they met ultimate defeat. Includes study of dictatorships in Argentina, Chile, Haiti, Guatemala and Syria. Credit is awarded for only one of POS C 157 or POS C 157S.

POS C 158 Politics of Mexico (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A survey of contemporary Mexican politics. Emphasis is on recent economic and social changes and their impact on Mexico's political system. Topics include relations with the United States, the rise of drug trafficking in Mexico, and the recent emergence of opposition politics. Cross-listed with LNST 148.

POS C 159 The Armed Forces and Politics (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the origins, nature, and behavior of the military within political systems. Focuses on the political interaction between the armed forces and civilians. Topics include military intervention, democracy, human rights, missions, defense organizations, and civilian control. Explores case studies of the United States, Russia, and countries from Latin America and Asia. Credit is awarded for only one of POS C 159 or POS C 159S.

POS C 159S The Armed Forces and Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the origins, nature, and behavior of the military within political systems. Focuses on the political interaction between the armed forces and civilians, as well as the origins of military subordination and insubordination. Topics include military intervention, civilian control strategies, military missions, defense organization, civil-military relations in peace and warfare, and human rights. Considers case studies from Latin America, the United States, Russia, and Eastern Europe. Credit is awarded for only one of POS C 159 or POS C 159S.

POS C 160 Globalization and Underdevelopment (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the political causes and consequences of the spread of the modern state, the competitive market, and political democracy. Examines how these political institutions interact with one another and the shape the possibility of development. Credit is awarded for only one of POS C 160 or POS C 160S.

POS C 160S Globalization and Underdevelopment (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the political causes and consequences of the spread of the modern state, the competitive market, and political democracy. Examines how these political institutions interact with one another and shape the possibility of development. Credit is awarded for only one of POS C 160 or POS C 160S.

POS C 161 U.S.-Latin American Relations (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores international relations between the United States and the nations of Latin America. Examines different theories for explaining changes in the conduct of U.S.-Latin American relations over time. Topics include democ- racy, urbanization, environmental change, economic integration and trade, petroleum politics, drug trafficking, and migration flows. Cross-listed with LNST 188.

POS C 162 Latin America: The Quest for Development and Democracy (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A comparative examination of central issues in and components of Latin American political life. Covers economic development, regimes and alliances, guerrilla wars, the armed forces, human rights, and democratic consolidation. Includes Argentina, Chile, Venezuela, and Peru. Cross-listed with LNST 142. Credit is awarded for only one of LNST 142/POS C 162 or LNST 142S/ POS C 162S.

POS C 162S Latin America: The Quest for Development and Democracy (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A comparative examination of central issues in and components of Latin American political life. Covers economic development, regimes and alliances, guerrilla wars, the armed forces, human rights, and democratic consolidation. Includes Argentina, Chile, Venezuela, and Peru. Cross-listed with LNST 142S.

POS C 163 Ethnic Politics (4) Lecture, 3 hours; individual study, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the politics of ethnicity. Surveys theory and evidence utilizing a wide range of cases from around the world. Credit is awarded for only one of POS C 163 or POS C 163S.

POS C 163S Ethnic Politics (5) Lecture, 3 hours; discussion, 1 hour; individual study, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the politics of ethnicity. Surveys theory and evidence utilizing a wide range of cases from around the world. Credit is awarded for only one of POS C 163 or POS C 163S.

POS C 164 The Nation State and Capitalism (4) Lecture, 3 hours; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers the comparative political economy of advanced industrial countries. Examines forms of capitalism after World War II. Studies political foundations and institutional features and their relation to economic growth, investment, innovation, international trade, employment, and economic quality. Analyzes the impact of globalization on labor relations, social welfare, financial market regulation, and corporate governance. Credit is awarded for only one of POS C 164 or POS C 164S.

POS C 164S The Nation State and Capitalism (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers the comparative political economy of advanced industrial countries. Examines forms of capitalism after World War II. Studies political foundations and institutional features and their relation to economic growth, investment, innovation, international trade, employment, and economic quality. Analyzes the impact of globalization on labor relations, social welfare, financial market regulation, and corporate governance. Credit is awarded for only one of POS C 164 or POS C 164S.

POS C 165 Strategy and Politics (4) Lecture, 3 hours; individual study, 1 hour; written work, 1 hour; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the formal analysis of politics, the role of strategic behavior, and the importance of political institutions in influencing political outcomes. Covers the basics of social choice and game theory and their applications to strategic voting, bargaining, cooperation, agenda setting, executive vetoes, conflict, and legislative bargaining. Credit is awarded for only one of POS C 165 or POS C 165S.

POS C 165S Strategy and Politics (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the formal analysis of politics, the role of strategic behavior, and the importance of political institutions in influencing political outcomes. Covers the basics of social choice and game theory and their applications to strategic voting, bargaining, cooperation, agenda setting, executive vetoes, conflict, and legislative bargaining. Credit is awarded for only one of POS C 165 or POS C 165S.

POS C 166 Judicial Politics and Policy Making (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of the characteristics of judicial bodies, emphasizing their interaction with other policy-makers and social and political problems. Investigates the policy roles of local, state, and lower federal courts and the U.S. Supreme Court.

POS C 167 Constitutional Law: Fundamental Freedoms
POSC 168 Constitutional Law: Criminal Justice (5) Lecture, 3 hours; discussion, 1 hour; outside research, 1 hour; individual study, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the legal and political context in the U.S. of freedom of expression, the press, and religion; separation of church and state; equal rights for women and minorities; voting rights; and citizenship.

POSC 169 Terrorism and Political Violence (4) Lecture, 3 hours; extra reading and term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the nature and origin of political conflict, violence, and rebellion. Examines political violence as a political pathology and as an instrument of supporters and opponents of regimes. Examines types of political violence: terrorism, ethnic and communal conflict, rebellion, and revolutionary and counter-revolutionary violence.

POSC 170 Local Leadership in California (4) Lecture, 3 hours; consultation, 1 hour. A survey of the local leadership structure-official and unofficial-in California. An analysis of who decides and influences local policy decisions.

POSC 171 American State Politics (4) Lecture, 3 hours. A critical examination of the activities, structure, and function of the states in the American political system. Concern is with the politics and major policy issues of the 50 states, with a special interest in California.

POSC 172 Urban Politics and Policies (4) Lecture, 3 hours; term paper and extra reading, 3 hours. Prerequisite(s): upper-division standing. POSC 010 or POSC 010H or POSC 012W. A general analysis of urban politics in the United States. Topics include theories of urban politics, structure of political competition, leading political roles, and major policy problems. Cross-listed with URST 172.

POSC 173 Government and Politics of California (4) Lecture, 3 hours; individual study, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the political process of California. Focuses on both the electoral and legislative politics and the contribution they make to democratic governance under conditions of social diversity. Credit is awarded for only one of POSC 173 or POSC 173S.

POSC 173S Government and Politics of California (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 1 hour; individual study, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the political process of California. Focuses on both the electoral and legislative politics and the contribution they make to democratic governance under conditions of social diversity. Credit is awarded for only one of POSC 173 or POSC 173S.

POSC 175H Introduction to the Honors Thesis (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Familiarizes students with the procedures and techniques, from theory construction to data collection and analysis, needed to design and conduct original research for an honors thesis. Satisfactory (S) or No Credit (NC) grading is not available.

POSC 176 Seminar on Writing the Honors Thesis (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): POSC 175H; upper-division standing or consent of instructor. Provides guidance for students writing an honors thesis in political science. Topics include bibliographic research, fieldwork, statistics, case study analysis, professional writing, and standards of academic scholarship. Satisfactory (S) or No Credit (NC) grading is not available.

POSC 177H Honors Thesis I (1-4) Thesis, 3-12 hours. Prerequisite(s): POSC 175H; POSC 176H; upper-division standing or consent of instructor. Independent research and preparation of an honors thesis completed under the supervision of a faculty member. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

POSC 178 Political Consequences of Electoral Institutions (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the effects of electoral systems used around the world. Explores how different electoral systems influence the choices made by voters and political candidates. Examines how these choices influence factors including representation, accountability, party systems, corruption, and economic growth. Credit is awarded for only one of POSC 178 or POSC 178S.

POSC 178S Political Consequences of Electoral Institutions (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 2 hours; written work, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of the effects of electoral systems used around the world. Explores how different electoral systems influence the choices made by voters and political candidates. Examines how these choices influence factors including representation, accountability, party systems, corruption, and economic growth. Credit is awarded for only one of POSC 178 or POSC 178S.

POSC 180 The Politics of Public Health (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the social, environmental, and political factors that shape population health. Utilizes public health topics to illustrate the fundamental problems of the politics of regulation and social policy. Credit is awarded for only one of POSC 180 or POSC 180S.

POSC 180S The Politics of Public Health (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the social, environmental, and political factors that shape population health. Utilizes public health topics to illustrate the fundamental problems of the politics of regulation and social policy. Credit is awarded for only one of POSC 180 or POSC 180S.

POSC 181 Public Policy: Values, Conflict, and Politics (4) Lecture, 3 hours; extra outside research, 1 hour; individual study, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the political process of California. Focuses on both the electoral and legislative politics and the contribution they make to democratic governance under conditions of social diversity. Credit is awarded for only one of POSC 183 or POSC 183S.

POSC 182 Politics and Economic Policy (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the political and administrative processes of economic policy formation, the rationale of government programs, and the mixture of facts, values, and social forces that determine policy. Emphasizes issues such as guaranteed income, civil rights and the impact of technology on the labor market.

POSC 183 Administrative Politics and Theory (4) Lecture, 3 hours; outside research, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): POSC 010 or POSC 010H or POSC 012W; upper-division standing or consent of instructor. An introduction to the politics and theory of public administration. Topics include decision-making processes, leadership, formal and informal organization, and the interrelationships among values, structures, and behavior patterns.

POSC 184 Digital Government (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the extent to which emerging digital communication technologies transform the institutions and practice of democratic government in the United States. Topics include the impact of emerging communication technology on campaigning, legislative representation, agency rulemaking, and deliberation, as well as the legal, regulatory, and political context of public sector technology. Credit is awarded for only one of POSC 184 or POSC 184S.

POSC 184S Digital Government (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the extent to which emerging digital communication technologies transform the institutions and practice of democratic government in the United States. Topics include the impact of emerging communication technology on campaigning, legislative representation, agency rulemaking, and deliberation, as well as the legal, regulatory, and political context of public sector technology. Credit is awarded for only one of POSC 184 or POSC 184S.

POSC 186 Regulation: A Political Perspective (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines government regulation from a political perspective, covering both traditional areas of business regulation and the newer social regulation in areas of environmental, health, safety, and personal behavior. Evaluates rationales for and against regulation, in theory and through case studies.

POSC 188 Political Violence in Latin America (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines violence perpetuated by states, insurgents, military, police, and organized crime. Includes case studies of repression in Argentina, genocide in Guatemala, counter-insurgency in Colombia, and drug-related violence in Mexico, Brazil, and Central America. Credit is awarded for only one of POSC 188 or POSC 188S.

POSC 188S Political Violence in Latin America (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the nature, origins, and purposes of political violence in Latin America. Examines different forms of violence perpetuated by states, insurgents, military, police, and organized crime. Includes case studies of repression in Argentina, genocide in Guatemala, counter-insurgency in Colombia, and drug-related violence in Mexico, Brazil, and Central America. Credit is awarded for only one of POSC 188 or POSC 188S.

POSC 189 Life after Oil: Understanding the New Energy Order (4) Seminar, 3 hours; extra reading, 1 hour, term paper, 1 hour; written work, 1 hour. Prerequisite(s): ECON 002 or GBST 001 or PBPL 001 or POSC 020 or POSC 020H; upper-division standing or consent of instructor. Examines the environmental, economic, and social impacts of emerging digital communication technologies on political institutions and practice of democratic government in the United States. Topics include the impact of emerging communication technology on campaigning, legislative representation, agency rulemaking, and deliberation, as well as the legal, regulatory, and political context of public sector technology. Credit is awarded for only one of POSC 184 or POSC 184S.

POSC 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): consent of instructor and department chair. Student prepares a written proposal endorsed by a supervising instructor, as a means of meeting individual curricular needs. Course is repeatable to a maximum of 15 units.

POSC 196 Moot Court: Legal Research, Writing, and Advocacy (4) Seminar, 3 hours. Prerequisite(s): senior standing, 3.40 GPA; POSC 167 or POSC 168. Introduction to the judicial process and legal argu-
Programs and Courses

POSC 197 Research for Undergraduates (1–4) Outside research, 1–4 hours. Offers opportunity for directed individual research, to result in a substantial paper, when a student wishes to do a deeper study of a topic than is possible in the normal term paper.

POSC 198 Field Work in Political Science (4) tutorial, hours to be announced; assignments, 8 hours. Direct evaluation of the local political process through participant observation, combining academic instruction and supervised field work. Students will examine firsthand political behavior and the policy process in one location in local political systems. May be repeated once for credit.

POSC 198-I Individual Internship in Political Science (1–12) Internship, 2–24 hours; reading and writing, 1–12 hours. Prerequisite(s): a GPA of 2.70 or better; upper-division standing; consent of instructor. Intern assignments in major political offices. Students participate in and observe substantive theoretical analyses of political behavior and policy processes. Course is repeatable to a maximum of 16 units.

POSC 199 Senior Research (1–4) Outside research, 3–12 hours. Prerequisite(s): upper-division standing and consent of instructor. Independent work under the direction of members of the staff. The project may be undertaken as a one-, two-, or three-quarter sequence. In the case of a two- or three-quarter sequence, the final grade may be deferred until completion of the last quarter. Course is repeatable to a maximum of 12 units.

Graduate Courses

POSC 201 Introduction to Political Inquiry (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the logic of political inquiry. Problems of theory-building, research design, case selection, and measurement are covered in the context of quantitative and qualitative political research.

POSC 202A Survey of Quantitative Methods (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): POSC 201 or approval of department graduate committee. Introduction to statistical analysis. Topics include descriptive statistics, probability, sampling distributions, parameter estimation, hypothesis testing, correlation, and bivariate regression analysis.

POSC 202B Survey of Quantitative Methods (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): POSC 201 or approval of department graduate committee. Covers data analysis for political science applications. Topics include Statistical Package for the Social Sciences (SPSSX), regression analysis, causal modeling, factor analysis, and cluster analysis in research design context.

POSC 203 Social Science, History, and Qualitative Methodology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the basic epistemology of qualitative social science. Provides students with a working knowledge of the strengths and weaknesses of the historical and comparative case study approaches to social science.

POSC 204 Mathematical Modeling in Political Science (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Survey of basic mathematical tools relevant to research in political science and other disciplines of the social sciences, with an emphasis on concepts and applications. Topics include sets, matrix algebra, comparative-static analysis, optimization problems, exponential and logarithmic functions, equality constraints in optimization, and integration.

POSC 205 Advanced Regression Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): POSC 202B. Introduction to the use of advanced techniques in regression analysis. Topics include model specification, measures of goodness of fit, two-stage least squares, and models with binary dependent variables.

POSC 206 Environmental Policy and Law (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing; POSC 010 or POSC 010H or POSC 010W, POSC 020 or POSC 020H; or consent of instructor. An introduction to the processes and politics of environmental regulation in the United States and the negotiation and implementation of international environmental accords. Uses social scientific methods of analysis to investigate specific issues such as air quality, energy, and biodiversity. Cross-listed with ENVS 206.

POSC 207 Advanced Quantitative Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): MATH 005, POSC 202B; or consent of instructor. Introduction to the use of advanced techniques in quantitative analysis. Topics include maximum likelihood, sample selection bias, simultaneous equations.

POSC 208 Seminar in Representation (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines representation in America. Topics include what it means to represent; the different means of representation; to what degree the elected behave consistently with their constituents' views; and the accountability of elected officials. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

POSC 212 Political Theory (4) Seminar, 3 terms; paper, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A survey of general issues in political theory. Proponents covered may include Plato, Montesquieu, Weber, Arendt, Rawls, Foucault, and others. Debate models covered may include hermeneutics and normativity vs. science; power vs. truth; and democracy vs. liberalism. Course is repeatable as content changes to a maximum of 12 units.

POSC 213 Rhetoric and Argument in Ancient China and Greece (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): POSC 201 or approval of department graduate committee. Conducts a broad theoretical and historical survey of argument, persuasion, and, in some cases, poetics in ancient China and Greece (texts dating from the fifth to the third centuries B.C.), as well as some of their implications for contemporary theory and practice. Students who submit a seminar paper receive a letter grade, whereas other students receive Satisfactory (S) or No Credit (NC) grade. This course may also be taken on a Satisfactory (S) or No Credit (NC) basis by students advanced to candidacy for the Ph.D. Cross-listed with CPLT 213.

POSC 214 Political Economy of International Trade (4) Lecture, 3 hours; individual study, 1 hour; outside research, 1 hour; written work, 1 hour. Prerequisite(s): graduate standing; POSC 216 recommended. Overview of the literature in International Political Economy (IPE) relevant to the study of trade and globalization. Introduces the relationship between international politics and the world economy. Evaluates theoretical debates relevant to trade politics including economic growth and development, gender, environmental protection, migration, trade in services and industrial property protection. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Credit is awarded for only one of POSC 214 or POSC 264.

POSC 215 Political Economy of International Finance (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Conducts a broad theoretical and historical survey of the politics and economics of international money and finance. Topics include monetary and exchange rate regimes, foreign direct investment, capital flows, sovereign debt, financial regulation and international macroeconomic coordination, the role of finance in economic development, and international financial crises. Cross-listed with ECON 236.

POSC 216 International Relations (4) Lecture, 3 hours. Prerequisite(s): consent of instructor. Historical development and present day theory and practice in the study of relations among nations, origins and implications of the idea of sovereignty, the theory of an international community, theories of imperialism. The analysis of selected contemporary problems—bipolarity, emergent nations, alliance systems in the light of recent contributions to international relations theory.

POSC 217 Comparative Politics (4) Lecture, 3 hours. Survey and introduction to comparative politics with emphasis on major ideas, trends, and issues in the field. Critical assessment of the literature on systems, political culture, development and underdevelopment, and elites.

POSC 220 Politics of Race, Immigration, and Ethnicity (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the politics of race, immigration, and ethnicity in the United States, including comparisons to ethnic politics in other regions of the world. Emphasizes the role of political institutions and processes in making race, immigration, and ethnicity more or less salient in elections, legislation, social movements, and interpersonal and intergroup relations. Course is repeatable as content changes to a maximum of 8 units.

POSC 225 Formal Analysis Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the use of formal theory in political science. Covers the basics of game theoretical analysis and applications to substantive issues in the discipline. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 8 units.

POSC 227 Seminar in Religion and Politics (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A critical examination of the relationship between religion and politics from a comparative perspective. Studies politicization of religion in political issues such as anti-Semitism, mass politics, and political theory. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 8 units.

POSC 230 Research Colloquium in Political Science (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Provides training in full and effective engagement in scholarly inquiry and exchange. Utilizes tiered participation in student and faculty presentations. Includes discussion of current research in the fields of political science such as American politics, comparative politics, international relations, mass politics, and political theory. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 18 units.

POSC 249 American Politics (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys major theoretical approaches to the study of American politics and enduring research questions in the field. Topics vary and could include the politics of race and ethnicity, the historical development of government institutions, political parties, voting behavior, federalism, and the policy-making process in the United States. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 8 units.
POSC 250 Seminar in Politics and the Legal Order (4) Seminar, 3 hours; outside research, 3 hours. Prereq-
usite(s): graduate standing or consent of instructor. Intensive reading and research on selected topics in poli-
tics and the legal order, such as law and social change, compliance with judicial decision making, and
important areas of constitutional law.

POSC 252 Public Policy (4) Seminar, 3 hours; individ-
ual study, 3 hours. Prerequisite(s): graduate standing
or consent of instructor. Explores approaches to public
policy analysis, emphasizing interaction between
substance and development. Covers both theories and
case concrete cases; special attention given to the administrative stage of policy
development.

POSC 254 Seminar on the U.S. Congress (4) Seminar, 3
hours. An examination of major research on the U.S.
Congress. Emphasis will be placed upon substantive
questions requiring further research and upon meth-
odological techniques appropriate to such research.

POSC 255 Seminar in American Electoral Behavior (4)
Seminar, 3 hours; outside research, 3 hours. Prereq-
usite(s): graduate standing or consent of instructor.
Explores the literature on electoral behavior in the
United States. Focuses on the major models of voting
behavior developed since 1945. In addition, issues
such as voter turnout, economic voting, and presiden-
tial primaries are covered.

POSC 256 Seminar in Public Opinion and Mass Media
(4) Seminar, 3 hours; outside research, 3 hours. Pre-
requisite(s): graduate standing or consent of instructor.
Explores classic and contemporary research on public
opinion and mass media. Topics in public opinion
include political socialization, attitude constraint,
and theories of attitude change. Topics in mass media
include agenda setting and framing effects.

POSC 257 Comparative Political Behavior and Elections
(4) Seminar, 3 hours; outside research, 3 hours. Pre-
requisite(s): graduate standing or consent of instructor.
Examines issues in the theoretical literature on voting
studies by using examples mainly from outside the U.S.

POSC 258 Congressional Elections (4) Seminar, 3
hours; outside research, 3 hours. Prerequisite(s):
graduate standing or consent of instructor. Congress-
ional elections constitute a regular topic of inquiry in
American politics. Much scholarly debate has been
generated over a variety of phenomena in this area.
This seminar provides an overview of a number of
these controversies and offers students the conceptual
framework to critically analyze a rather large body of
literature.

POSC 259 Women and the American Political Process
(4) Seminar, 3 hours; outside research, 3 hours. Pre-
requisite(s): graduate standing or consent of instructor.
An examination of the role of women in the American
political process. Topics include the women's move-
ment as a social movement and as an interest group,
women as voters, candidates and office holders, and
women's issues and the public policy process.

POSC 260 Economics and Elections (4) Seminar, 3
hours; outside research, 3 hours. Prerequisite(s):
graduate standing or consent of instructor. Examines
the impact of issues and economic conditions on vot-
ing behavior in elections, with primary focus on United
States presidential elections. The roles of campaigns
and information are also covered.

POSC 261 American Political Institutions (4) Seminar,
3 hours; outside research, 3 hours. Prerequisite(s):
graduate standing or consent of instructor. Surveys
the principal theoretical and empirical issues involved
in the study of American political institutions. Covers
the major U.S. national political institutions, including
Congress, the presidency, the judiciary, the bureaucra-
cy, interest groups, and political parties.

POSC 262 War Termination and Conflict Resolution (4)
Seminar, 3 hours; outside research, 3 hours. Prereq-
usite(s): graduate standing or consent of instructor.
Considers competing explanations of why and when
conflicts come to an end. Focuses on international
and civil wars. Addresses questions such as the fol-
lowing: Why do civil wars last longer than international
ones? Why are civil wars more likely to settle through
negotiation? What impact does domestic politics have
on international war termination?

POSC 263 Seminar on Conflict and Peace (4) Seminar,
3 hours; outside research, 3 hours. Prerequisite(s):
graduate standing or consent of instructor. Considers
some of the principal problems, issues, and findings
in the study of the causes and consequences of war.
Focuses on a number of key variables and their links
to war under certain conditions and introduces students
to standard data sources.

POSC 264 Seminar in International Political Economy
(4) Seminar, 3 hours; consultation, 1 hour. Prerequi-
site(s): graduate standing or consent of instructor. An
examination of major economic institutions, develop-
ments, and forces in world politics. Emphasizes con-
tending theoretical approaches, issues in North-South
relations and contemporary regional and national
political-economic development. Credit is awarded for
only one of POSC 214 or POSC 264.

POSC 266 Political Economy of Growth (4) Seminar,
3 hours; outside research, 3 hours. Prerequisite(s):
POSC 202A, POSC 202B; or consent of instructor.
Examination of political and economic aspects of
growth using a formal and quantitative approach.
Topics include political institutions, social development,
economic growth, and democratization. Emphasis is
on the interaction and causality between political and
economic variables.

POSC 267 Ethics and International Politics (4) Seminar,
3 hours; extra reading, 1.5 hours; written work, 1.5
hours. Prerequisite(s): graduate standing or consent
of instructor. Examines ethical debates in the field of
international politics. Topics include just war theory,
humanitarian aid, military intervention, international
justice and human rights, aggression, peacekeeping,
and global inequality. May be taken Satisfactory (S) or
No Credit (NC) with consent of instructor and graduate
advisor. Credit is awarded for only one of POSC 135 or
POSC 267.

POSC 268 Human Rights (4) Seminar, 3 hours; outside
research, 3 hours. Prerequisite(s): graduate standing
or consent of instructor; consent of instructor is re-
quired for students repeating the course. Surveys the
primary theoretical and empirical issues in the study of
human rights. Explores major themes and contempo-
rary topics, including, but not limited to, cultural rela-
tivism, the evolution of the human rights regime, and
the impact of globalization, domestic, and international
institutions. Course is repeatable as content changes
to a maximum of 8 units.

POSC 271 Comparative Political Economics (4) Semi-
inar, 3 hours; research, 3 hours. Prerequisite(s):
graduate standing or consent of instructor. Past attempts
to address such questions as “What part does govern-
ment play in the economy?” have been made within the
disciplinary boundaries of political science or eco-
nomics. Such work, cut across the domains of economics and political science, and the new political economy attempts to integrate theories and insights from both disciplines. This course will ex-
amine this literature to see how successful it has been in explaining important aspects of the interrelationship
between politicians and the economy.

POSC 272 Parties and Party Systems in Western Europe
(4) Seminar, 3 hours; outside research, 3 hours. Pre-
requisite(s): graduate standing or consent of instructor.
Examines some of the literature on parties and party
systems in Western Europe, with special attention to
the role of such systems in modern representative
democracies and to debates in the literature on this
topic.

POSC 273 Rational Choice in Comparative Politics (4)
Seminar, 3 hours; outside research, 3 hours. Prereq-
usite(s): graduate standing or consent of instructor.
The rational choice approach has begun to gain favor
among a number of contending approaches on a variety of questions. This seminar critically reviews and
discusses the contribution the rational choice perspec-
tive has made as well as the debates it has sparked.

POSC 274 The Armed Forces and Politics (4) Seminar,
3 hours; outside research, 3 hours. Prerequisite(s):
grand standing or consent of instructor. Examines
the role of the armed forces in political society, cover-
ing western-democratic, communist, postcommunist,
and post-socialist political systems. Explores how civil-military relations across regions are made, with
an emphasis on military political intervention and civilian control
strategies.

POSC 276 Democracy and Democratization (4) Lecture,
3 hours; term paper, 3 hours. Prerequisite(s): graduate
standing or consent of instructor. Addresses topics
and readings on democracy and democratization within
the field of comparative politics. Examines the contingen-
ties between democracy and democratization across
regions and time. Explores the relative impact of eco-
nomic, social, and political factors in the emergence of
democracy and conditions sustained therein. No

POSC 278 Seminar in Latin American Politics (4) Seminar,
3 hours. Critical examination of fundamental issues of Latin American politics with attention to
varying interpretations and approaches to the study of
effie and masses, power and class conflict, develop-
ment and underdevelopment.

POSC 279 Asian Political Economy in Comparative
Perspective (4) Seminar, 3 hours; outside research, 3
hours. Prerequisite(s): graduate standing or consent
of instructor. Focusses on the political economy of late
development, particularly in East Asia, including rival
forms of institutional analysis, case studies versus
comparative analysis, and the particular data and
methodological challenges of fieldwork-based analysis.

POSC 280 Seminar in Political Theory (4) Seminar,
3 hours; extra reading, 2 hours; outside research, 1
hour. Prerequisite(s): consent of instructor. A detailed
study at an advanced level of political theories and
concepts and the writings of their major theorists. Themes
and eras covered vary each quarter. Course is
repeatable as content changes to a maximum of 12
units.

POSC 281 Seminar in the History of Political Thought
(4) Seminar, 3 hours; outside research, 3 hours. Pre-
requisite(s): graduate standing or consent of instructor.
Advanced study of the methodology and practice of
research in the history of political thought. Course is
repeatable as content changes to a maximum of 12
units.

POSC 282 Political Theory and Policy Analysis (4)
Seminar, 3 hours; extra reading, 1.5 hours; written
work, 1.5 hours. Prerequisite(s): graduate standing or
consent of instructor. Provides an overview of the
literature focusing on the analysis of individual behav-
ior within various types of institutional arrangements.
Introduces a diversity of work oriented in rational
choice theory, broadly defined. Emphasis is placed on
applying institutional analysis to legislative, bureau-
cratic, and so-called informal institutions.

POSC 283 Political Thinkers in Depth (4) Seminar,
3 hours; outside research, 3 hours. Prerequisite(s):
grand standing or consent of instructor. Explores in
deep one or more great political thinkers from around
the world. Focusses on methodologies of research and
interpretation. May include works by Plato, Confucius,
Machiaveli, Marx and Engels, John Stuart Mill, or Gandhi. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

POSC 285 Professional Research Paper (4) Outside research, 12 hours. Prerequisite(s): graduate standing or consent of instructor. An independent study course focusing on writing a substantial research paper, emphasizing research design problems. Must be accomplished within two quarters following doctoral qualifying examinations. If completed in one quarter, a grade will be assigned for 4 units. If two quarters are necessary, course will be graded In Progress (IP) until both terms are completed when the final grade will be assigned for 8 units. Course is repeatable to a maximum of 8 units.

POSC 290 Directed Studies (1-6) variable hours. Prerequisite(s): consent of instructor. Advanced work in a topic or topics appropriate to the student's special interests and needs. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

POSC 291 Individual Study in Coordinated Areas (1-12) Prerequisite(s): consent of instructor. A program of study designed to advise and assist candidates who are preparing for doctoral examinations. Does not count toward the unit requirement for the master's degree. Graded Satisfactory (S) or No Credit (NC). May be repeated up to a total of 16 units.

POSC 292 Concurrent Analytical Studies in Political Science (2-4) Outside research, 8-16 hours. Prerequisite(s): consent of instructor. Each 292 course is taken concurrently with a 100-series course but on an individual basis. Students complete a graduate-level paper based on research or criticism related to the 100-series course. Faculty guidance and evaluation is provided throughout the quarter. POSC 114, POSC 114H, POSC 114S, POSC 142 (E-Z), POSC 186, POSC 190, POSC 196, POSC 197, POSC 198E, POSC 198I, and POSC 199 may not be used for this course arrangement. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

POSC 293 Research Topics in Political Science (1) Lecture, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Lectures and discussions by invited scholars and faculty on selected research topics in political science. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 15 units.

POSC 297 Directed Research (1-6) Outside research, 3-18 hours. Individual research performed under the direction of a faculty advisor. Designed for students preparing their dissertation prospectuses. Students meet in groups by appointment with a faculty advisor to discuss issues of dissertation writing. Emphasis is placed on the development of research design. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 18 units.

POSC 299 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

POSC 301 Teaching of Political Science at the College Level (2) Seminar, 1 hour: practicum, 3 hours. Prerequisite(s): graduate standing in Political Science. A program of weekly meetings and individual formative evaluation required of every Political Science Teaching Assistant. Covers instructional methods and classroom/section activities most suitable for teaching Political Science. Conducted by departmental faculty or the Teaching Assistant Development Program. Graded Satisfactory (S) or No Credit (NC).

POSC 302 College Teaching Practicum (1-4) Practicum, 2-8 hours; consultation, 1-4 hours. Prerequisite(s): graduate standing and consent of instructor. Required of all teaching assistants in the department. Credit not applicable to graduate unit requirements. Supervised teaching in college level classes under the supervision of the course instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Population Biology

College of Natural and Agricultural Sciences

The interdepartmental Ph.D. program in Population Biology is not currently accepting new students. For further information call (800) 735-0717 or (951) 827-5621.

Psychology

Subject abbreviation: PSYC

College of Humanities, Arts, and Social Sciences

B. Glenn Stanley, Ph.D., Chair
Department Office, 1111 Psychology
Psychology, (951) 827-7792
Undergraduate Advising Office
1200 Psychology
(951) 827-5386; psych.ucr.edu

Professors
G. John Andersen, Ph.D.
Curt Burgess, Ph.D.
Christine Chiarello, Ph.D.
Steven E. Clark, Ph.D.
Howard S. Friedman, Ph.D.
Distinguished Professor of the Graduate Division
David C. Funder, Ph.D.
Distinguished Professor
Mary Gauvain, Ph.D.
Jill F. Kroll, Ph.D.
Distinguished Professor Sonja Lyubomirsky, Ph.D.
Carolyn M. Murray, Ph.D.
Daniel J. Ozer, Ph.D.
Chandra A. Reynolds-Gebelin, Ph.D.
David A. Rosenbaum, Ph.D.
Distinguished Professor
Lawrence D. Rosenblum, Ph.D.
Robert Rosenthal, Ph.D.
Distinguished Professor
Aaron Seitz, Ph.D.
B. Glenn Stanley, Ph.D.
Psychology/Cell Biology and Neuroscience

Professors Emeriti
M. Robin DiMatteo, Ph.D.
Marvin Nachman, Ph.D.
Ross Parke, Ph.D.
Lewis Petrinovich, Ph.D.
Robert D. Singer, Ph.D.
Ovid J-L. Tzeng, Ph.D.
David H. Warren, Ph.D.

Associate Professors
Peter W. Hickmott, Ph.D.
Kelly Huffman, Ph.D.
Edward Korzus, Ph.D.
Sara Mednick, Ph.D.
M. Robin DiMatteo, Ph.D.
M. Robin DiMatteo, Ph.D.
Rebekah Richert, Ph.D.
Edward Korzus, Ph.D.
Kelly Huffman, Ph.D.
Ovid J-L. Tzeng, Ph.D.

Assistant Professors
Ilana Bennett, Ph.D.
Cecilia Cheung, Ph.D.
Elizabeth L. Davis, Ph.D.
William Dunlop, Ph.D.
John Franchak, Ph.D.
Brent L. Hughes, Ph.D.
Kalina J. Michalska, Ph.D.
Megan Robbins, Ph.D.
Jon Willits, Ph.D.
Rachel Wu, Ph.D.
Edward Zagha, M.D., Ph.D.
WeiWei Zhang, Ph.D.

Majors and Career Opportunities

The major in Psychology is designed to give students a broad, general exposure to knowledge in the various areas of psychology and to the methods psychologists use to conduct research. The B.A. degree in Psychology is useful to those students seeking careers in probation and parole, corrections, personnel, industrial relations, mental health work, social work, or positions as trainees in a variety of executive training programs. The degree also prepares students for graduate school in psychology in either M.A. or Ph.D. programs. Such graduate programs prepare students for a variety of career possibilities. Careers include teaching and research positions in community and private colleges and state and other universities as well as career positions such as research psychologist, clinical psychologist, counseling psychologist, and industrial psychologist. For more information, see psych.ucr.edu.

The department offers a minor in Psychology and a major in Psychology/Law and Society.

Transfer Students

Transfer applicants must have a minimum GPA of 2.70. Applicants must also have a minimum of one UC transferable mathematics course equivalent to Math 004 or higher.

Change of Major Criteria

Students switching to the Psychology or Psychology/Law and Society must have completed the following courses with grades of C- or better and have been in good academic standing for two quarters or more.

1. Lower Division requirements
a. PSYC 001, PSYC 002, PSYC 011 and MATH 004 or higher

Transfer students and others entering the major after achieving sophomore standing must complete the requirements within one year by enrolling in applicable courses every quarter until the requirement is met. Students who do not complete the lower-division requirements in this timely fashion and with at least the minimum required grade average will not be permitted to continue in the Psychology major. Students must check course descriptions for prerequisite requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

The lower-division biological, physical sciences, and mathematics requirements for the Psychology major also count toward the college's Natural Sciences and Mathematics breadth requirement. Consult with a departmental advisor.
Major Requirements

Psychology Major

Psychology offers B.A. and B.S. degrees. The Psychology major requires completion of the lower-division requirements listed below by the end of the sophomore year, with an average grade of “C” or better with no grade below a “C-“. before upper-division Psychology courses are taken. All courses must be taken for a letter grade.

For the Bachelor of Arts The major requirements for the B.A. degree in Psychology are as follows:

1. Lower-division requirements (39 units)
   a) One course in Mathematics chosen from MATH 004, MATH 005, MATH 008A, or MATH 009A
   b) One 4 unit course in Biological Sciences (Biochemistry, Biology, Botany and Plant Sciences, Entomology, Nematology, or Plant Pathology)
   c) One 4 unit course in Physical Sciences (Chemistry, Physics, Earth Sciences, excluding cultural Geography courses)
   d) Two additional 4 unit courses that satisfy the CHASS Natural Sciences and Mathematics breadth requirements.
   e) PSYC 001, PSYC 002, PSYC 011, PSYC 012

2. Upper-division requirements (37 units)
   a) PSYC 110 or CBNS 106
   b) PSYC 140, PSYC 150
   c) PSYC 132 or PSYC 134
   d) PSYC 160 or PSYC 161 or PSYC 162 or PSYC 163
   e) Four additional 4-unit, upper-division Psychology courses. Only one 4- to 5-unit quarter of PSYC 198G, or one 4- to 8-unit quarter of PSYC 198I may be included. No 190- series courses other than PSYC 198G or PSYC 198I may be used

Students planning for graduate school should take into consideration any specific graduate school requirements when choosing these elective Psychology courses.

Note Students who have taken general or introductory Psychology courses other than PSYC 001 and PSYC 002 must consult with a departmental advisor.

For the Bachelor of Science

The B.S. degree is designed to provide a research-intensive curriculum for students who want a deeper understanding of how knowledge is created through research and for students who may be interested in research-based graduate programs in psychology and the biological sciences.

Psychology courses must be taken for a letter grade. Students must check course descriptions for prerequisite requirements.

Admission A limited number of students are accepted into the B.S. degree of the Psychology major. Acceptance is according to overall GPA and acceptable progress towards the Psychology major, including PSYC 001, PSYC 002, PSYC 011 and PSYC 012 with a B- or better. Students must apply when they have completed between 75 and 100 quarter units of college work.

The major requirements for the B.S. degree in Psychology are as follows:

1. Lower-division requirements for the B.S. (39 units)
   a) One course in Mathematics chosen from MATH 004, MATH 005, MATH 008A, or MATH 009A
   b) One 4 unit course in Biological Sciences (Biochemistry, Biology, Botany and Plant Sciences, Entomology, Nematology, or Plant Pathology)
   c) One 4 unit course in Physical Sciences (Chemistry, Physics, Earth Sciences, excluding cultural Geography courses)
   d) Two additional 4 unit courses that satisfy the CHASS Natural Sciences and Mathematics breadth requirements.
   e) PSYC 001, PSYC 002, PSYC 011, PSYC 012 with no grade below a B-

2. Upper-division requirements (37 units)
   a) PSYC 110 or CBNS 106
   b) PSYC 140, PSYC 150
   c) PSYC 132 or PSYC 134
   d) PSYC 160 or PSYC 161 or PSYC 162 or PSYC 163
   e) Any three of the following: PSYC 109, PSYC 120L/CBNS 120L, PSYC 180, PSYC 181, PSYC 182 (E- Z), PSYC 195, PSYC 197 (for a total of 4 units, letter grade required), PSYC 199H
   f) One of the following: PSYC 117, PSYC 136, PSYC 139, PSYC 148, PSYC 169, or PSYC 190 (for a total of 4 units, letter grade required).One of the following graduate seminars may be substituted, with permission of the instructor: PSYC 251, PSYC 255, PSYC 256, PSYC 257, PSYC 258, PSYC 263
   g) One additional 4-unit, upper-division Psychology course. No 190- series courses other than PSYC 198G or PSYC 198I may be used.

Students planning for graduate school should take into consideration any specific graduate school requirements when choosing these elective Psychology courses.

Psychology/Law and Society Major

The Law and Society major is open to undergraduate students with junior standing who have completed LWSO 100 with a grade of “C” or higher.

1. All requirements for the B.A. in Psychology (39 lower-division units, which includes 16 units that are also used for college breadth requirements; 36 upper-division units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100 (with a grade of “C” or better)
   c) One course chosen from POSC 114, PSYC 012, SOC 004 (or equivalent course in research methods)
   d) Three courses chosen from ANTH 127, ECON 119, HISE 153, PHIL 165, POSC 167, PSYC 175, SOC 159
   e) Two courses chosen from ENSC 174, HISA 120A, HISA 120B, HISE 123, LWSO 175 (E-Z), PHIL 164, POSC 111, POSC 166, POSC 168, POSC 186, SOC 147, SOC 149, SOC 180
   f) LWSO 193, Senior Seminar

Note For sections 2.d) and 2.e) combined, no more than two courses may be taken from the same department. In fulfilling requirements of two or more majors, students may not count more than two courses toward both parts of their total requirements. For this major, PSYC 012 fulfills a requirement in both Psychology and Law and Society.

Minor

Prerequisites for the minor in Psychology are PSYC 001, PSYC 002, PSYC 011, and PSYC 012, with an average grade of “C” or better, with no grade below a “C-“. Requirements for the Psychology minor are as follows (21 units):

1. Twenty-one (21) upper-division Psychology units
   a) PSYC 110 or CBNS 106
   b) PSYC 132 or PSYC 134
   c) PSYC 160 or PSYC 161 or PSYC 162 or PSYC 163
   d) Three courses chosen from ANTH 127, PSYC 169, PSYC 190 (for a total of 4 units, letter grade required).One of the following graduate seminars may be substituted, with permission of the instructor: PSYC 251, PSYC 255, PSYC 256, PSYC 257, PSYC 258, PSYC 263
   g) One additional 4-unit, upper-division Psychology course. No 190- series courses other than PSYC 198G or PSYC 198I may be used.

Students planning for graduate school should take into consideration any specific graduate school requirements when choosing these elective Psychology courses.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program

The Department of Psychology offers the M.A. and Ph.D. degrees in Psychology, however, applications are not accepted from students wishing to work towards the master’s degree only.
Graduate training in Psychology is offered in four major areas: Cognitive, Social/Personality, Developmental, and Systems Neuroscience.

**Admission** Students are normally expected to have completed the equivalent of an undergraduate major in Psychology at the UC, with background preparation in basic science and mathematics. Applicants for graduate status must provide scores for the GRE General Test (verbal and quantitative) prior to admission.

The Ph.D. degree is a research degree. Students must demonstrate the ability to complete rigorous empirical research and must be active in research throughout their graduate career. The course requirements in the Ph.D. program are directed toward establishing a foundation for critical evaluation of research literature and designing conceptually important empirical research.

**Doctoral Degree**

**Course Work** The courses normally required during the first two years include the following:

1. **PSYC 211, PSYC 212, PSYC 213** (Systems Neuroscience students take two of the three, as directed by the student's advisor.)

2. The appropriate area core:
   - Cognitive: PSYC 203A, PSYC 203B, PSYC 203C, PSYC 233
   - Developmental: PSYC 207A, PSYC 207B, PSYC 207C, PSYC 208
   - Social/Personality: PSYC 225, PSYC 226, PSYC 227
   - Neuroscience: NRSC 200A/PSYC 200A, NRSC 200B/PSYC 200B, NRSC 200C/PSYC 200C

3. Five additional courses or seminars selected to provide further study beyond the area core course requirements. Courses or seminars must be 3- or 4-units, and at least one must be a Departmental core course (listed in 2, above) outside the student's area of specialization.

The student's adviser and the department graduate adviser must approve the list of courses used to satisfy this further study requirement. Students who have completed graduate-level course work prior to entering the UCR program may request that specific courses be accepted toward the satisfaction of this requirement. This request will be reviewed using procedures and standards typically applied to the approval of courses to satisfy this requirement.

4. **PSYC 301**: Required of all graduate students prior to or concurrent with the first teaching assistant appointment unless waived by petition due to previous experience

The Psychology Department requires that each student earn a “B” average in the PSYC 211, PSYC 212, and PSYC 213 sequence and in the student's area core courses, with no grade lower than a "B-".

In addition, students must be enrolled in the appropriate area of Proseminar every quarter until advancement to candidacy.

**Cognitive:** PSYC 283  
**Developmental:** PSYC 284  
**Social/Personality:** PSYC 285  
**Neuroscience:** PSYC 251 or PSYC 263 or PSYC 287 or PSYC 289

Progress in the program is formally evaluated in June of each year and informally on a continuing basis by noting participation in class and in research.

All students in the graduate program are held to these requirements whether or not they have taken graduate work at, or hold an M.A. from, another institution. The only exception may be for previously-taken graduate-level course work which is thought to be equivalent to one or more of PSYC 211, PSYC 212, or PSYC 213. If a grade of “B” or better was received, and with the approval of the advisor, the student may be tested by a departmental instructor of the course(s) in question. On the basis of the results of the test, the instructor decides if the course can be waived.

**Professional Development Requirement** The Professional Development course (PSYC309B) curriculum satisfies the Professional Development requirement. Topics discussed typically include: interviewing, writing, and oral presentation skills; the academic job market and the job application process; and nonacademic careers

**Master's Degree** Although there is not a separate terminal master's program, students may apply for the master's degree at the beginning of the quarter in which they expect to complete the statistical sequence, the appropriate area core, two of the five further study courses, PSYC 301 (see 1, 2, 3, and 4 above), and a minimum of 36 units in graduate status (of which at least 18 must be in graduate course work) and pass an oral comprehensive examination administered by the Psychology Department.

**Teaching Experience** Each student must gain experience in a teaching capacity for the equivalent of at least three full quarters. Teaching assistants assist a faculty member in an undergraduate course by preparing and grading examinations, reading papers, lecturing, and conducting discussion and laboratory sections.

**Written and Oral Qualifying Examinations** The qualifying examination should be taken during the third year of full-time graduate study. It consists of a written component and an oral examination, and focuses on the subject matter in the student's chosen area of concentration.

A qualifying committee should be nominated early in the third year, and all core and breadth requirements must be completed no later than the quarter in which the qualifying examination is taken.

On the basis of this examination (and completion of the core and breadth requirements), the student may pass and be advanced to candidacy for the Ph.D.; fail, and be permitted one retake; be awarded the M.A. (if not previously awarded) but not be advanced to candidacy for the Ph.D.; or not be awarded the M.A. and not be advanced to candidacy for the Ph.D.

Upon successful completion of 1, 2, 3, and 4, passing the qualifying examination, and nomination of the dissertation committee, the Graduate Division sends the student an application for advancement to candidacy.

**Dissertation and Final Oral Examination** Students must complete a dissertation on a subject chosen by the candidate, bearing on the principal area of concentration and showing the student’s ability in independent investigation. The dissertation committee guides the student in preparing the dissertation and examines the student during the defense of the dissertation.

Each of the four major areas may have additional requirements. Occasionally, a change in courses used to satisfy specific requirements may be justifiable. For a complete description of the program, visit psych.ucr.edu.

**Normative Time to Degree** 15 quarters

**Minor in Quantitative Psychology**

In addition to pursuing a doctoral degree in one of the core areas of psychology, graduate students may qualify, under the direction of the committee in charge of the quantitative minor, for a minor in Quantitative Psychology by completing the following:

1. **PSYC 211, PSYC 212, and PSYC 213**, with a grade of “A-” or better in each course, or passing an examination covering the three courses.

2. Three advanced quantitative courses: PSYC 259 (with different subtitles) or other courses specifically approved by the committee in charge.

3. Three quarters of PSYC 270

4. Successful completion of an oral qualifying examination based upon a paper written by the student on a quantitative topic.

A three-person faculty qualifying committee, approved by the chair of the committee in charge, must grant prior approval of the topic of the paper and conduct the oral examination. The candidate and the committee determine the format of the oral exam; a presentation in PSYC 270 based on the paper satisfies the oral examination requirement.

**Opportunities for Graduate Study in Neuroscience**

Faculty from the Department of Psychology participate in a unique graduate specialization in Neuroscience which draws on the strengths of distinguished scientists from several units. For further information concerning work in this area, see Neuroscience Graduate Program in the Programs and Courses section of this catalog.

**Lower-Division Courses**

PSYC 001 Introductory Psychology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to psychology as an experimental science. Emphasizes topics in cognitive (including learning, memory, sensation, perception), comparative, and physiological psychology.
PSYC 002 Introductory Psychology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Emphasizes topics in developmental psychology, tests and measurements, social psychology, personality, and abnormal behavior.

PSYC 011 Psychological Methods: Statistical Procedures (3) Lecture, 3 hours; discussion, 2 hours. Prerequisite(s): PSYC 002 or PSYC 005 or MATH 006A or MATH 006B or MATH 022 or MATH 009A or MATH 009C or MATH 010A or MATH 010B with a grade of C- or better; or a score on the MAE (Math Advising Exam) sufficient for placement into MATH 022 or higher; PSYC 001; PSYC 002 with grades of C- or better. Covers descriptive and inferential statistics, measures of central tendency, variability, and correlation. Introduces sampling distributions, statistical inference, and hypothesis testing.

PSYC 012 Psychological Methods: Research Procedures (6) Lecture, 3 hours; laboratory, 3 hours; outside research, 3 hours; term paper, 1 hour; extra reading, 2 hours. Prerequisite(s): ENGL 001B or equivalent with a grade of "C" or better; PSYC 001, PSYC 002. PSYC 011 with grades of C- or better; consent of instructor is required for students repeating the course. A systematic survey of research methodologies in psychology. Laboratory experiments include evaluating and testing psychological theories; assessing methodologies and research designs; designing and implementing research; collecting data and analyzing statistics; writing research reports; and discussing ethical issues in science.

PSYC 013 Skepticism and Pseudoscience in Psychology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): a grade of "C" or better in ENGL 001A or consent of instructor. Students study at the borderlands of psychology (e.g., extra-sensory perception, repressed memory, pseudoscientific beliefs, parapsychology, psychic phenomena, faith healing, mass hysteria). Explores the relationship among skepticism, cynicism, and "gullibility" and the rhetoric of extraordinary claims. Stresses the development of scientific literacy, critical thinking skills, hypothesis testing, and understanding psychology as an empirical science.

PSYC 049 Topics in Psychology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Explores a topic of general interest in psychology. Debate and dialog are the distinguishing features of this course. Topics are announced in the <i>Schedule of Classes</i>. Course is repeatable as topics change to a maximum of 16 units.

PSYC 096 Research for Lower-Division Students (1-2) scheduled research, 3-6 hours. Prerequisite(s): freshman or sophomore standing and consent of instructor. An introduction to research in psychology. Emphasis upon aspects of library and laboratory research within the context of ongoing faculty research programs. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

Upper-Division Courses

PSYC 109 Advanced Research Methods (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, each with a grade of "B-" or better, or equivalents; or consent of instructor. Advanced theory and practice of planning, conducting, reporting, and evaluating research in the social and behavioral sciences. Students conduct original research that, if desired, can lead to (and become part of) a senior honors thesis or other senior-level research project. Satisfactory (S) or No Credit (NC) grading is not available.

PSYC 110 The Brain and Behavior (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PSYC 001 with a grade of C- or better, or equivalents, or consent of instructor. Explores the principles of neuroanatomy and neurophysiology and their relationship to brain function. Topics include sensory and perceptual processes, biological aspects of learning and memory, motivation, emotion, language, and abnormal behavior.

PSYC 112 Neural Mechanisms of Animal Behavior (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 with a grade of C- or better or PSYC 110 with a grade of "C-" or better or consent of instructor. Studies how the nervous systems of vertebrates and invertebrates contribute to and control their behavior. Focuses on aspects of sensory physiology with a brief orientation to the structure and function of nervous systems. Emphasizes a top-down approach to neurobiology, with specific behaviors providing guidelines for an examination of neural mechanisms.

PSYC 115 Drugs and Behavior (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 with a grade of "C-" or better or PSYC 110 with a grade of "C-" or better or consent of instructor. Describes both legal and illegal drugs. Analyzes drug-nervous system interactions and how the use of various drugs (particularly drugs of abuse) affects behavior and psychological well-being.

PSYC 117 Cognitive Neuroscience of Memory and Consciousness (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): CBNS 106 with a grade of "C-" or better or PSYC 110 with a grade of "C-" or better. Surveys the neural basis of mental processes, focusing on memory and consciousness and their behavioral manifestations. Emphasizes current research literature.

PSYC 120 Cellular Neuroscience: Membrane and Synaptic Phenomena (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 or consent of instructor. An examination of cellular and molecular mechanisms of nervous system function using concepts drawn from the study of vertebrates and invertebrates with emphasis on mammalian systems. Cross-listed with CBNS 120.

PSYC 120L Neuroscience Laboratory (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): CBNS 120/PSYC 120 or concurrent enrollment. Laboratory experiments using anatomical, chemical, and physiological research methods fundamental to understanding neurons and neural systems. Cross-listed with CBNS 120L.

PSYC 121 Developmental Neuroscience (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 or consent of instructor. A study of the development of nervous systems, mechanisms of nervous system development and the determinants of cell birth and death, axonal pathfinding, neuronal connections, and development of neural systems underlying behavior. Cross-listed with CBNS 121.

PSYC 122 Human Neuroimaging (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PSYC 110 or CBNS 106 or consent of instructor. PSYC 122 can be taken without PSYC 122L. An introduction to magnetic resonance imaging (MRI) and other neuroimaging research with an emphasis on the merits and limitations of structural and functional neuroimaging in humans.

PSYC 122L Human Neuroimaging Laboratory (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): concurrent enrollment in PSYC 122; or consent of instructor. Laboratory exercises in the design, acquisition, and analysis of structural and functional magnetic resonance imaging data.

PSYC 124 Systems Neuroscience (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 with a grade of "C-" or better or consent of instructor. A study of the structure and function of motor and sensory systems in vertebrate and invertebrate nervous systems. Cross-listed with CBNS 124.

PSYC 125 Neuropharmacology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 120/PSYC 120; previous or concurrent enrollment in CBNS 120L/PSYC 120L and CBNS 124/PSYC 124 recommended. Examines synaptic neurotransmitter systems, mechanisms, and pharmacological agents and effects, which are fundamental to neural information processing. Cross-listed with CBNS 125.

PSYC 126 Neuroscience of Learning and Memory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CBNS 106 or PSYC 110 or consent of instructor. Covers mechanisms of learning and memory across levels of analysis, including genetic, neuronal, systems and theory. Topics include the multiple memory systems, memory consolidation, working memory, emotional memory, recognition memory, spatial memory, and human amnesia. Cross-listed with CBNS 126.

PSYC 127 Behavioral Control Systems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): a grade of "C-" or better in one of the following courses or consent of instructor: CBNS 106, PSYC 110, PSYC 132. Emphasizes the function of behavioral control and theoretical neurobiological functions (e.g., perception, memory, language) are organized in the human brain. Special emphasis is on behavioral and cognitive impairments due to brain injury and how they may inform our view of normal cognitive functions.

PSYC 130 Fundamentals of Learning and Conditioning (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 132 with grades of "C-" or better, or equivalents; or consent of instructor. A survey course that includes both historical and current models of human learning, conditioning, and memory. Provides a good foundation for research or future study in learning and memory by covering fundamental theories established by Pavlov and Skinner while incorporating new theories of human behavioral control.

PSYC 131 Computational and Mathematical Models in Cognitive Science (4) Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): a grade of "C-" or better in PSYC 001, PSYC 002, PSYC 011, PSYC 132 with grades of "C-" or better, or equivalents; or consent of instructor. A survey course that includes both historical and current models of human learning, conditioning, and memory. Provides a good foundation for research or future study in learning and memory and the role of sensory and motor processes, experiences, expectations, and needs in recognizing objects in the environment.

PSYC 133 Human Factors (4) Lecture, 3 hours; extra reading, 2 hours; term paper, 1 hour. Prerequisite(s): a grade of "C-" or better in one of the following courses or consent of instructor: PSYC 132 or PSYC 134. Provides an overview of the human capabilities and limitations considered in the design of person-machine systems. Evaluates factors critical to performance in person-machine systems, including attention, decision making, motor performance, and memory. Andersen

PSYC 134 Cognitive Processes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or bet-
ter; or equivalents; or consent of instructor. Empirical and theoretical research in several subareas within contemporary cognitive psychology. These subareas include attention, mental representation, information organization and retrieval, memory, psycholinguistics, problem solving, decision making, thinking, and artificial intelligence and computer simulation of cognitive processes.

PSYC 135 Psycholinguistics (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): a grade of "C-" or better in the following courses or consent of instructor: PSYC 001, PSYC 002, PSYC 011, PSYC 012. Introduction to psycholinguistics emphasizing the psycho-phonological implications of linguistic theory, including the effect of syntactic structure on the comprehension, production, and retention of speech; the course of language acquisition; and models of the adult language user.

PSYC 136 Topics in Cognitive Neuroscience (4) Seminar, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): a grade of "C-" or better in one of the following courses or consent of instructor: CBNS 106, PSYC 110, PSYC 129, PSYC 132, PSYC 134, PSYC 135. Intensive study of selected topics in cognitive neuroscience. Stresses the methodology and interpretation of current research topics. Course is repeatable as topics change to a maximum of 12 units.

PSYC 138 Sensory Exotica: The Secret Perceptual Skills of Animals and Humans. (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 122, and PSYC 130 with grades of "C-" or better. Surveys lesser-known sensory mechanisms and perceptual abilities of animals and humans. Topics include echolocation in bats and porpoises; bionavigation in birds; electroreception in fish; pheromones in insects; and lirping, and pheromone sensitivity in humans. Emphasis is on cognitive, neurophysiological, and philosophical implications.

PSYC 139 Topics in Cognitive Psychology (4) Seminar, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): a grade of "C-" or better in the following courses or consent of instructor: PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 132 or PSYC 135. Intensive study in cognitive psychology. Stresses literature, methodology, and experimental design and analysis. Course is repeatable as topics change to a maximum of 16 units.

PSYC 140 Social Psychology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 132 or PSYC 135. Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): a grade of "C-" or better in the following courses or consent of instructor: PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 150. Covers the assessment of personality and psychological problems.

PSYC 155 Personality Assessment (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): a grade of "C-" or better in the following courses or consent of instructor: PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 150. Covers the assessment of personality through self-report and projective techniques. Methods of studying the cultural bases of psychological tests in the assessment of psychological problems.

PSYC 158 Person Perception (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): a grade of "C-" or better in the following courses or consent of instructor: PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 150. Explores "person perception" from the viewpoint of both personality psychology and social psychology. Examines how individuals perceive and judge their own personalities and those of others. Focuses on the processes used in daily life to judge personality and the ways such judgments are erroneous and accurate.

PSYC 160 Life Span Development (5) Lecture, 3 hours; discussion, 1 hour; term paper, 3 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. Covers current theory and research on the development of human personality from birth through late adulthood. Emphasizes the impact of interpersonal relationships on the acquisition of human traits, emotional reactions, and patterns of adjustment.
theoretical and practical relevance of all experiments. Students also design, perform, and analyze experiments in psychological perspectives to such topics as stress-related diseases, placebo effects, doctor-patient interactions, and theoretical foundations of cognitive psychology with the mechanics of conducting research. Students develop and design research studies and collect, analyze, and interpret data.

PSYC 182 (E-Z) Laboratory in Psychology (5) Lecture, 3 hours; outside research, 3 hours; term paper, 3 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, and PSYC 134 with grades of "C-" or better. Integrates the conceptual and theoretical foundations of cognitive psychology with the mechanics of conducting research. Students develop and design research studies and collect, analyze, and interpret data.

PSYC 182 (E-Z) Laboratory in Psychology (5) Lecture, 3 hours; outside research, 3 hours; term paper, 3 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, and PSYC 134 with grades of "C-" or better or consent of instructor; for PSYC 182E: PSYC 160 or PSYC 161 or PSYC 162 or PSYC 163 with a grade of "C" or better or consent of instructor, for PSYC 182F: PSYC 132 with a grade of "C" or better or consent of instructor. Provides the student hands-on experience in various research approaches in psychology. Involves in-class discussion of research design and methods, as well as outside data collection. E. Child Development; F. Sensation and Perception

PSYC 190 Special Studies (1-5) Prerequisite(s): upper-division standing with consent of instructor. Individual study under the direction of a faculty member. Course is repeatable to a maximum of 16 units.

PSYC 171 Psychology of Gender (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): PSYC 012 with a grade of "C-" or better or consent of instructor. Examines psychological theory and research on gender, including ethnic and cultural variations in male and female experience. Topics include gender roles, gender development, gender differences and stereotypes, biological influences on gender, gender and language, gender and achievement, and men and women in the workplace.

PSYC 178 Psychology and Law (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PSYC 002 or consent of instructor. An examination of the importance of interpersonal relationships to physical health and effective medical care. Applies social psychological perspectives to such topics as stress-related diseases, placebo effects, doctor-patient interactions, dying, and the hospital environment.

PSYC 179 Psychology and Behavior Change (4) Lecture, 3 hours; discussion, 1 hour; term paper, 1 hour. Prerequisite(s): a grade of "C-" or better in one of the following courses: HNPP 042K or PSYC 002 or SCI 002 or SCI 178. An examination of the importance of interpersonal relationships to physical health and effective medical care. Applies social psychological perspectives to such topics as stress-related diseases, placebo effects, doctor-patient interactions, dying, and the hospital environment.

PSYC 180 Laboratory in Perception (4) Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 all with grades of "C-" or better; or current enrollment in or completion of PSYC 132 with a grade of "C-" or better. Provides hands-on computer experience testing phenomena of sensory and perceptual psychology. Students perform experiments in vision, hearing, touch, taste, or smell, using computer software. Students also design, perform, and analyze a novel experiment of their choosing. Discusses the theoretical and practical relevance of all experiments.

PSYC 181 Laboratory in Cognitive Psychology (4) Lecture, 3 hours; outside research, 1.5 hours; extra reading, 1.5 hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, and PSYC 134 with grades of "C-" or better. Integrates the conceptual and theoretical foundations of cognitive psychology with the mechanics of conducting research. Students develop and design research studies and collect, analyze, and interpret data.
Psychology majors by invitation. Original research undertaken, by invitation of faculty, under the direction of individual faculty members. Psychology Department Undergraduate Honors Program participants must enroll for 2 units each quarter of their senior year except for the thesis-writing quarter. Satisfactory (S) or No Credit (NC) grading is not available for Honors Program participants; other students may choose Satisfactory (S) or No Credit (NC) grading. Course is repeatable to a maximum of 16 units.

Graduate Courses

PSYC 200 Fundamentals of Neuroscience (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. The fundamentals of neuroscience in molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with NRSC 200A.

PSYC 200B Fundamentals of Neuroscience (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor; NRSC 200A/PSYC 200A. The fundamentals of neuroscience in molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with NRSC 200B.

PSYC 200C Fundamentals of Neuroscience (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor; NRSC 200B/PSYC 200B. The fundamentals of neuroscience in molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with NRSC 200C.

PSYC 203A Experimental Psychology (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Psychology or Neuroscience; or consent of instructor. Focuses on the history and philosophy of cognitive science. Covers the theories and models and gives an empirical overview of perception.

PSYC 203B Experimental Psychology (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Psychology or Neuroscience; or consent of instructor. Focuses on the history and philosophy of cognitive science. Covers the theories and models and gives an empirical overview of perception.

PSYC 203C Experimental Psychology (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Psychology or Neuroscience; or consent of instructor. Focuses on the history and philosophy of cognitive science. Covers the theories and models and gives an empirical overview of perception.

PSYC 207A Theories in Developmental Psychology (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. A consideration of major issues and theories in the area of developmental psychology. Theories to be covered include social learning theory, structural theories, sociobiology, and theories of personality development. Topics include life span models and plasticity of human behavior.

PSYC 207B Social Development (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. Theoretical and empirical consideration of various topics in social development, including attachment, aggression, dependency, cooperation, and competition. Students will also consider methodological issues appropriate to investigating of these phenomena.

PSYC 207C Processes of Cognitive Development (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. Examines the cognitive changes in humans throughout the life cycle. Topics include Piagetian theory and memory, information processing, attention, and intelligence with a focus on the changes that occur in these skills.

PSYC 208 Research Methods in Development (3) Lecture, 3 hours. Prerequisite(s): PSYC 212; PSYC 214 or consent of instructor. Develops students’ skills in evaluating current research and interpreting methodological questions and in critically evaluating a variety of research methodologies currently in use. Topics include measurement of developmental dimensions and methods for assessing interrelations among developmental dimensions.

PSYC 210 Preparing Research Proposals in Psychology (3) Seminar, 3 hours; written work, 2 hours. Prerequisite(s): second-year standing or above in the Psychology graduate program or consent of instructor. Designed for advanced graduate psychology students planning a research career. Focuses on funding opportunities for pre-doctoral research support. Topics include sources of grant support, mechanisms of grant support, and essentials of grant writing. Graded Satisfactory (S) or No Credit (NC).

PSYC 211 Statistical Inference (4) Lecture, 3 hours; discussion, 1 hour; laboratory, 2 hours. Prerequisite(s): graduate standing in Psychology or consent of instructor. Examines basic issues related to the application of statistical inference, effect size estimation, and significance testing in psychology. Discusses aspects of psychological measurement and the appropriateness of particular statistical techniques to different types of psychological data.

PSYC 212 Multiple Regression and Correlation Analysis (4) Lecture, 3 hours; discussion, 1 hour; laboratory, 1 hour. Prerequisite(s): graduate standing in Psychology. PSYC 211, or consent of instructor. Multiple regression, the general linear model, their relationship to analysis of variance, and extensions to multivariate analysis. The use of assorted computer statistical packages.

PSYC 213 Experimental Design and Analysis of Variance (4) Lecture, 3 hours; discussion, 2 hours. Prerequisite(s): graduate standing in Psychology, PSYC 211, or consent of instructor. Experimental design and analysis including repeated measures and mixed designs, with special attention to exploratory data analysis, nested designs, interactions, and contrasts.

PSYC 225 Theories and Concepts of Social Psychology (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. Advanced theories and concepts of social psychology. Special attention is given to the history and development of the major concepts of the field. Required of all social/personality graduate students.

PSYC 226 Theories and Concepts of Personality Psychology (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. Advanced critical review of the theories, assessment techniques, and empirical literature in personality psychology. Special attention is given to the interactionist perspective. Required of all social/personality graduate students.

PSYC 227 Research Methods in Social and Personality Psychology (3) Lecture, 3 hours. Prerequisite(s): consent of instructor. Covers laboratory and field research methods, personality and dependent variable measurement, research design, bias and artifacts, and meta-analysis. Also addresses interview and surveys, focus groups, research publication, and ethics.

PSYC 231 Mathematical and Computational Models in Cognitive Science (3) Lecture, 3 hours; extra reading 1.5 hours; written work, 1.5 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the technical and theoretical issues involved in using models to understand behavior. Emphasis is on hands-on analysis of model predictions and simulation of behavioral data. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units if taken with different instructors.

PSYC 233 Research Methods in Cognitive Science (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Develops skills in research methodologies currently available to cognitive scientists such as eye-tracking, computational modeling, signal detection, neuro-imaging, and event-related potentials. Emphasis is on critically examining assumptions of methods and current research utilizing each method, and on how each is being utilized to address theoretical and empirical questions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 9 units if taken with different instructors.

PSYC 234 Data Analysis in Cognitive Sciences (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Psychology or consent of instructor. Focuses on the analysis of cognitive psychological data obtained using specialized methodologies particularly relevant to cognitive psychology research including computer simulation, online experimental paradigms, and eye tracking. Topics include real-time data analysis, signal detecting theory, Fourier analysis, and reaction time data. Course is repeatable to a maximum of 9 units if taken with different instructors.

PSYC 234 Multivariate Statistics (3) Lecture, 3 hours; laboratory, 1 hour. Prerequisite(s): PSYC 211, PSYC 212, PSYC 213. Introduces students to multivariate statistical methods, including multivariate analysis of variance, analysis of covariance, repeated measures analysis of variance, cluster analysis, discriminant function analysis, multivariate regression, principal components analysis, exploratory factor analysis, and confirmatory factor analysis. Covers the theoretical and practical applications of each method. Graded Satisfactory (S) or No Credit (NC).

PSYC 251 Seminar in Cognitive Neuroscience (3) Seminar, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Consists of seminars, oral reports, and discussions by students, faculty, and visiting scholars on current trends in cognitive neuroscience. Focuses on a memory phenomenon. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 252 Seminar in Social Psychology (3) Seminar, 3 hours. Prerequisite(s): consent of instructor. Selected advanced topics in social psychology. The contents of these courses will vary. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 256 Seminar in Perception (3) Seminar, 3 hours. Prerequisite(s): consent of instructor. Study and discussion of experimental papers in relation to the theory of perceptual processes. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 257 Seminar in Personality Psychology (3) Seminar, 3 hours. Prerequisite(s): consent of instructor. Selected advanced topics in personality with an emphasis on experimental findings and theoretical interpretations. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 258 Seminar in Developmental Psychology (3) Seminar, 3 hours. Prerequisite(s): consent of instructor. Selected advanced topics in developmental psychology. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 269 Topics in Quantitative Methods (3) Lecture, 3 hours. Prerequisite(s): graduate standing in Psychology or consent of instructor. A study of selected advanced topics in quantitative methods specifically for behavioral research, especially multivariate analysis. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as topics change.

PSYC 262 Developmental Biopsychology (3) Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers basic processes of brain development and plasticity from conception to adulthood. Emphasis is on relationships between biological and psychological phenomena such as sensation, perception, and learning. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade.
PSYC 263 Seminar in Physiological Psychology (3) Seminar, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Readings, oral reports, and discussions by students, faculty, and visiting scholars of selected areas in physiological psychology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 36 units.

PSYC 265 Auditory Neuroscience (3) Seminar, 3 hours. Prerequisite(s): NRSC 200C/PSYC 200C or consent of instructor. Studies ways in which the mammalian auditory system is organized and functions. Focuses on aspects of auditory physiology that gives rise to auditory perceptions. Emphasizes the use of the auditory system to understand principles of sensory system organization and to compare and contrast different sensory modalities.

PSYC 270 Current Research in Quantitative Psychology (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Discussion of selected research topics in quantitative psychology. Emphasis on contemporary research design and quantitative problems relevant to the ongoing research areas of graduate students and faculty. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

PSYC 271 Current Issues in Cognition (3) Seminar, 3 hours. Prerequisite(s): consent of instructor. Current issues in memory, learning, and psycholinguistics. Emphasis is on recent and important experimental findings and on theoretical development. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 283 Proseminar on Current Research in Cognitive Psychology (1) Seminar, 1 hour; written work, 4 hours per quarter; extra reading, 1-3 hours. Prerequisite(s): graduate standing or consent of instructor. Presentations by students, departmental faculty, and visiting scholars describing current research in cognitive psychology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 15 units.

PSYC 284 Proseminar on Current Research in Developmental Psychology (1) Seminar, 1 hour; written work, 4 hours per quarter; extra reading, 1-3 hours. Prerequisite(s): graduate standing or consent of instructor. Presentations by students, departmental faculty, and visiting scholars describing current research in developmental psychology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 15 units.

PSYC 285 Proseminar on Current Research in Social/Personality Psychology (1) Seminar, 1 hour; written work, 4 hours per quarter; extra reading, 1-3 hours. Prerequisite(s): graduate standing or consent of instructor. Presentations by students, departmental faculty, and visiting scholars describing current research in social/personality psychology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 15 units.

PSYC 287 Colloquium in Neuroscience (1) Colloquium, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Involves oral presentations on current research topics in neuroscience by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with NRSC 287.

PSYC 289 Special Topics in Neuroscience (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BCH 289, BIOL 289, CHEM 289, ENTM 289, and NRSC 289.

PSYC 290 Directed Studies (1-6) Prerequisite(s): consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 291 Individual Study in Coordinated Areas (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing or consent of instructor. A program of study designed to advise and assist candidates who are preparing for doctoral examinations. Graded Satisfactory (S) or No Credit (NC). May be repeated to a total of 18 units; units do not count toward the Master’s Degree.

PSYC 292 Concurrent Analytical Studies (1-4) Outside research, 2-8 hours. Prerequisite(s): consent of instructor. Each 292 course will be taken concurrently with some 100-series course, but on an individual basis. It will be devoted to specific additional projects related to the 100-series course. Faculty guidance and evaluation will be provided through the quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

PSYC 296 Research Tutorial (3) scheduled research, 3 hours; extra reading, 3 hours; extra writing, 3 hours. Prerequisite(s): graduate standing in Psychology or consent of instructor. Research performed under the supervision of a faculty advisor. Course is repeatable to a maximum of 18 units.

PSYC 297 Directed Research (1-6) Prerequisite(s): consent of instructor. Minor research studies or exploratory work toward the development of the dissertation problem. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 299 Research for Thesis or Dissertation (1-12) Prerequisite(s): consent of instructor and department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

PSYC 301 Teaching Psychology at the College Level (2) Seminar, 1 hour, practicum, 3 hours. Prerequisite(s): admission to graduate standing in Psychology. Teaching Assistant Development Program offered by the Teaching Assistant Development Office of the Graduate Division. Required prior to or concurrent with the student’s first teaching assistant appointment. May be waived by petition based on previous experience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 309A Professional Development and Research Ethics for Early Career Graduate Students (3) Seminar, 3 hours. Prerequisite(s): graduate standing in Psychology. Designed for beginning graduate students planning an academic or research career in psychology. Includes transition to graduate school, setting career goals, time management, professional and research ethics, scientific writing and publication, preparation of fellowship applications, and oral presentation skills. Graded Satisfactory (S) or No Credit (NC).

PSYC 309B Professional Development (3) Seminar, 3 hours. Prerequisite(s): graduate standing in Psychology. Designed for advanced graduate students planning a teaching and/or research career in psychology. Covers teaching; conducting research; interviewing, writing, and oral presentation skills; the academic job market and the job application process; and nonacademic careers. Graded Satisfactory (S) or No Credit (NC).

Public Policy
Subject abbreviation: PBPL
College of Humanities, Arts, and Social Sciences
School of Public Policy
Anil Deolalikar, Ph.D., Chair
Program Office, INTS 3rd Floor
MDU Academic Advising Center Lobby
anil.deolalikar@ucr.edu
(951) 827-6427; publicpolicy.ucr.edu

Committee in Charge
Julian Emmons Allison, Ph.D. (Political Science)
Ken Baerenklau, Ph.D. (Environmental Sciences)
David Biggs, Ph.D. (History)
Steven G. Brint, Ph.D. (Sociology)
Ariel Dinar, Ph.D. (Environmental Sciences)
Kevin Esterling, Ph.D. (Political Science)
Karthick Ramakrishnan, Ph.D. (Political Science)
Kurt Schwabe, Ph.D. (Environmental Sciences)
Millagros Perla Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

Major
Public policy analysis is the use of decision-making theory and evidence-based methods to the study of substantive public policy problems. The objective of public policy analysis is to improve the quality of public policy-making by critically examining the design and relevance of public policies, their implementation and execution, and their impact on households, communities, and the society at large. By its very nature, policy analysis is multidisciplinary. For instance, policies to address health problems in society must draw on developments in philosophy, economics, political science, medicine, and ethics (among other disciplines).

Career Opportunities
A degree in public policy equips students to go into a range of different careers. Examples include working as a policy analyst for local, regional, state, or national government agencies; a governmental or public relations officer for a private sector firm; an employee of a public advocacy group; or as a leader of a community-based, non-profit organization.

University Requirements
See Undergraduate Studies section.

College Requirements
See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements
The major requirements for the B.A. degree in Public Policy are as follows:
Students will not be admitted into the major until they have completed PBPL 001 with a “C-” grade or better.
1. Lower-division requirements (five courses [at least 20 units])
   a) PBPL 001
   b) PBPL 002
2. Upper-division requirements (12 courses [at least 48 units])
   a) ECON 101, POSC 114 or STAT 100A
   b) PBPL 101
   c) 10 courses chosen from two tracks, with no more than seven courses from one track.

Track 1: Health and Population Policy
ANTH 147/GSST 140, ANTH 160, ECON 129, ECON 156, ECON 183, ENSC 141/MCBL 141/SWSC 141, ETST 116/HISA 147, GSST 140/ANTH 147, POSC 180, PSYC 178, PSYC 179, SOC 137

Track 2: Social, Cultural, and Family Policy

Track 3: Economic Policy

Track 4: Urban/Environmental Policy
ECON 121F, ECON 143A/ENSC 143A, ECON 143B/ENSC 143B, ECON 146.URST 146, ENSC 101, ENSC 141/MCBL 141/SWSC 141, ENSC 143C/ENSC 143C, LWSO 175 (E-Z), PHIL 117, POSC 127, POSC 172/URST 172, SOC 120, URST 172, SOC 184

Track 5: Policy Institutions and Processes
ANTH 104, ECON 116, ECON 119, HIST 111, HISA 120B, LWSO 100, LWSO 193, PHIL 165, POSC 101, POSC 146, POSC 150, POSC 167, POSC 168, POSC 170, POSC 173, POSC 186, PSYC 175, RLST 174, RLST 175, SOC 150, SOC 151, SOC 159

Track 6: International and Foreign Policy
ECON 187/LNST 187, POSC 120, POSC 125, POSC 126, POSC 127, POSC 129, POSC 154, POSC 159, POSC 160, POSC 162/LNST 142, POSC 169, RLST 173/POSC 109, SOC 135, SOC 181

3. Public Policy Seminar/Colloquia

During the junior and senior years, students must enroll in PBPL 191 (Seminar in Public Policy), which includes attendance at public lectures to the campus community given by outside speakers — typically policy makers, administrators and researchers — on timely and important policy issues facing the Inland Empire, the state, the nation, and the world.

4. Domestic or International Policy Practicum
In the third or fourth year of the program (or during the summer between the third and fourth years), students must undertake a policy practicum (PBPL 198-I), which consists of an internship (paid or voluntary) on a policy issue or problem with a local, state or federal government agency, nonprofit or for-profit organization, a trade association, a labor/trade union, or a public-affairs firm. The Public Policy Program Committee helps students locate internship opportunities. The internship provides students with an opportunity to gain real-world experience and apply the analytical skills learned in the classroom. Students enrolled in the UC Riverside Washington Academic Program, the UC Center at Sacramento program or the Education Abroad Program can apply that experience toward the policy practicum requirement, and do not need to undertake a separate internship.

5. Senior Thesis (for Honors candidates only)
Students who have an outstanding academic record in their course work during the first three years of the program can become candidates for Honors in Public Policy during the spring quarter of their junior year. All honors candidates must enroll in a two-quarter senior thesis seminar (PBPL 195H-I) that will culminate in a written thesis covering a real policy problem of the student's choice. The thesis project could grow out of the practicum experience.

Minor
1. Lower-division requirements (four courses [at least 16 units])
   a) PBPL 001
   b) One course from ECON 005, PSYC 011, SOC 005, STAT 040, STAT 048, HIST 017B, HIST 020
   c) One course from ECON 003, PHIL 002, PHIL 003, POSC 010, POSC 015

2. Upper-division requirements (six courses [at least 24 units]) chosen from two tracks:

Track 1: Health and Population Policy
ANTH 147/GSST 140, ANTH 160, ECON 129, ECON 156, ECON 183, ENSC 141/MCBL 141/SWSC 141, ETST 116/HISA 147, GSST 140/ANTH 147, POSC 180, PSYC 178, PSYC 179, SOC 137

Track 2: Social, Cultural, and Family Policy

Track 3: Economic Policy

Track 4: Urban/Environmental Policy
ECON 121F, ECON 143A/ENSC 143A, ECON 143B/ENSC 143B, ECON 146/URST 146, ENSC 101, ENSC 141/MCBL 141/SWSC 141, ENSC 143C/ENSC 143C, LWSO 175 (E-Z), PHIL 117, POSC 127, POSC 172/URST 172, SOC 184

Track 5: Policy Institutions and Processes
ECON 116, ECON 119, ANTH 104, HIST 111, HISA 120B, LWSO 100, LWSO 193, PHIL 165, POSC 101, POSC 146, POSC 150, POSC 166, POSC 167, POSC 168, POSC 170, POSC 173, POSC 186, PSYC 175, RLST 174, RLST 175, SOC 150, SOC 159

Track 6: International and Foreign Policy
ECON 187/LNST 187, POSC 120, POSC 125, POSC 126, POSC 127, POSC 129, POSC 154, POSC 155, POSC 158/LNST 148, POSC 159, POSC 160, POSC 169, RLST 173/POS C 109, SOC 135, SOC 181

3. Public Policy Seminar/Colloquia

During the junior and senior years, students must enroll in PBPL 191 (Seminar in Public Policy), which includes attendance at public lectures to the campus community by outside speakers — typically policy makers, administrators and researchers — on timely and important policy issues facing the Inland Empire, the state, the nation, and the world.

Graduate Program

The School of Public Policy offers the Master of Public Policy (MPP) program leading to a Master's degree in public policy.

Admissions Requirements
Applications for the MPP program, which is housed within the UCR School of Public Policy, are accepted for fall entry. Applicants must have completed a bachelor's degree or an approved equivalent from an accredited institution, and must have successfully taken courses in microeconomics, statistics, and an introduction to politics and government, or their equivalent during their undergraduate study. All applicants must also submit scores from the Graduate Record Exam, General Test (GRE). Applicants whose first language is not English are required to submit acceptable scores from the TEST of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). Additionally, each applicant must submit three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application.

Program of Study
TTThe MPP program consists of 72 units of graduate courses. The curriculum consists of 10 required core courses, a required capstone research project spanning two quarters (which substitutes for a final examination), and six concentration or elective courses.
1. Core Courses:
   a) The Policy Process (3 courses): PBPL 200, PBPL 202, PBPL 206
   b) Policy Methods (4 courses): PBPL 210, PBPL 212, PBPL 214, PBPL 216
   c) Institutional Context (2 courses): PBPL 220, PBPL 222
   d) Internship: PBPL 298

2. Elective Courses
   Students can choose to align their elective coursework with their interests and career goals. A minimum of two courses focusing on a related substantive area are required for a concentration. The concentrations available are Environmental and Resource Policy, Health Policy, Education Policy, Urban Policy, Inequality and Poverty, Race and Immigration Policy.

a) Environmental and Resource Policy: PBPL 233, PBPL 240, PBPL 241, PBPL 242, PBPL 244, PBPL 245
b) Health Policy
c) Education Policy: PBPL 260
d) Urban Policy: PBPL 232, PBPL 235, PBPL 236E, PBPL 273
e) Inequality and Poverty: PBPL 231, PBPL 234
f) Race and Immigration Policy: PBPL 270E, PBPL 270F, PBPL 271, PBPL 272
g) Additional Elective Courses: PBPL 204, PBPL 224, PBPL 280

3. Capstone Research Project
   Students must complete a capstone research project in the second year of the program.
a) PBPL 289A, PBPL 289B

Normative Time to Degree
   Two years

Lower-Division Courses
PBPL 001 Introduction to Public Policy Analysis (4) Lecture, 3 hours; discussion, 1 hour. Introduces the basic concepts and processes underlying policy analysis, including application of these concepts to economic and budgetary policy, health care policy, welfare and social security policy, education policy, and environmental and energy policy.

PBPL 002 Politics and Public Policy (4) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours; term paper, 2 hours; written work, 1 hour; extra reading, 1 hour; research, 1 hour. Prerequisite(s): None. An introduction to the political institutions and processes that govern public policy in the United States and the tools and techniques used in public policy analysis. Part I presents policymaking models and methods of policy analysis. Part II applies these concepts to specific policy areas, illustrated by real-world case studies.

PBPL 004 Ethics, Professionalism, and Public Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PBPL 002. Examines extent to which issues of fairness, social justice, and morality should factor into the choice of public policies. Includes trade-off between social justice and efficiency; actors whose value perspectives often reflect public policy; ethical standards to which policy makers and practitioners are held; and professionalism in public service.

PBPL 090 Special Studies (1-3) Individual study, 3-9 hours. Prerequisite(s): consent of program chair. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable to a maximum of 8 units.

Upper-Division Courses
PBPL 101 Case Studies in Public Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): PBPL 002; ECON 003 with grades of C- or better; one of the following courses: ECON 101, POSC 114, STAT 100A. Explores a contemporary policy issue in depth. Includes health insurance reform, immigration policy, water policies, education reform, anti-poverty programs, crime policy, and social security reform. Explores the political challenges as well as the economic and distributional consequences of the alternative reforms.

PBPL 129 Understanding Sustainability (4) Lecture, 2 hours; practicum, 2 hours; extra reading, 2 hours; screening, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Survey of the concepts, principles and tools from diverse fields that contribute to understanding and responding to problems such as climate change, environmental degradation, and unbalanced development of resources. Leads to an appreciation of the social, gendered, political, economic, and natural scientific principles and theories underlying sustainability.

PBPL 130 Management of International Water (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores basic concepts of international water law. Examines how these concepts, as well as conflict definitions, negotiation principles, and cooperation principles, are applied to international waters. Includes analysis of several major international water cases utilizing contemporary literature. Cross-listed with GST 130.

PBPL 155 Women's Labor and the Economy (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 003. Focuses on economic analyses of four top issues: women's work inside and outside the paid labor force, gender differences in occupation, earnings, and income; marriage, divorce, and childbearing; and public policy regarding women's work and standard of living. Explores differences among women by race, ethnicity, class, marital status, and parental responsibilities.

PBPL 170 Technology, Policy, and Ethics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Explores technological drivers of globalization. Includes social, economic, and political consequences. Explores the cultural aspects of globalization, including barriers and drivers for economic and cultural interdependence and integration, as well as virtual global organizations. Cross-listed with ENGR 170.

PBPL 171 Globalization (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): junior standing. Covers technological drivers of globalization. Includes social, economic, and political issues such as liability, as well as environmental, patent, and copyright law. Cross-listed with ENGR 171.

PBPL 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): consent of program chair. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable to a maximum of 15 units.

PBPL 191 Seminar in Public Policy (2) Seminar, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Seminar by faculty, invited policy scholars, and policy makers on timely policy issues facing the region, state, nation, and the world, such as economic and budgetary policy, health care policy, welfare and social security policy, education policy, environmental and energy policy, and foreign policy. Grading: 1 hour (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

PBPL 195H Senior Honors Thesis (1-4) Thesis, 3-12 hours. Prerequisite(s): senior standing in Public Policy; admission to the University Honors Program or consent of instructor. Students complete research in public policy and write a senior honors thesis under the guidance of a faculty member. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

PBPL 197 Research for Undergraduates (1-4) Consultation, 1-4 hours; outside research, 1-4 hours. Prerequisite(s): one of the following: ANTH 180A, BUS 115, PSYC 011, SOC 005, STAT 040, STAT 048, STAT 155; or consent of instructor. Examines community activities and legislative processes in the region and the state. Includes designing and shaping research to address community needs and objectives; planning and performing applied research using quantitative, qualitative, and mixed methods; and developing writing and oral communication skills. Course is repeatable to a maximum of 8 units.

PBPL 198-I Individual Internship in Public Policy (1-12) Written work, 1-12 hours; internship, 2-24 hours. Prerequisite(s): consent of instructor. Internship in a public or quasi-public agency or business concern in matters relating to public policy. Course is repeatable to a maximum of 16 units.

Graduate Courses
PBPL 200 Introduction to Policy Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduction to the analytical tools used in regional policy analysis as well as to the processes of policy development, implementation, and evaluation.

PBPL 201 Advanced Analysis Across Administrative Jurisdictions (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduction to the analytical tools used in regional policy analysis as well as to the processes of policy development, implementation, and evaluation.

PBPL 202 Policy Institutions and Processes (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores the various institutions in a country that shape, formulate, implement, and enforce policy as well as the manner in which these institutions make policy or influence policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 204 Regional Policy-Making Across Administrative Jurisdictions (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduction to the analytical tools used in regional policy analysis as well as to the processes of policy development, implementation, and evaluation.

PBPL 206 State Governments as Laboratories of Change (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the political, institutions, and policy processes of state governments and assesses the extent to which variation in state political institutions shapes politics and policies across states. Substantive topics include health care, education, corrections, economic development, land use planning, environmental protection, and social welfare. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 210 Quantitative Methods for Public Policy Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Provides students with the ability to understand and evaluate policy information obtained through quantitative research methods and to employ these methods in their own research. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.
PBPL 212 Qualitative Social Science Methods (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduces the qualitative methods widely used in the social sciences and their use in analyzing policy formulation, policy implementation, and policy effects. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 214 Applied Microeconomics for Public Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Shows how economic analysis can be used to identify the relevant economic analyses to address various public policy problems and to comprehend and assess what professional economists can contribute to the shaping, implementation, and evaluation of public policies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 216 Public Leadership and Management (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduces the basic principles and practices of leadership suitable for local, regional, national, and global international settings. Also assists in developing the capacity to be a public leader. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 220 Policy Evaluation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Topics include immigration, land use, biodiversity, traffic congestion, air and water quality, and public health. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 222 Ethics, Professionalism, and the Normative Bases of Public Policies (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the normative bases of public policies - in other words, the extent to which issues of fairness, social justice, and morality should factor into the choice of public policies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 224 Global-local Policy Connections: Case Studies in Poverty, Water, and Sustainable Development (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Discusses commonalities of public policies across the world. Illustrates how lessons can be learned from the successful policy experiences of other countries, and vice versa. Explores global experiences in four topical areas including poverty, environment, urbanism, and health. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 231 Labor Economics and Labor Policies (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Labor issues lie at the heart of such important social issues as earnings, poverty, discrimination, and economic mobility. Labor economists seek to understand immigration, land use, biodiversity, traffic congestion, air and water quality, and public health. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 232 Sustainability Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers Sustainability as practice and policy at the local, regional, national, and global levels. As we become more embedded in the history and science behind Sustainability, we will examine the various policies and policy making organizations surrounding Sustainability and Sustainable Development. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 233 Environmental Economics and Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduces to Climate Change policy at the local, regional, national and global levels. Examines the various policies and policy making organizations surrounding the issue of Climate Change. Includes channels for disseminating Climate Change Policy, as well as, specific gendered, ethnic, class and racial dynamics of policy creation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 234 Poverty in Global Perspective (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Interdisciplinary and international view of the social sciences of poverty. Topics include causes, consequences and potential solutions to poverty. Different social science methodologies and theories will be compared, and relevant social policies will be evaluated and debated. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 235 Economic Development in United States Cities (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the challenges of developing regions, cities and communities that are economically dynamic, socially equitable and environmentally sustainable. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 236 (E-Z) Urban and Spatial Analyses (4) activities vary segment to segment. See individual segments for listed activities. Prerequisite(s): graduate standing or consent of instructor. Topics related to urban and spatial analyses. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 237 (4) Seminar, 3 hours; term paper, 1 hour; outside research, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Topics related to immigration policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 238 Economic Development in United States Cities (4) Seminar, 3 hours; term paper, 1 hour; outside research, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the economic development policy and law, and with central analytical concepts and practical methodologies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 240 Global Environmental Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduction to Climate Change policy at the local, regional, national and global levels. Examines the various policies and policy making organizations surrounding the issue of Climate Change. Includes channels for disseminating Climate Change Policy, as well as, specific gendered, ethnic, class and racial dynamics of policy creation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 241 Climate Change Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Examines the various policies and policy making organizations surrounding the issue of Climate Change. Includes channels for disseminating Climate Change Policy, as well as, specific gendered, ethnic, class and racial dynamics of policy creation. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 242 Applied Environmental History (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores historical research methodologies and environmental policy in four major areas - chemical pollution, conservation, water, and air - emphasis on the use of primary and secondary sources. Introduction to primary sources useful to environmental history analysis including maps and satellite images, environmental data, and various document archives. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 244 Water Resource Economics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Provides a working knowledge of water resource economics for future water managers, planning students wishing to improve their comprehension of these problems. The course will discuss and consider relevant policy options regarding water use and allocation. Application of empirical methods to water management, especially within a benefit-cost framework. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 245 Comparative Global Water Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Covers issues and problems faced by developing and industrialized countries. Compares and analyzes the debate about efficiency vs. equity and protection of the environment, public goods, water, food, economic growth and good or social good, and adaptation in the water sector to climate change. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 250 Education Policy Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Explores historical research methodologies and environmental policy in four major areas - chemical pollution, conservation, water, and air - emphasis on the use of primary and secondary sources. Introduction to primary sources useful to environmental history analysis including maps and satellite images, environmental data, and various document archives. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 270 (E-Z) Topics in Immigration Policy (4) activities vary segment to segment. See individual segment for listed activities. Prerequisite(s): graduate standing or consent of instructor. Topics related to immigration policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 270 (E-Z) Topics in Immigration Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Topics related to immigration policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 270F General Perspectives on Immigration Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Topics related to immigration policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 270F General Perspectives on Immigration Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Topics related to immigration policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 270F General Perspectives on Immigration Policy (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Topics related to immigration policy. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 271 (4) Seminar, 3 hours; term paper, 1 hour; outside research, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the experiences of immigrants in the southwest borderland region of the United States. Examines immigration history, trends, and legislation. Examines the immigration policy impact on economic and health indicators as well as the family systems and dynamics. Attention to change strategies used to empower the immigrant community. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 271 (4) Seminar, 3 hours; term paper, 1 hour; outside research, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the experiences of immigrants in the southwest borderland region of the United States. Examines immigration history, trends, and legislation. Examines the immigration policy impact on economic and health indicators as well as the family systems and dynamics. Attention to change strategies used to empower the immigrant community. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Politics and policy of race and social inequality in the United States. Topics include disparities in health, education, income, and civic engagement. Students gain an understanding of the history of racial inequality, including its changes over time, and the efficacy of contemporary solutions to address ongoing racial disparities. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 272 Policy and Politics in California (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Introduction to politics and policy in California, paying particular attention to the nature of American federalism, institutions of state government, direct democracy, the role of partisanship and demographic diversity, and various problems of governance as they relate to issues at the state and local levels. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 273 Geographic Information Systems (GIS) for Public Policy (4) Lecture, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to geographic information systems (GIS), spatial data and applications of spatial analysis in the social sciences and public policy. Theoretical, technical, and policy dimensions of GIS in policy settings. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 280 Special Topics in Public Policy (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Seminars or lectures on current topics in public policy and other related fields presented by faculty members. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PBPL 289A Capstone Research Project (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Research and investigate a topic of policy significance and relevance, producing a technical paper of publishable quality. Includes specific topic of investigation designed to foster integration of learning by incorporating knowledge acquired throughout the 2-year program. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Graded In Progress (IP) until PBPL 289A and PBPL 289B are completed, at which time a final grade is assigned.

PBPL 289B Capstone Research Project (4) Seminar, 4 hours. Prerequisite(s): PBPL 289A; consent of instructor. Research and investigate a topic of policy significance and relevance, producing a technical paper of publishable quality. Includes specific topic of investigation designed to foster integration of learning by incorporating knowledge acquired throughout the 2-year program. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

PBPL 290 Directed Studies (1-6) Activity, 3-18 hours. Prerequisite(s): graduate standing and consent of instructor. Advanced work in a topic or topics appropriate to the student's special interests and needs. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PBPL 291 Individual Study in Coordinated Areas (1-12) Activity, 3-36 hours. Prerequisite(s): graduate standing and consent of instructor. A program of study designed to advise and assist candidates who are preparing for masters and/or doctoral examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PBPL 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing and consent of instructor. Research performed under the direction of a faculty advisor. Designed for students preparing their capstone prospectuses. Students meet in groups by appointment with a faculty advisor to discuss issues of capstone writing. Emphasis is placed on the development of research design. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PBPL 298-I Individual Internship (1-12) Internship, 2-24 hours; written work, 1-12 hours. Prerequisite(s): graduate standing or consent of instructor. Internship in a public or quasi-public agency concerning matters relating to public policy. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

Public Policy Designated Emphasis
Subject abbreviation: PBPL
College of Humanities, Arts, and Social Sciences
School of Public Policy
Anil Deolalikar, Founding Dean
Karthick Ramakrishnan, Associate Dean
Anil.deolalikar@ucr.edu
Karthick.ramakrishnan@ucr.edu
Advisory Committee & Participating Faculty
Anil Deolalikar (Economics, Public Policy)
Karthick Ramakrishnan (Political Science, Public Policy)
Ariel Dinar (Environmental Economics, Public Policy)
Bruce Link, (Public Policy)
David Brady (Public Policy)
Qingfeng Wang (Public Policy)
Kurt Schwabe (Environmental Economics and Policy)
Cassandra Guerini (Education and Public Policy)
Kevin Esterling (Political Science, Public Policy)
Ben Newman (Political Science, Public Policy)
Ken Baerenklau (Environmental Economics, Public Policy)
Paul D’Anieri (Political Science, Public Policy)
Ronald Loveridge (Political Science)
Steve Brint (Sociology)
David Biggs (History, Public Policy)
Steven Clark (Psychology)

Designated Emphasis Requirements
Students must complete four graduate courses (16 units) in total, of which two should be core courses in the Master of Public Policy program, one course from the list of MPP program elective courses, and one graduate course from an approved list offered by a department that is not the student’s own department. Note that students cannot apply units taken to fulfill the DE program requirement toward their own graduate program requirements.

1. Two (2) required core courses (8 units) offered by the School of Public Policy: PBPL 200, PBPL 220.

2. One (1) required elective course (4 units) offered by the School of Public Policy selected from: PBPL 206, PBPL 210, PBPL 212, PBPL 214, PBPL 224, PBPL 232, PBPL 233, PBPL 234, PBPL 241, PBPL 245, PBPL 260, PBPL 270E, PBPL 271, PBPL 272.

3. One (1) required course from any of the following programs that is not the student’s own graduate program: ECON 236, ECON 240, ECON 241, ECON 243, ECON 250, ECON 254, ECON 260, ECON 261, ECON 264, ECON 265, EDUC 203, EDUC 206A, EDUC 269M, EDUC 245E, EDUC 269E, CEE 232, ENGR 200, ENGR 201, ENGR 203, ENSC 201, ENSC 206, ENSC 227, GEO 205, GEO 252, GEO 255, GEO 260, POSC 252, POSC 268, POSC 271, POSC 282, SOC 245, SOC 257, SOC 251, SOC 252, SOC 253.

4. Research Requirement: Students in the Designated Emphasis are required to demonstrate their research capacity by writing a review paper that will focus on a policy issue/problem and the policy solutions (including design, implementation, and cost-effectiveness) to address the problem. Selection of the policy issue and the structure of the paper are to be agreed upon with a faculty member from the School of Public Policy, who will serve as a mentor, with an option for joint mentorship with a faculty member from another department (including the student’s own department). It is expected that the review paper, of about 25-30 pages long, will be of publishable quality to be completed within 1-2 quarters.

All requirements for the Designated Emphasis must be satisfied within a year of a student advancing to candidacy in their Ph.D. field; a minimum GPA of 3.0 is required for the award of the Designated Emphasis.

Religious Studies
Subject abbreviation: RLST
College of Humanities, Arts, and Social Sciences
Pashaura Singh, Ph.D., Chair
Department Office, 3033C CHASS Interdisciplinary North
pashaura.singh@ucr.edu
(951) 827-1251; religiousstudies.ucr.edu

Professor
Pashaura Singh, Ph.D. Dr. Jasbir Singh Saini
Endowed Chair in Sikh and Punjabi Studies
Melissa M. Wilcox, Ph.D. Holstein Family and Community Chair in Religious Studies

Professors Emeriti
Vivian-Lee Nytray, Ph.D. Douglas M. Parrott, Ph.D. Ivan A. Strenski, Ph.D.

Associate Professors
Michael Alexander, Ph.D. Maimonisides Chair in Jewish Studies Muhamad Ali, Ph.D Amanda Lucia, Ph.D.

Assistant Professors
Paul Chang, Ph.D. Matthew King, Ph.D.

Major
The Department of Religious Studies provides an opportunity for students to gain a broad, cross-cultural perspective by studying the diverse religious traditions of the world. Students examine the texts, symbols, myths, rituals, ideas, values, and ethical systems of many religious traditions, such as Judaism, Christianity, Islam, Hinduism, Buddhism, Chinese, African, and Native American religions.

Majoring in Religious Studies can be an excellent preparation for living in a multicultural society and for a variety of careers, such as
teaching, counseling, business, law, writing, the arts, and professional religious leadership. Religious Studies at UCR develops in students a variety of valuable and transferable skills. These include disciplined attention to the facts (texts, ideas, history, behavior); critical reflection and analysis about claims of meaning and value and about assumptions and methods used in the study of religion; and descriptive and analytical writing about religious history, ideas, motivations, practices, and ethical concerns. A minor in Religious Studies is also available. Students are encouraged to consult with the department chair and other faculty about their questions and interests.

The Holstein Family and Community Chair in Religious Studies The Holstein Family and Community Chair in Religious Studies is an endowed faculty chair, the result of a generous contribution given by the Robert and Loretta Holstein family and by friends of the Holstein family and the university. Dr. Melissa Wilcox, the chair, is a distinguished scholar and teacher whose work engages thought on the interactions of religions and cultures as these are manifested in cultural, social, ethical, and historical debates.

The Dr. Jasbir Singh Saini Endowed Chair in Sikh and Punjabi Studies The Dr. Jasbir Singh Saini Endowed Chair in Sikh and Punjabi Studies is the result of a generous contribution given by the Saini Foundation, the Sikh Foundation and by a number of individuals and the University. It honors the memory of the late Dr. Jasbir Singh Saini, who was a cardiologist in Phoenix, Arizona. Dr. Pashaura Singh has been appointed to the Chair and is a leading scholar and teacher whose work in the field of Adi Granth studies is internationally acclaimed. For more information on the Endowed Chair, please visit the following website: religiousstudies.ucr.edu/SPS/index.html.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

The major requirements for the B.A. degree in Religious Studies are as follows:

1. Lower-division requirements (12 units)
   a) RLST 005
   b) RLST 012/ETST 012 or RLST 012W/ETST 012W
   c) One additional 4-unit course in Religious Studies or equivalent

2. Upper-division requirements (40 units)
   a) At least two courses from each of the following areas:
      (1) Eastern religions
      (2) Western religions
      (3) Themes in religions
   b) RLST 100 or RLST 102
   c) RLST 193 (Senior Seminar)
   d) Eight (8) additional units from Religious Studies courses (closely related courses from other programs or departments may be substituted upon approval)

The programs of all majors should be developed in consultation with their advisors.

Art History/Religious Studies Major

The Art History/Religious Studies Major combines the disciplinary interest in the history of the visual arts with its related religious content and background. Three concentrations are offered. Students must select one family of religions, either Asian or Western, and combine it with the study of the history of the visual arts in the corresponding area of artistic endeavor. Or, students wishing to combine Asian and Western materials to serve a comparative purpose are invited to design their own major in consultation with faculty representatives from both departments. Students are encouraged to include study abroad as part of their major and should plan well in advance to ensure that the courses taken fit with their overall program at UCR. Students in this major will be well prepared for graduate studies in either art history or religious studies.

Major Requirements

The major requirements for the B.A. degree in Art History/Religious Studies are as follows:

Asian Concentration (52 units)

1. Lower-division requirements (12 units)
   a) Art History (4 units): AHS 015
   b) Asian Studies (4 units): AST 030/CHN 030
   c) Religious Studies (4 units): RLST 005

2. Upper-division requirements (40 units)
   a) Art History (16 units): AHS 140, AHS 141, AHS 143, CPLT 141
   b) Religious Studies (24 units) choose from:
      RLST 101, RLST 103, RLST 105, RLST 106, RLST 142/AST 142/CHN 142, RLST 144/CPLT 144

3. Optional 190 level work in either Art History or Religious Studies

Student-designed Comparative Concentration (52 units)

1. Lower-division requirements (12 units)
   a) Art History, choose at least 4 units: AHS 015, AHS 017A, AHS 017B, AHS 017C, AST 030/CHN 030
   b) Religious Studies, choose at least 4 units:
      RLST 005, RLST 007, RLST 010

2. Upper-division requirements (40 units)
   a) Art History, choose at least 12 units:
      AHS 140, AHS 141, AHS 143, AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 164, AHS 171, AHS 172, CPLT 141
   b) Religious Studies, choose at least 12 units:
      RLST 100, RLST 101, RLST 103, RLST 105, RLST 106, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136

3. Optional 190 level work in either Art History or Religious Studies

Minor

Requirements for a minor in Religious Studies are as follows:

1. Lower-division requirements (12 units)
   a) RLST 005
   b) RLST 012/ETST 012 or RLST 012W/ETST 012W
   c) One additional 4-unit course in Religious Studies

2. Upper-division requirements (16 units)
   a) Twelve (12) units consisting of one course from each of the following three areas:
      (1) Eastern religions
      (2) Western religions
      (3) Themes in religions
   b) Four (4) upper-division units from those courses approved for the Religious Studies major

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in
Graduate Program

The Department of Religious Studies offers the M.A. and Ph.D. degrees in Religious Studies. The graduate program in Religious Studies is for students interested in the critical academic study of religions. The Ph.D. program prepares students to enter into academia as researchers and university instructors in a specific field of expertise.

Admission All applicants must submit GRE General Test scores and transcripts from all previous institutions, along with three letters of academic reference and a Statement of Goals and Qualifications. Applicants whose first language is not English must also take the TOEFL exam.

Master’s Degree

The Department of Religious Studies offers the M.A. in Religious Studies. The M.A. program allows students to explore the academic study of religions broadly and is for students who wish to expand their study of religions in an academic environment but may not yet wish to pursue a career in academia.

Admission Although an undergraduate major in religious studies is not required for admission into the graduate program, applicants should demonstrate significant interest in and background in the academic study of religions and the appropriate scholarly approaches to religious studies. Applicants to the master’s program must demonstrate scholarly acuity, as well as interest in the critical questions of the discipline of religious studies. Given the broader scope of the master’s program, applicants to this degree program do not need to specify a particular field of study they wish to pursue in the program.

Course work Candidates must complete a minimum of 36 units for the degree; 18 of the 36 units must be 200-level courses. Twelve units comprise the three core courses required of all graduate students (RLST 200A, RLST 200B, RLST 200C), preferably completed in the first year of study. All M.A. students must enroll in at least one of these Method and Theory courses, preferably in their first year (if offered):

- RLST 201: Thinking about Religion: Classic Theories in the Study of Religion
- RLST 202: Contemporary Theories and Theorists in the Study of Religion

The remaining units should be from among the religious studies graduate offerings; additional course work in related areas (e.g., history, anthropology, philosophy, comparative literature) are encouraged as time and workload permit. Some entering students may also be encouraged to take graduate-level survey courses in Asian or Western or Native American religious traditions.

Professional Development Requirement Topics in professional development in the RLST 200A, RLST 200B, and RLST 200C curriculum satisfy the Professional Development requirement.

Topics discussed typically include: professional publication; pedagogy and public speaking; grant, fellowship, and job application processes.

Comprehensive Examinations In the final quarter of their program, master’s students complete a series of comprehensive written examinations that are designed by the department and administered by a master’s examination committee. These examinations test the student’s knowledge of specific fields of study as well as the areas of critical inquiry that serve as the methodological focus of the program.

Foreign Language Requirement Students must demonstrate reading proficiency in either French or German, the languages in which much modern secondary scholarship in the discipline has been written. Students may petition to substitute either another modern language of secondary scholarship or a language or primary research if it is deemed more immediately relevant to their studies. This requirement can be fulfilled through a departmental examination, by passing a designated language course (FREN 009A, FREN 009B, GER 002R), or by alternative certification (such as a diploma from a foreign language institute).

Normative Time to Degree 6 quarters.

Doctoral Degree

The Department of Religious Studies offers the Ph.D. in Religious Studies. The Ph.D. program prepares students to enter into academia as researchers and university instructors in a specific field of expertise.

Admission Although an undergraduate major in religious studies is not required for admission into the graduate program, applicants should demonstrate significant interest in and background in the academic study of religions and the appropriate scholarly approaches to religious studies. In addition, applicants are held to a high standard of undergraduate preparation for their graduate work: both basic and advanced courses in religious studies (in methods and in their chosen field of study), beginning work in foreign languages (particularly if this will be an integral component of their particular course of study), and a demonstrated ability to work across methods, traditions, and disciplines. A master’s degree is not required for admission to the doctoral program.

Course work Candidates must complete all three of the following core courses (RLST 200A, RLST 200B, RLST 200C), preferably in their first year of coursework. In addition, students must also complete two Method and Theory courses (RLST 201 and RLST 202), and at least 24 units in a major area of geographic study (either Asian religions or Religions in the West). At least 12 additional units should be taken in a minor area of geographic study (some other aspect of Asian Religions or Religions in the West).

Professional Development Requirement Topics in professional development in the RLST 200A, RLST 200B, and RLST 200C curriculum satisfy the Professional Development requirement. Topics discussed typically include: professional publication; pedagogy and public speaking; grant, fellowship, and job application processes.

Written and Oral Qualifying Examinations Students must complete a round of qualifying written examinations, followed by an oral defense of those examinations, in the quarter following their completion of course work. (Students may defer their examinations for one quarter in consultation with the graduate advisor and faculty.) Students complete the three written examinations over a two- to three-week period in the following areas:

- Major field studies
- Comparative studies
- Critical studies

The Major Field Studies examination evaluates the student’s mastery of the chosen field of study (some specific tradition within Asian religions or within Religions in the West), with particular attention to subdivisions of these fields of study on which the student has decided to focus (e.g., Buddhist monasticism or Christian ethics).

The Comparative Studies examination draws on the minor field of study the student has focused on in course work; the student must demonstrate the ability to elucidate aspects of the academic study of religions through the juxtaposition of traditions (e.g., Judaism and Islam).

The Critical Studies examination will have two components: a method section, focusing on some methodological approach to the study of religion (e.g., ethnography or literary studies) and a theory section, focusing on some conceptual approach to religion (e.g., Weber or Durkheim).

The three examinations give students the opportunity to demonstrate an overall mastery of subjects and approaches and prepare them for the more focused, rigorous research work they will pursue in their dissertations.

After completing the written examinations, students undergo an oral examination by committee. The content of the oral examinations is based on the written examination questions and answers.

Both the written and oral examinations are composed, administered, and evaluated by a qualifying committee, nominated by the graduate advisor in consultation with the student and is appointed by the graduate dean.

Upon the successful completion of the written and oral qualifying examinations, the student is recommended to the graduate dean for advancement to candidacy.

Foreign Language Requirement Students must demonstrate reading proficiency in either French or German, the languages in which much modern secondary scholarship in the discipline has been written. Students may petition to substitute either another modern language of secondary scholarship or a language of primary research if it is deemed more immediately relevant to their studies.

This requirement can be fulfilled through a departmental examination, by passing a designated language course (FREN 009A, FREN 009B, GER 002R), or by alternative certification (such as a diploma from a foreign language institute).
FREN 009B, GER 002R), or by alternative certification (such as a diploma from a foreign language institute).

In addition, students must demonstrate proficiency in any language or languages deemed critical for examination of primary texts in their declared field of study (e.g., Japanese, Latin, Arabic, Tagalog, Indonesian). It is strongly suggested that doctoral students begin studying relevant languages for research before beginning their course work at UCR. Adequate language training is becoming increasingly vital in the scholarly and professional training of academics in the fields of religious studies. Many research languages are offered at UCR; if necessary, the faculty will work with students to help place them in needed language courses at other institutions.

Dissertation and Final Oral Examination: Students prepare a dissertation presented as prescribed by the Graduate Division under the direction of the candidate’s dissertation committee. After completion of the dissertation, the candidate is examined by the dissertation committee. This examination normally takes the form of a public presentation by the candidate followed by questions from the committee.

Normative Time to Degree: 18 quarters.

Lower-Division Courses

RLST 001 Sex, Sin, and Scripture (4) Lecture, 3 hours; discussion, 1 hour; term paper, 5 hours. An introduction to the academic study of religion. Engages the study of religion thematically, thinking through taboos and injunctions as they are related to specific social and historical contexts. Examines global religious beliefs and practices from diverse cultural perspectives. Credit is awarded for only one of RLST 001 or RLST 001H.

RLST 001H Honors Sex, Sin, and Scripture (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours, individual study, 5 hours; term paper, 5 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to RLST 001. An introduction to the academic study of religion. Engages the study of religion thematically, thinking through taboos and injunctions as they are related to specific social and historical contexts. Examines global religious beliefs and practices from diverse cultural perspectives. Credit is awarded for only one of RLST 001 or RLST 001H.

RLST 004 Religion, Society, and Culture (4) Lecture, 3 hours; discussion, 1 hour. Introduction to the study of religion through the lenses of sociology and cultural studies. Explores the mutual influence of religion and social power, and politics. Credit is awarded for only one of RLST 004 or RLST 004H.

RLST 004H Honors Religion, Society, and Culture (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to RLST 004. Introduction to the study of religion through the lenses of sociology and cultural studies. Explores the mutual influence of religion and social power, and politics. Credit is awarded for only one of RLST 004 or RLST 004H.

RLST 005 Introduction to Asian Religions (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduction to Asian Religions, which includes Hinduism, Buddhism, Sikhism, Confucianism, Taoism, and Shinto. Credit is awarded for only one of RLST 005 or RLST 005H.

RLST 005H Honors Introduction to Asian Religions (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to RLST 005. Introduction to Asian Religions, which includes Hinduism, Buddhism, Sikhism, Confucianism, Taoism, and Shinto. Credit is awarded for only one of RLST 005 or RLST 005H.

RLST 007 Introduction to Western Religions (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. An introductory survey of Judaism, Christianity, and Islam. Emphasizes distinguishing characteristics, major ceremonies, foundational texts, and historical interactions. Credit is awarded for only one of RLST 007, RLST 007H, or RLST 007W.

RLST 007H Honors Introduction to Western Religions (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to RLST 007 and RLST 007W. An introductory survey of Judaism, Christianity, and Islam. Emphasizes distinguishing characteristics, major ceremonies, foundational texts, and historical interactions. Credit is awarded for only one of RLST 007, RLST 007H, or RLST 007W.

RLST 007W Introduction to Western Religions (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): ENGL 001B with a grade of “C” or better or consent of instructor. A writing-intensive introductory survey of Judaism, Christianity, and Islam. Emphasizes distinguishing characteristics, major ceremonies, foundational texts, and historical interactions. Credit is awarded for only one of RLST 007, RLST 007H, or RLST 007W.

RLST 008W Introduction to Latin American Religions (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An introduction to Latin American religions. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Credit is awarded for only one of RLST 008 or RLST 008W.

RLST 009 Introduction to Latin American Religions (4) Lecture, 3 hours; discussion, 1 hour. An introduction to religious practices, beliefs, and movements in Latin America from colonial to contemporary times. Topics include indigenous religions and legacy, the impact of mission, evangelization, conversion, Virgin of Guadalupe devotion, Afro-Latin traditions in Cuba and Brazil, the growth of Pentecostal churches, and transnational religion.

RLST 010 Introduction to the Bible (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. A preparation for informed study of the Bible. Examines comparatively important stances, history, methods, and major themes through the study of significant portions of the Bible.

RLST 012 Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; and images of transcendence. Examines religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Cross-listed with ETST 012/RLST 012, ETST 012W/RLST 012W, ETST 012W/RLST 012W, or ETST 012X/RLST 012X.

RLST 012H Honors Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 012/RLST 012. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; images of transcendence; and understanding religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Cross-listed with ETST 012/RLST 012, ETST 012W/RLST 012W, ETST 012W/RLST 012W, or ETST 012X/RLST 012X.

RLST 012W Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; and images of transcendence. Examines religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Credit is awarded for only one of ETST 012/RLST 012 or ETST 012W/RLST 012W or ETST 012W/RLST 012W or ETST 012X/RLST 012X.

RLST 012X Religious Myths and Rituals (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; and images of transcendence. Examines religious beliefs and expressions from diverse cultural perspectives. Utilizes materials from indigenous Native (North and South) American, African American, and/or Asian American religions. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits as alternatives to English 001C. Cross-listed with ETST 012/RLST 012, ETST 012W/RLST 012W, ETST 012W/RLST 012W, or ETST 012X/RLST 012X.

RLST 013 World Religions in California (5) Lecture, 3 hours; discussion, 1 hour; individual study, 3 hours. Prerequisite(s): none. Explores the religious landscape of California and provides basic background to texts, beliefs, and practices. Topics include local expressions of Buddhism, Christian, Native American religious traditions, as well as spiritual movements specific to the state such as Scientology, Heaven’s Gate, Mur’s nature mysticism, and Jim Jones’ People’s Temple.

RLST 014 Religion and Science (5) Lecture, 3 hours;
discussion, 1 hour; extra reading, 3 hours. Covers major themes in the relation of science and religion. Primary focus is on issues between science and Western religions, with attention to Islam, Buddhism, and Hinduism. Major issues include Gnosticism, theism, Darwinian evolution, and the relationship between science and religion. Explores religious meaning in a scientific cosmos through the study of contemporary science fiction and film.

RLST 015 Death (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Investigates the psychological aspects of facing death and dealing with dying persons; cross-cultural religious and philosophical interpretations of life, resurrection, rebirth, etc.; and medical, ethical, and legal issues such as physician-assisted suicide and euthanasia. Credit is awarded for only one of RLST 015 or RLST 015H.

RLST 015H Honors Death (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to RLST 015. An examination of three sets of issues pertaining to death and dying; psychological and experiential aspects of facing medical crisis, illness, death, and grief; cross-cultural perspectives on the ways in which death is conceived in selected religions of the world with respect to life and claims about afterlife; public policy issues that involve ethical, legal, and medical concerns regarding euthanasia, physician-assisted suicide, and hospice alternatives. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of RLST 015 or RLST 015H.

RLST 016 Sexuality and Religion in Global Perspective (4) Lecture, 3 hours; discussion, 1 hour. Introduces sexuality studies within the comparative study of religion, rooted in the theoretical frameworks of gender and sexuality studies. Transnationalism and global dynamics of power are central themes. Focus is on critical heterosexualities, with some LGB studies and an underlying queer studies perspective. Cross-listed with GSST 016. Credit awarded for only one of GSST 016 or RLST 016H/RLST 016H.

RLST 016H Honors Sexuality and Religion in Global Perspective (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to GSST 016/RLST 016. Introduces sexuality studies within the comparative study of religion, rooted in the theoretical frameworks of gender and sexuality studies. Transnationalism and global dynamics of power are central themes. Focus is on critical heterosexualities, with some LGB studies and an underlying queer studies perspective. Satisfactory (S) or No Credit (NC) grading is not available. Cross-listed with GSST 016H. Credit awarded for only one of GSST 016H or GSST 016H/RLST 016H.

RLST 024 Introduction to Native American Culture and Religion (4) Lecture, 3 hours. Discussion, 1 hour. Interdisciplinary study of contemporary and historic Native American efforts to resist colonialism, with a strong emphasis on land matters, identity issues, and religious forms. Promotes critical reflection on historic and contemporary culture and politics. Cross-listed with HST 034.

RLST 039 Introduction to African American Religions (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): RLST 015. An introduction to religious practices, beliefs, and movements of African Americans from the seventeenth century to the present. Topics include black religions in North America under slavery, black churches, Black Muslims, Jewish and Spiritualist studies, and the civil rights movement. Considers the relation of African American religion to literature and music.

RLST 044 Gods, Ghosts, and Grandparents (4) Lecture, 3 hours; discussion, 1 hour. Introduction to the rich diversity of Chinese beliefs and practices concerning gods, ghosts, and ancestors through primary and secondary sources. Includes oracle bone inscriptions, philosophical arguments on the existence of spirits, tomb contracts, suita promoting the goddess Guanyin as Giver of Sons, ghost stories, and eyewitness accounts of funeral rituals. Cross-listed with HIST 044. Credit is awarded for only one of HIST 044/RLST 044 or HIST 044W/RLST 044W.

RLST 044W Gods, Ghosts, and Grandparents (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL01B with a grade of “C” or better or consent of instructor. Introduction to the rich diversity of Chinese beliefs and practices concerning gods, ghosts, and ancestors through primary and secondary sources. Includes oracle bone inscriptions, philosophical arguments on the existence of spirits, tomb contracts, suita promoting the goddess Guanyin as Giver of Sons, ghost stories, and eyewitness accounts of funeral rituals. Fulfills the third-quarter writing requirement for students who earn a grade of “C” or better for courses that the Academic Senate designates, and that the student’s college permits, as alternatives to English 001C. Credit is awarded for only one of HIST 044/RLST 044 or HIST 044W/RLST 044W.

Upper-Division Courses

RLST 100 The Problem of Religion (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one Religious Studies course or upper-division standing or consent of instructor. A survey of critics and defenders of religion who debate meanings and functions of religion in relation to modern challenges such as religious pluralism, secularism, and scientific inquiry. Addresses topics of assigned instructor’s expertise.

RLST 101 Religions of India (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. An examination of the major religious traditions in India with special emphasis on Hinduism and Buddhism.

RLST 102 Contemporary Themes in Religion and Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the major religious traditions in India with special emphasis on Hinduism and Buddhism.

RLST 104 Sikhism (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. A survey of the ancient mystical and philosophical aspects of Sikhism as well as the living religious tradition, such as Giver of Sons, ghost stories, and eyewitness accounts of funeral rituals. Cross-listed with CPLT 112.

RLST 105 Hinduism (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. An examination of the major religious traditions in India with special emphasis on Hinduism and Buddhism.

RLST 106 Buddhism (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. An examination of the major religious traditions in India with special emphasis on Hinduism and Buddhism.

RLST 107 Taoist Traditions (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): AST 030/CHN 030 or upper-division standing or consent of instructor. A survey of the ancient mystical and philosophical aspects of Taoism as well as the living religious tradition, their relationship to and their interaction with other religions and the way in which Islam shaping and is shaped by the contexts in which new religions emerge, their relations with dominant religious traditions or normative cultures, and the religious content of such movements. Explores the “cult” versus “religion” debate, apocalyptic, eschatological, and millenarian views of the world, the nature of charismatic leadership; regional patterns; and transnational trends.

RLST 110 Yoga: Ancient and Modern (4) Lecture, 3 hours; individual study, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the underlying queer studies perspective. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of HIST 044/RLST 044 or HIST 044W/RLST 044W.

RLST 109 New Religious Movements (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the contexts in which new religions emerge, their relations with dominant religious traditions or normative cultures, and the religious content of such movements. Explores the “cult” versus “religion” debate, apocalyptic, eschatological, and millenarian views of the world, the nature of charismatic leadership; regional patterns; and transnational trends.

RLST 111 Islam (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. An overview of Islam from the time of Muhammad (d. 632 A.D.) to the present. Explores the ways in which Islam shapes and is shaped by Western culture and religion. Explores the capacity of religion to mobilize and legitimate violence. Materials covered include ideological texts by Rene Girard, Walter Burkert, Jonathan Z. Smith, and others, and case studies dealing with religion and violence in India, Northern Ireland, Egypt, Lebanon, Israel, Palestine, Sri Lanka, and the United States.

RLST 112 Islam in America (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. Explores the ways in which Islam shapes and is shaped by Western culture and religion. Explores the capacity of religion to mobilize and legitimate violence. Materials covered include ideological texts by Rene Girard, Walter Burkert, Jonathan Z. Smith, and others, and case studies dealing with religion and violence in India, Northern Ireland, Egypt, Lebanon, Israel, Palestine, Sri Lanka, and the United States.

RLST 117 Mythology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of mythic traditions from several world cultures and religions viewed from a variety of theoretical perspectives. Includes material drawn from epic, religious texts, divine hymns, creation myths, heroic legends, and the way in which Islam shaping and is shaped by the contexts in which new religions emerge, their relations with dominant religious traditions or normative cultures, and the religious content of such movements. Explores the ways in which Islam shapes and is shaped by Western culture and religion. Explores the capacity of religion to mobilize and legitimate violence. Materials covered include ideological texts by Rene Girard, Walter Burkert, Jonathan Z. Smith, and others, and case studies dealing with religion and violence in India, Northern Ireland, Egypt, Lebanon, Israel, Palestine, Sri Lanka, and the United States.

RLST 118 The Problem of Evil: Understanding Evil and Its Manifestations (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. Explores the ways in which Islam shapes and is shaped by Western culture and religion. Explores the capacity of religion to mobilize and legitimate violence. Materials covered include ideological texts by Rene Girard, Walter Burkert, Jonathan Z. Smith, and others, and case studies dealing with religion and violence in India, Northern Ireland, Egypt, Lebanon, Israel, Palestine, Sri Lanka, and the United States.
considers philosophical, social scientific, and popular ideas of evil. Examines evil from the perspectives of the victim, the perpetrator, and the voyeur, and in a variety of media such as fiction, nonfiction, and film.

RLST 121 The Hebrew Bible/Old Testament (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the collection of books usually called the Old Testament from the Bible by Jews (the acronym T'NCH is often used by Jews as well). The books are examined in their historical, cultural, and religious contexts, with attention to the methods of modern literary criticism.

RLST 124 (E-Z) Studies in Judaism from 70 C.E. to Modern Period (4) For hours and prerequisites, see segment descriptions. Exploration of developments in Judaism during this period, such as the collection of the Mishnah into the Talmud. Engages with a variety of Jewish sources, including midrashic, philosophic, and mystical literatures of the Jewish past and in response to the impact of Christian and secular thought of the present.

RLST 124 The Essentials of Judaism (4) Lecture, 3 hours; outside reading, 3 hours, or consultation, 1 hour. An exploration of major teaching of Judaism. A brief historical background is related to central affirmations. Emphasis is placed on the historical shape of faith and contemporary dynamics of faith.

RLST 124K Zionism and Holocaust (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. A survey of the religious, historical, and ideological background regarding the origins of the Zionist idea and Holocaust.

RLST 126 Israel: The Jewish State (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines Zionism and the state of Israel in the period from the first Zionist Congress in 1896 to the present. Addresses religious, social, economic, and political aspects of the Jewish state. Cross-listed with HIST 127.

RLST 127 The Holocaust (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the extermination of European Jewry during World War II. Surveys the history of the "Jewish Question"; Jewish-Christian relations; race; the systematic persecution and genocide of the Jews; and world responses to genocide. Addresses religious, philosophical, and political implications of the Holocaust, as well as continuing anti-Semitic trends. Cross-listed with HISE 147.

RLST 128 (E-Z) Topics in the Bible (4) For hours and prerequisites, see segment descriptions. Academic examination of issues relating to the Bible.

RLST 128E Contemporary Views of Jesus (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the history of Christianity from its origins through the Reformation. Includes the development of Christian beliefs, practices, and institutions in historical contexts. Cross-listed with HIST 130A.

RLST 135B History of Christianity: Modern Era (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Surveys the history of Christianity from its first six centuries. Particular attention paid to issues of heresy/orthodoxy, material piety, and the rise of ecclesiastical institutions.

RLST 135A History of Christianity: Origins to the Reformation (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Surveys the history of Christianity from its origins through the Reformation. Examines the development of Christian belief, practices, and institutions in historical contexts. Cross-listed with HIST 130B.

RLST 136 Augustine and Aquinas (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of the spiritual, occupational, and cultural diversification that ensued. Explores the impact of dislocation and urbanization on black religious and artistic production. Issues include the religious marketplace, Exodus theology, and the nature of black religious and cultural expression.

RLST 138 Colonialism and Religions in Mexico (4) Lecture, 3 hours; outside research, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the history of Christianity in Mesoamerica. Examines indigenous and immigrant religions through themes such as myths and rituals of pre-Columbian peoples; sexuality and eroticism in religion; Indian theology and theogony; Counter Reformation Catholicism; and growing religious syncretisms.

RLST 139 Religion and Colonialism (4) Lecture, 3 hours; outside research, 1 hour; term paper, 1 hour; individual study, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Covers the survival, revival, and invention of religious traditions in the contemporary Mesoamerican world. Examines indigenous and immigrant religions through themes such as myths and rituals of pre-Columbian peoples; sexuality and eroticism in religion; Indian theology and theogony; Counter Reformation Catholicism; and growing religious syncretisms.

Cross-listed with LNST 138.

RLST 142 Chuang-tzu (4) Lecture, 3 hours; outside research, 1 hour; extra reading, 1 hour; term paper, 1 hour. Prerequisite(s): RLST 005 or RLST 009 or AST 107/CHN 107/RLST 107 or consent of instructor. Examines the history of Chinese thought from the classic literature of the Chuang-tzu to the present.

RLST 143 Divination and Prediction in China and Greece (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): one of the following courses: CHN 030/AST 030, CHN 104, CHN 105, AST 107/CHN 107/RLST 107, CHN 108, AST 142/CHN 142/RLST 142, AST 148/CHN 148, CLA 010A, CLA 010B, CLA 010C/CLA 040, CLA 110/CLA 112/CLPLT 112/RLST 117, CLA 114/CLPLT 114, CLA 120 (E-Z), CLA 165, CPAC 102/CLA 102, CPAC 112/CLA 113/HISE 113, CPAC 121/CLA 121/POSC 121, CPAC 132/AST 132/CHN 132/CLA 132, CPAC 133/HISE 134, CPAC 134/HIST 110, CPAC 141/AST 145/CHN 141/CLA 141/POSC 140, or consent of instructor. Comparative study of early divination and prediction in early China, ancient Greece, or two other areas of the ancient world. Perspectives include social and intellectual contexts, as well as gender and boundaries between science, philosophy, and religion. Utilizes primary source material in texts and visual arts. Cross-listed with CHN 143, CLA 143, and CPAC 143.

RLST 144 Buddhist Literature (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Readings in canonical and non-canonical Buddhist texts. Includes Buddhist-influenced literature written by Asian, European, and American authors. Examines themes of emptiness, impermanence, and no-self. Cross-listed with AST 133 and CPLT 144.

RLST 145 Buddhism in Southeast Asia (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): RLST 106 or consent of instructor. Explores various texts, magical practices, forms of meditation, rituals, and beliefs of ancient and modern Buddhism, focusing on the ways in which they are transformed by monks, nuns, and the laity in Burma, Cambodia, Laos, Thailand, and California. Cross-listed with SEAS 145.

RLST 146 Rhetoric and Discipline in Buddhist Studies (4) Lecture, 3 hours; written work, 2 hours, activity, 2 hours. Prerequisite(s): upper-division standing or
consent of instructor. A study of key works in Buddhist studies in an effort to flesh out a critical history of academic portrayals of Buddhism. Explores the history, boundaries of the field and its relationship to modes of Buddhist and non-Buddhist rhetoric and interpretation in colonial, Orientalist, socialist, and neo-liberal contexts.

RLST 148 Religions of the Silk Road (4) Lecture, 3 hours; individual study, 2 hours; written work, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to religious traditions that flourished along the ancient Silk Road. Includes Zoroastrianism, Buddhism, Manicheanism, Nestorian Christianity, Islam and others. Focuses on the spread, development, and interaction through the medieval period. Considers ways in which the Silk Road period legacy figures in religious and political debates in contemporary Central Asia.

RLST 149 Southeast Asian Religions (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one Religious Studies course or upper-division standing or consent of instructor. Introduces aspects of religion in various Southeast Asian countries including Indonesia, Malaysia, Thailand, Cambodia, Vietnam, and the Philippines. Provides contextualized readings featuring historical, anthropological, literary, and other disciplinary perspectives. Cross-listed with SEAS 149.

RLST 150 Islam in Southeast Asia (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the religious, intellectual, and cultural histories of Islam in Southeast Asia. Includes Indonesia, Malaysia, and Brunei, as well as minority communities in Singapore, Thailand, Cambodia, and the southern Philippines. Examines a series of contextualized readings in translated primary sources. Approaches texts from historical, anthropological, literary, and other disciplinary perspectives. Cross-listed with SEAS 150.

RLST 151 Reading the Qur'an (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the Qur'an, Islam's primary scripture. Examines the contexts in which the text originated. Offers critical analyses of the Qur'an and discussion of its roles in the cultural histories of Muslim societies.

RLST 152 Religion and Oppression (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): one of the following: GSST 001H, GSST 001, RLST 001H, RLST 001, RLST 009, RLST 015H, RLST 017, RLST 017H, RLST 017W, RLST 019, RLST 020, RLST 023/5, RLST 024/HIST 034, RLST 025, RLST 033, RLST 039, RLST 040H/ HIST 044, RLST 040W/HIST 044W; or consent of instructor. An introduction to religion as a mitigating or exacerbating force in oppression. Religions, religion as cause of oppression, and religion as colonialism, secularism, modernity, language, and the state. Utilizes the law and philosophy. Cross-listed with ARLC 156, CPTL 156, and MEIS 156.

RLST 157 Introduction to Arabic Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces contemporary psychoanalytic readings of Islam to consider the relationship between Islam and Orientalism, Orientalism and psychoanalysis, and psychoanalysis and Islam. Cross-listed with ARLC 158, CPTL 158, and MEIS 158.

RLST 159 Queer Religiosities (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): one of the following: GSST 001H, GSST 001, RLST 001H, RLST 002, RLST 003, RLST 005, RLST 005H, RLST 007, RLST 007H, RLST 007W, RLST 009, RLST 010, RLST 012/ETST 012, RLST 012HETST 012H, RLST 012HETST 012W, RLST 012/EXETST 012X, RLST 014, RLST 015, RLST 015H, RLST 024/HIST 034, RLST 039, RLST 044H/HIST 044, RLST 044W/HIST 044W; or consent of instructor. A comparative, thematic exploration of religion in the lives of contemporary and same-sex-identified individuals within the context of religion standing or consent of instructor. Explores the complex intersection of sound, religion, religious experience, and culture. Explores how sacred music and varieties of sound-produced or sound-enhanced religious experience enables groups of people to construct religious meaning and understand their world. Focuses on musical forms of practices and embodied experiences of the sacred.

RLST 160 Religion, Gender and Sexuality (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examination of attitudes toward and images of women in diverse religious traditions. Includes issues such as the presence and absence of women in leadership roles; women's spiritual experiences; feminization of religious groups; and recent developments in feminist religious thought. Cross-listed with GSST 160.

RLST 161 Gender and Sexuality in U.S Religious History (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): one of the following: GSST 001H, GSST 001, GSST 001S, GSST 001, RLST 001H, RLST 001, RLST 003, RLST 005, RLST 005H, RLST 007, RLST 007H, RLST 007W, RLST 009, RLST 010, RLST 012/ETST 012, RLST 012HETST 012H, RLST 012HETST 012W, RLST 012/EXETST 012X, RLST 013, RLST 014, RLST 015, RLST 015H, RLST 024/HIST 034, RLST 039, RLST 044/ HIST 044, RLST 044W/HIST 044W; or consent of instructor. Overview and analysis of key works in religious history in the United States. Focuses on the role of women in colonial period (including Spanish, French, Russian, and British colonizers in what is now the United States) to present day. Combines critical and comparative religious studies approaches with historical methods and the analytical perspectives of intersectional gender, sexuality, and queer studies. Cross-listed with GSST 158.

RLST 162 Women’s Issues in Modern Muslim Thought (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one Religious Studies course or upper-division standing or consent of instructor. Introduces complex religious and social issues related to the role of women in modern Islamic societies ranging from North America to Southeast Asia. Examines Muslim writings produced during the past century.<B> Cross-listed with GSST 162.

RLST 163 The Women of Early Christianity (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of selected human rights struggles with particular attention given to the role of religion. Examines the complex intersection of sound, religion, religious experience, and culture. Explores how sacred music and varieties of sound-produced or sound-enhanced religious experience enables groups of people to construct religious meaning and understand their world. Focuses on musical forms of practices and embodied experiences of the sacred.

RLST 164 Political Religions and Religious Politics (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Traces the formation and boundaries of the field and its relationship to the cultural histories of Muslim societies. Examines how sacred music and varieties of sound-produced or sound-enhanced religious experience enables groups of people to construct religious meaning and understand their world. Focuses on musical forms of practices and embodied experiences of the sacred.

RLST 166 Religious Studies, Media, and Culture in America (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the complex intersection of sound, religion, religious experience, and culture. Explores how sacred music and varieties of sound-produced or sound-enhanced religious experience enables groups of people to construct religious meaning and understand their world. Focuses on musical forms of practices and embodied experiences of the sacred.

RLST 167 Religion and Human Rights (4) Lecture, 3 hours; independent research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of selected human rights struggles with particular attention given to the role of religion. Case examples are taken from North and Latin America, South Africa, South Asia, or China, among others.

RLST 176 Peace and War (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of selected human rights struggles with particular attention given to the role of religion. Case examples are taken from North and Latin America, South Africa, South Asia, or China, among others.

RLST 177 History of the Church in Latin America (4) Lecture, 3 hours; term paper, 3 hours per quarter. Prerequisite(s): upper-division standing or consent of instructor. A survey of the history of the church (e.g. Catholic, Protestant) in Latin America. Includes con-
revolutions, and liberation theology movements. Explores the dynamics of church and culture, church and state, and church and social transformation. Cross-listed with HISA 168.

RLST 178 Religious Biography (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the construction and continuing appropriation of biographical images in and through visual narrative in selected religious traditions. Special attention is given to problems of interpretability and the medium of presentation in the communication of "religious" meaning. Cross-listed with CPLT 178.

RLST 179 Pilgrimage (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of pilgrimage and religious tourism in selected traditions. Includes historical, sociological, anthropological, and ritual analysis of the construction of sacred time and space and of the formation of communal and personal identity.

RLST 180 Saints and Gurus (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores how religious virtuosos have shaped religious practice and the teaching of Hindus, Buddhism, Jainism, Sikhism, and Islam in South Asia. Examines history, myth, poetry, meditation, yoga, and ritual, with a focus on how the ascetic ideal has shaped global imagination about South Asia.

RLST 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): consent of instructor and department chair. To be taken to meet special curricular problems. Course is repeatable to a maximum of 16 units.

RLST 193 Senior Seminar (4) Seminar, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Advanced undergraduate study of specific religious texts, traditions, or key understanding themes as set by the instructor. Topics vary each year.

RLST 195 Senior Thesis (1-4) Enrollment by request of student with the approval of the Program faculty, which must be granted no later than the quarter before the course is to be taken. May be taken for four units only in the first or second quarter of the senior year; two more units may be taken in a subsequent quarter. Total credit may not exceed 6 units.

RLST 197 Research for Undergraduates (1-2) Individual research, 3-6 hours. Prerequisite(s): upper-division standing or consent of instructor. Directed individual research. May be taken Satisfactory (S) or No Credit (NC). Prerequisite: graduate standing or consent of instructor; consent of department chair. Critical examination of the underlying themes as set by the instructor. Topics vary but may include syncretism, mission and colonization, religious wars, ecumenism, and other religious/cultural conflicts. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 201 Thinking about Religion: Classic Theories in the Study of Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A critical study of classic theories and theorists in the study of religion in their historical contexts. Featured thinkers include Frazer, Eliade, Smart, Spinoza, Durkheim, Freud, and Weber. Considers how intellectual movements as Higher Criticism of the Bible, psychoanalysis, phenomenology, and hermeneutics. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 202 Contemporary Theories and Theorists in the Study of Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; consent of graduate advisor is required for students repeating the course. A critical consideration of leading contemporary theories and theorists in religious studies. Selection of theories and theorists changes according to the interests of the instructor. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable to a maximum of 16 units if taken with different instructors.

RLST 210 Understanding Theories of Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers the technique and theory of interpreting theoretical texts of the study of religion within historical contexts. Special attention is given to Charles Taylor's theory of interpretation in the human sciences and Quentin Skinner's theory of interpretative anatomy. The Models are drawn from the literature of the theory of myth, religion, and sacrifice. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 212 The Durkheimian Tradition in the Study of Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers major figures and themes in the Durkhevinian approach to the study of religion. Pays special attention to qualitative methods of analysis. Focuses on the Durkheimian development of major religious themes: gift, magic, religion, sacred time and space, and sacrifice. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 220 Advanced Topics in Method and Theory in the Study of Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. An inquiry into the major conceptual issues of the methods and theories employed in the study of religion. Topic varies from quarter to quarter. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 221 The Religious Studies-Theology Debate (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Addresses current debates concerning the relationships of theology to humanistic studies of religion. Covers neoorthodox, liberal, post-liberal and postmodern theologies as alternatives to the humanistic study of religion in the public university. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 222 Human Rights as a Moral Discourse (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Inquiry into the moral and ethical dimensions of philosophical, religious, legal, and historical traditions of “rights-talk.” Attention paid to conceptual, historical, cross-cultural, and case-study source materials. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 224 Comparative Religious Ethics (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Inquiry into a variety of debates about ethics: religious and philosophical, theoretical and applied. Topics may include policy debates about bioethics, moral inquiries into virtue, ethics and minority discourse, violence and nonviolence as means of social change, and intercultural moral problems generated by suffering. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 227 Politics and Religion: From Premodern to Postmodern (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the relation between politics and religion from premodernity through postmodernity. Topics include the divine right of kings; Machiavelli, Locke, and Hobbes; documents of the American, English, French, and Turkish revolutions; Islamism; secularism; the clash of civilizations; the United States as a Christian nation; and modern nationalism as religions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 228 Lived Religions and Local Faults: Cultural Approaches to the Study of Religion (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Covers ethnographic, anthropological, and other cultural approaches to the study of religion. Traces emergence of the cultural study of religion from colonial encounters to current-day ethnographies of religion. Evaluates risks and promises of ethnography for the study of religion. Includes ethnographic project. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 229 Material Culture of Religion (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines how material objects connect to and convey textural statements about religious belief and practice. Considers the material dimensions of scripture, ritual objects, and everyday artifacts associated with religion; the agency of objects; and religion and consumer culture. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 230 Theory and Writing on Native American Religious Traditions (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Theoretical study of Native American religions, traditions, and institutions.
American religious history, including its research, interpretation, and writing, in relation to colonialism and tribal sovereignty. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 231 Ethnographic Methodology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Assists in the design and implementation of sustained field research while engaging various theoretical approaches to ethnographic practice. Provides preparation for or in service of dissertation research. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 234 Popular and Elite Religion (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores complexities within the first Christian centuries. Emphasizes content relevant to the expertise of the instructor. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 235 Christian Hagiography (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Study of the writing of Christian saints’ lives from a cultural perspective. Explores the role of holy men and women in premodern Christianity. Examines the sociocultural contexts of the early church. Prerequisite(s): consent of instructor.

RLST 236 Gender and Religion (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the role of sex and gender in selected religious beliefs and practices. Topics include gender and divinity, gender and hierarchy in ancient religious traditions, gender and popular culture, gender and the body in religious traditions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 237 Asceticism (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides an analysis of the theories and practices associated with bodily renunciation, focused especially on the ascetic practices of early Christianity. Explores issues such as fasting, sexual abstinence, and social withdrawal from a variety of cultural perspectives, with special attention paid to gender, status, and the body in religion. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 238 Religious Images (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the use of sacred images in spiritual practice in diverse religious traditions. Explores major issues in recent scholarship in North American religion. Topics include debates over emerging theories such as narrative and market model approaches; secularism, immigration, race, and ethnicity; religiosity and national identity formation; religious practice in regards to gender and sexuality; and the role of Protestant privilege. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 240 Advanced Topics in the Study of North American Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores major issues in recent scholarship in North American religion. Topics include debates over emerging theories such as narrative and market model approaches; secularism, immigration, race, and ethnicity; religiosity and national identity formation; religious practice in regards to gender and sexuality; and the role of Protestant privilege. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 241 From Text to Scripture: Canon, Performance, Reception (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the Sikh sacred text as a primary example of the intellectual and emotional factors underlying the composition, copying, canonization, and transmission of sacred texts, with attention to issues of production and reception in historical communities. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 245 Via Mystica (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the Hindu sacred text as a primary example of the intellectual and emotional factors underlying the composition, copying, canonization, and transmission of sacred texts, with attention to issues of production and reception in historical communities. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 246 Religious Reading Cultures (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines textual communities and interpretive virtuosi in different religious cultures. Explores the means by which religious scripture is composed, transmitted, translated, illuminated, performed, and preserved in Christianity, Judaism, Buddhism, Hinduism, and Islam. Introduces students to the methodologies and approaches of textual anthropology, intertextuality, hermeneutics, liturgical studies, performance theory, and philology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 249 Public Religious Discourses in Modern Islam (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces the complexities of contemporary Islam as lived by Muslims in local and global contexts by examining the content and dynamics of modern discourses of religious issues in contemporary Islamic “public spheres.” Involves primary and secondary sources of information. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 250 Approaches to Islam in Religious Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines various approaches to the study of Islam. Includes textual, legal, historical, anthropological, and sociological approaches. Also explores orientalism and occidentalism, textuality and orality, sacredness and profanity, orthodoxy and heterodoxy, modernity and modernity, conversion, identity, and media. Utilizes works of social scientists, philosophers, legal scholars, and sociologists. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 252 Southeast Asian Islam (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to contextualized readings in translated primary source texts in the fourteenth-first centuries from Muslim Southeast Asia. Explores the richness of Islamicate culture in the region through discussions of broader issues of Islam, Muslim societies, and the academic study of religion. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 253 Southeast Asian Religions (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Discusses different and dynamic aspects of religion in various Southeast Asian countries including Indonesia, Malaysia, Thailand, Cambodia, Vietnam, and the Philippines. Explores contextualized readings featuring historical, anthropological, literary, and other disciplinary perspectives on this diverse region. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as topic changes to a maximum of 8 units. Cross-listed with ANTH 257 and SEAS 202.

RLST 254 Queer and Transgender Studies in Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores major issues in recent scholarship in North American religion. Specific topics may include: queer analysis of sacred texts and religious histories, gender variance in religious traditions, queer/trans religious innovation, and queer feminist, critical race, and anti- and postcolonial studies on topics related to religious history. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 257 The Sufis (4) Seminar, 3 hours; term paper, 2 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces students to the methodologies and approaches of textual anthropology, intertextuality, hermeneutics, liturgical studies, performance theory, and philology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with CPWA 257.

RLST 261 Problems in the Study of Buddhism (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines major issues in recent scholarship on Buddhism. Topics include the rise of sectarian debate, and women’s role in Buddhist ecclesias. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 263 Historiography of Sikh Hermeneutics (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the historical context of Sikh religious and historical thought, within and outside Sikh religious and social traditions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 270 Topics in Jewish Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines current problems in the field of Jewish studies. Topics address issues related to memory, identity, economy, power, gender, race, genetics, and culture. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 271 The Nietzschean Tradition in the Study of Religion (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores major issues in recent scholarship on Nietzsche’s thought and its impact on human religious life. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

RLST 272 Jews and the Economy (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys facts and fictions about Jews and the economy. Topics include...
Science Fiction and Technoculture Studies Minor

Subject abbreviation: SFTS
College of Humanities, Arts, and Social Sciences

Committee in Charge
Sherry Vint (English)
Dana Simmons (History)
Tamara Ho (Gender and Sexuality Studies)
Nalo Hopkinson (Creative Writing)
Eric Switzelgetz (Philosophy)
Milagros Peña, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

Supporting Faculty
Derek Burrill (Media and Cultural Studies)
Stuart Krieger (Theatre, Film and Digital Production)
Margherita Long (Comparative Literature)
Juliet McMullin (Anthropology)
Yolanda Moses (Anthropology)
Lisa Raphals, (Comparative Literature)
Robin Russin (Theatre, Film and Digital Production)
Chikako Takeshita (Gender and Sexuality Studies)
James Tobias (English)
Susan Zieger (English)
Milagros Peña, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The minor in Science Fiction and Technoculture Studies explores the intersections linking science fiction studies, science and technology studies (STS), and technoculture studies. The program examines the histories and cultures of science, technology, and medicine to understand the role that culture has always played in the production of science and the reciprocal way that changes in science and technology have shaped culture. The program uniquely emphasizes the role of popular culture and the genre of science fiction in particular in mediating public understandings of science, serving as an imaginative testing ground for technological innovation, and articulating hopes and anxieties regarding technocultural change. Drawing on faculty from across CHASS, the Science Fiction and Technoculture Studies minor enables students to develop a critical understanding of the cultures of science and their dialectical exchange with contemporary popular culture.

1. Upper-division requirements (24 units)
   a) Four (4) units from SFTS 001
   b) Sixteen (16) additional units, selected from the following groups. Students must take at least four (4) units from two of the three groups.

   GROUP ONE: Fine Arts; selected from CRWT 162; CRWT 172; MCS 146; MCS 151G; MCS 153 (E-Z); TFDP 166C.
   GROUP TWO: Humanities; selected from CPTL 118; CPAC 132; ENGL 179A; ENGL 179B; ENGL 179C; ENGL 179D; ENGL 179T; JPN 184; HIST 105; HIST 107; HISA 147; PHIL 137; PHIL 167.
   GROUP THREE: Social Sciences; selected from ANTH 143; ANTH 162; GSST 106; GSST 161; GSST 185; GSST 187; GSST 189.
   c) Four (4) units from SFTS 193 (senior seminar)

All students must take the introductory course and the senior seminar. There is no required order in which elective courses must be taken but credit in SFTS 001 is required for entry into SFTS 193.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for information on minors.

Lower-Division Course
SFTS 001 Introduction to Science Fiction and Technoculture Studies (4) Lecture, 3 hours; extra reading, 3 hours. Investigates the relationship between science, technology, and medicine and the genre of science fiction. Emphasizes exchanges between technology and popular culture. Covers fiction by H.G. Wells, Kim Stanley Robinson, and Nancy Kress and critical readings by Steven Shafar, Donna Haraway, and Bruno Latour.

Upper-Division Course
SFTS 193 Senior Seminar in Science Fiction and Technoculture Studies (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SFTS 001 or consent of instructor. Develops skills in the formulation and investigation of research questions in science fiction and technoculture studies. Synthesizes and integrates knowledge and skills obtained in the minor. Includes a major research project and presentations by guest speakers.

Sociology

Subject abbreviation: SOC
College of Humanities, Arts, and Social Sciences
Jan E. Stets, Ph.D., Co-Chair
Augustine J. Kposowa, Ph.D., Co-Chair
Department Office, 1209 Watkins Hall (951) 827-6466; sociology.ucr.edu

Professors
Adalberto Aguirre, Jr., Ph.D.
Steven G. Brint, Ph.D. Distinguished Professor (Sociology/Public Policy)
Richard M. Carpio, Ph.D.
Christopher Chaise-Dunn, Ph.D. Distinguished Professor
Augustine J. Kposowa, Ph.D.
Bruce G. Link, Ph.D. Distinguished Professor (Sociology/Public Policy)
Alfredo M. Miranda, Ph.D.
Sociology/Ethnic Studies
Milagros Peña, Ph.D.
Karen D. Pfye, Ph.D.
Ellen Reese, Ph.D.
Jan E. Stets, Ph.D.
David A. Swanson, Ph.D.

Professors Emeriti
Edna M. Bonacich, Ph.D. (Ethnic Studies/Sociology)
Peter J. Burke, Ph.D.
Edgar W. Butler, Ph.D.
Scott L. Coltrane, Ph.D.
Robert A. Hanneman, Ph.D.
Alexandra Maryanski, Ph.D.
Jane R. Mercer, Ph.D.
Robert Nash Parker, Ph.D.
Raymond L. Russell, III, Ph.D.

Related Courses
ANTH 124. Ritual and Religion. (4) Description under Anthropology.

AHS 155. Cultures in Conflict: Art at the Fall of the Roman Empire. (4) Description under Art History.

AHS 156. Memory of Empire: the Art of Early Medieval Europe. (4) Description under Art History.

CLA 165. Greco-Roman Cults and Credence. (4) Description under Classics.

ENGL 100E. Scriptures, Myths, Interpretation. (4) Description under English.

HISE 132. The Reformation. (4) Description under History.

PHIL 159. Philosophy of Religion. (4) Description under Philosophy.

SOC 158. The Sociology of Religion. (4) Description under Sociology.

anthusory, the court Jew, finance, retail and manufactur-
ing, labor movements, organized crime, and culture
industries. Addresses select issues of culture and
economy, as well as depictions of Jewish money in
literature, film, and journalism. May be taken Satisfac-
tory (S) or No Credit (NC) with consent of instructor
and graduate advisor.

RLST 290 Directed Studies (1-5) Outside research, 3-15 hours. Prerequisite(s): consent of instructor and graduate advisor. Advanced work in a topic or topics appropriate to the student’s special interests and needs. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

RLST 291 Individual Study in Coordinated Areas (1-12) Individual study, 3-36 hours. Prerequisite(s): consent of instructor; doctoral standing. Program of study designed to advise and assist candidates who are preparing for qualifying examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

RLST 292 Concurrent Studies in Religious Studies (1-6) Outside research, 3-12 hours. Prerequisite(s): consent of instructor; concurrent enrollment in a RLST-100 level course. Taken concurrently with a 100-level RLST course, but on an individual basis. Devoted to completion of a graduate paper based on research related to the 100-level course. Faculty guidance and evaluation is provided throughout the quarter. RLST 190, RLST 193, RLST 195, RLST 197, and RLST 198-I may not be used for this course arrangement. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

RLST 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): consent of instructor; graduate standing. Individualized research under the sponsorship of specific faculty members. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

RLST 299 Research for the Dissertation (1-12) Outside research, 3-36 hours. Prerequisite(s): satisfactory completion of the Ph.D. qualifying examination. Research, under the direction of a faculty member, for preparation of the thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course
RLST 302 Teaching Practicum (1-4) Practicum, 3-12 hours. Prerequisite(s): appointment as a Teaching Assistant; graduate standing. Supervised teaching in lower- and upper-division Religious Studies courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professors Emeriti
Adalberto Aguirre, Jr., Ph.D.
Edna M. Bonacich, Ph.D. (Ethnic Studies/Sociology)
Christopher Chase-Dunn, Ph.D. Distinguished Professor
Augustine J. Kposowa, Ph.D.
Bruce G. Link, Ph.D. Distinguished Professor (Sociology/Public Policy)
Alfredo M. Miranda, Ph.D.
Sociology/Ethnic Studies
Milagros Peña, Ph.D.
Karen D. Pfye, Ph.D.
Ellen Reese, Ph.D.
Jan E. Stets, Ph.D.
David A. Swanson, Ph.D.

Social Sciences

Subject abbreviation: SOC
College of Humanities, Arts, and Social Sciences
Jan E. Stets, Ph.D., Co-Chair
Augustine J. Kposowa, Ph.D., Co-Chair
Department Office, 1209 Watkins Hall (951) 827-6466; sociology.ucr.edu

Professors
Edna M. Bonacich, Ph.D. (Ethnic Studies/Sociology)
Peter J. Burke, Ph.D.
Edgar W. Butler, Ph.D.
Scott L. Coltrane, Ph.D.
Robert A. Hanneman, Ph.D.
Alexandra Maryanski, Ph.D.
Jane R. Mercer, Ph.D.
Robert Nash Parker, Ph.D.
Raymond L. Russell, III, Ph.D.

Related Courses
ANTH 124. Ritual and Religion. (4) Description under Anthropology.

AHS 155. Cultures in Conflict: Art at the Fall of the Roman Empire. (4) Description under Art History.

AHS 156. Memory of Empire: the Art of Early Medieval Europe. (4) Description under Art History.

CLA 165. Greco-Roman Cults and Credence. (4) Description under Classics.

ENGL 100E. Scriptures, Myths, Interpretation. (4) Description under English.

HISE 132. The Reformation. (4) Description under History.

PHIL 159. Philosophy of Religion. (4) Description under Philosophy.

SOC 158. The Sociology of Religion. (4) Description under Sociology.
Majors

Sociology is the scientific study of human behavior, interaction and organization. It provides a historical and comparative perspective on human societies and offers a framework for understanding society and the complex social world.

Students majoring in sociology can choose between a B.A. or B.S. degree. The department also offers majors in Sociology/Administrative Studies, and Sociology/Law and Society; as well as a minor in sociology. All students must meet quarterly prior to course enrollment with the student affairs officer or the undergraduate advisor to develop a program of studies.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Humanities, Arts, and Social Sciences, Colleges and Programs section.

Major Requirements

Sociology Major

The major requirements for the B.A. and B.S. degrees in Sociology are as follows:

For the Bachelor of Arts

Sociology Department requirements (14 courses [at least 56 units])

Students will not be admitted into the major until lower-division requirements are satisfied.

All courses in the major must be taken for a letter grade.

1. Lower-division requirements (5 courses [at least 20 units])
   a) SOC 001 or SOC 001H with a grade of "C-" or better
   b) SOC 003, SOC 004, SOC 005 with a grade of "C-" or better in each
   c) One additional lower-division Sociology course with a grade of "C-" or better

2. Upper-division requirements (9 courses [at least 36 units])
   a) SOC 168 or SOC 169
   b) A minimum of one course each selected from four of the following five areas of emphasis:
      (1) Social Institutions, Organizations and Change: SOC 112, SOC 120, SOC 121, SOC 122, SOC 123, SOC 125, SOC 126, SOC 137, SOC 138, SOC 139/ MCS 139, SOC 143/URST 143, SOC 150, SOC 151, SOC 156, SOC 157, SOC 158, SOC 160, SOC 171, SOC 176/BUS 176, SOC 179, SOC 181, SOC 182/URST 182, SOC 184, SOC 185
      (2) Social Psychology: SOC 173, SOC 174, SOC 175, SOC 177 E-Z, SOC 178, SOC 186E, SOC 186F, SOC 186G
      (3) Social Inequality: SOC 128, SOC 129, SOC 130, SOC 131 E-Z, SOC 132, SOC 133, SOC 135, SOC 136, SOC 152, SOC 161, SOC 162, SOC 163, SOC 164, SOC 165
      (4) Criminology and Deviance: SOC 134, SOC 144, SOC 145, SOC 147, SOC 149, SOC 159, SOC 180
      (5) Family and Gender: SOC 140, SOC 141, SOC 142, SOC 146, SOC 153, SOC 154, SOC 155 E-Z
   c) An additional four elective courses (at least 16 units) in Sociology (No more than 5 units from any combination of SOC 190, SOC 197, SOC 198-L)

For the Bachelor of Science

Sociology Department requirements (16 courses [at least 64 units])

Students will not be admitted into the major until lower-division requirements are satisfied.

All courses in the major must be taken for a letter grade.

1. Lower-division requirements (5 courses [at least 20 units])
   a) SOC 001 or SOC 001H with a grade of "C-" or better
   b) SOC 003, SOC 004, SOC 005 with a grade of "C-" or better in each
   c) One additional lower-division Sociology course with a grade of "C-" or better in each
   d) A minimum of one course each selected from four of the following five areas of emphasis:
      (1) Social Institutions, Organizations and Change: SOC 112, SOC 120, SOC 121, SOC 122, SOC 123, SOC 125, SOC 126, SOC 137, SOC 138, SOC 139/ MCS 139, SOC 143/URST 143, SOC 150, SOC 151, SOC 156, SOC 157, SOC 158, SOC 160, SOC 171, SOC 176/BUS 176, SOC 179, SOC 181, SOC 182/URST 182, SOC 184, SOC 185
      (2) Social Psychology: SOC 173, SOC 174, SOC 175, SOC 177 E-Z, SOC 178, SOC 186E, SOC 186F, SOC 186G
      (3) Social Inequality: SOC 128, SOC 129, SOC 130, SOC 131 E-Z, SOC 132, SOC 133, SOC 135, SOC 136, SOC 152, SOC 161, SOC 162, SOC 163, SOC 164, SOC 165
      (4) Criminology and Deviance: SOC 134, SOC 144, SOC 145, SOC 147, SOC 149, SOC 159, SOC 180
      (5) Family and Gender: SOC 140, SOC 141, SOC 142, SOC 146, SOC 153, SOC 154, SOC 155 E-Z
   e) An additional four elective courses (at least 16 units) in Sociology (No more than 5 units from any combination of SOC 190, SOC 197, SOC 198-L)

Sociology/Administrative Studies Major

The major requirements for the B.A. and B.S. degree in Sociology/Administrative Studies are as follows:

For the Bachelor of Arts

Sociology Department requirements (14 courses [at least 56 units])

Students will not be admitted into the major until lower-division requirements are satisfied.

All courses in the major must be taken for a letter grade.

1. Lower-division requirements (5 courses [at least 20 units])
   a) SOC 001 or SOC 001H with a grade of "C-" or better
   b) SOC 003, SOC 004, SOC 005 with a grade of "C-" or better in each
   c) One additional lower-division Sociology course with a grade of "C-" or better in each

2. Upper-division requirements (9 courses [at least 36 units])
   a) SOC 168 or SOC 169
   b) A minimum of one course each selected from four of the following five areas of emphasis:
      (1) Social Institutions, Organizations and Change: SOC 112, SOC 120, SOC 121, SOC 122, SOC 123, SOC 125, SOC 126, SOC 137, SOC 138, SOC 139/ MCS 139, SOC 143/URST 143, SOC 150, SOC 151, SOC 156, SOC 157, SOC 158, SOC 160, SOC 171, SOC 176/BUS 176, SOC 179, SOC 181, SOC 182/URST 182, SOC 184, SOC 185
      (2) Social Psychology: SOC 173, SOC 174, SOC 175, SOC 177 E-Z, SOC 178, SOC 186E, SOC 186F, SOC 186G
      (3) Social Inequality: SOC 128, SOC 129, SOC 130, SOC 131 E-Z, SOC 132, SOC 133, SOC 135, SOC 136, SOC 152, SOC 161, SOC 162, SOC 163, SOC 164, SOC 165
      (4) Criminology and Deviance: SOC 134, SOC 144, SOC 145, SOC 147, SOC 149, SOC 159, SOC 180
      (5) Family and Gender: SOC 140, SOC 141, SOC 142, SOC 146, SOC 153, SOC 154, SOC 155 E-Z
   c) An additional four elective courses (at least 16 units) in Sociology (No more than 5 units from any combination of SOC 190, SOC 197, SOC 198-L)
439 / Programs and Courses

b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
c) CS 008 (may be used to satisfy breadth requirements)

2. Upper-division requirements (20 units)
a) Two courses (8 units) from the list below:
   (1) ECON 102 or ECON 104A or ECON 130 or BUS 162/ECON 162
   (2) PSYC 140 or PSYC 142
   (3) SOC 150 or SOC 151 or SOC 171
   (4) POSC 181 or POSC 182 or POSC 183
   (5) ANTH 127 or ANTH 131
   These two courses must be outside the discipline of Sociology and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.
b) A three-course track (12 units) in Business Administration courses from one of the following:
   (1) Organizations (General): ANTH 105/BUS 198, BUS 100, BUS 107, BUS 176/SOC 176, SOC 150, SOC 151
   (2) Human Resources Management/Labor Relations: BUS 100, BUS 107, BUS 153/ECON 153, BUS 155, BUS 157, ECON 152, PSYC 142
   (3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, POSC 186
   (4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114, BUS 117
   (5) Managerial Accounting/Taxation: BUS 108, BUS 165A, BUS 165B
   (7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
   (8) Management Information Systems: BUS 101, BUS 171, BUS 173
   (9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127

   Note In filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (Sociology requirements and Administrative Studies requirements).

Sociology/Law and Society Major
The major requirements for the B.A. and B.S. degrees in Sociology/Law and Society are as follows:

For the Bachelor of Arts
Sociology Department requirements (14 courses [at least 56 units])

The Law and Society major is open to undergraduate students with junior standing who have completed LWSO 100 with a grade of “C” or higher. Students will not be admitted into the major until lower-division Sociology requirements are satisfied. All courses in the major must be taken for a letter grade.

1. Lower-division courses (17 units)
a) BUS 010, BUS 020
b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
c) CS 008 (may be used to satisfy breadth requirements)

2. Upper-division courses (20 units)
a) Two courses (8 units) from the list below:
   (1) ECON 102 or ECON 104A or ECON 130 or BUS 162/ECON 162
   (2) PSYC 140 or PSYC 142
   (3) SOC 150 or SOC 151 or SOC 171
   (4) POSC 181 or POSC 182 or POSC 183
   (5) ANTH 127 or ANTH 131
   These two courses must be outside the discipline of Sociology and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.
b) A three-course track (12 units) in Business Administration courses from one of the following:
   (1) Organizations (General): ANTH 105/BUS 158, BUS 100, BUS 107, BUS 176/SOC 176, SOC 150, SOC 151
   (2) Human Resources Management/Labor Relations: BUS 100, BUS 107, BUS 153/ECON 153, BUS 155, BUS 157, ECON 152, PSYC 142
   (3) Business and Society: BUS 100, BUS 102, BUS 107, PHIL 116, POSC 182, POSC 186
   (4) Marketing: BUS 103, and two from BUS 112, BUS 113, BUS 114, BUS 117
   (5) Managerial Accounting/Taxation: BUS 108, and two from BUS 166, BUS 168A, BUS 168B
   (7) Finance: BUS 106/ECON 134 and two from BUS 134, BUS 136, BUS 137, BUS 138, BUS 139
   (8) Management Information Systems: BUS 101, BUS 171, BUS 173
   (9) Production Management: BUS 104/STAT 104, and two from BUS 105, BUS 122, BUS 127/STAT 127
The Department of Sociology offers the M.A. and Ph.D. degrees in Sociology. The graduate program in Sociology is designed to prepare students for research and teaching careers in the discipline of sociology. The graduate program is designed as a full-time course of study for students seeking the Ph.D. degree. The M.A. degree in Sociology is awarded as part of a student’s required progress toward admittance into the Ph.D. program in Sociology. The Department of Sociology does not award an M.A. degree to a student who already received an M.A. degree in Sociology from another institution.

### Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

### Sociology Undergraduate Honors Program

Students who meet the departmental requirements for academic excellence are invited at the end of their junior year to participate in the Sociology Undergraduate Honors Program during their senior year. The students enroll in SOC 195 to work on an honors thesis under the supervision of a faculty member, for a total of 12 units distributed over three quarters. Students in the program also participate in SOC 199H, a year-long seminar led by the chair of Undergraduate Affairs Committee, for which they receive a total of 3 additional units of credit.

### Graduate Program

The Department of Sociology offers the M.A. and Ph.D. degrees in Sociology. The graduate program in Sociology is designed to prepare students for research and teaching careers in the discipline of sociology. The graduate program is designed as a full-time course of study for students seeking the Ph.D. degree. The M.A. degree in Sociology is awarded as part of a student’s required progress toward admittance into the Ph.D. program in Sociology. The Department of Sociology does not award an M.A. degree to a student who already received an M.A. degree in Sociology from another institution.
undergraduate or graduate Sociology classes

2. Performance on the GRE

3. Letters of reference from persons familiar with an applicant’s potential for achieving academic excellence

4. The extent to which an applicant’s areas of expressed interest coincide with teaching and research emphases in the department

Applicants to the graduate program in Sociology are encouraged to submit a copy of a professional or term paper with their application for consideration in the admissions process. In general, students are admitted for the fall quarter of each academic year. Applicants to the graduate program for mid-year admissions are not recommended because the sequence of core courses is designed to begin with the fall quarter. The deadline for an application for admission for the fall quarter is December 15. Also the deadline for various university fellowship programs. A detailed statement of degree requirements and procedures for the graduate degree is available at sociology.ucr.edu/academic/graduate.html. General university requirements of the Graduate Division are at www.gradient.ucr.edu and in the Graduate Studies section of this catalog.

The graduate program is designed to allow students to proceed through three distinct stages in their pursuit of the Ph.D. degree: the basic core program, the period of specialization, and writing the dissertation.

Basic Core Program All students must complete the basic core program, regardless of whether they hold a baccalaureate or master’s degree at the time of admission. A student is expected to complete the basic core program in not less than three and not more than six academic quarters. The chair of the graduate affairs committee advises students about the core program.

Course Requirements for the Core Program

1. In the core program, the minimum requirement is 42 units of academic work with no grade less than a “B.” Work in the basic core courses must be distributed as follows:
   a) Core sequence in theory: SOC 202A, SOC 202B
   b) Core course in research design: SOC 200
   c) Core sequence in qualitative methodology: SOC 204A, SOC 204B
   d) Core sequence in statistics: SOC 203A, SOC 203B
   e) Proseminar in Sociology: SOC 232
   f) Research colloquium: SOC 293 (required once each year until student is advanced to candidacy)
   g) Research practicum: SOC 250
   h) A minimum of one course from each of two specialization areas

Note: Students who have had extensive graduate training in a core course area at another graduate school may submit a petition to the graduate affairs assistant for possible course substitution which may exempt students from a core requirement.

M.A. Thesis and Oral Examination Each student must complete a thesis for completion of the master’s degree. This paper reflects the student’s areas of theoretical and substantive interest since entrance into the program, and it is written in a form, content, and style appropriate for publication or presentation to a sociological audience. A three-person faculty committee oversees the evaluation of the paper and the oral defense of the thesis. The thesis must be completed by the end of the student’s sixth quarter of enrollment. The thesis must be submitted electronically to the Graduate Division, following the formatting guidelines provided on the Graduate Division web page.

On the basis of a favorable recommendation from the three-person faculty committee, the faculty votes to recommend the awarding of the M.A. degree in Sociology. If the M.A. is awarded or if the student already has an M.A. in Sociology, the faculty then votes on whether the student should continue in the Ph.D. program. If a student is allowed to continue in the Ph.D. program, the faculty then votes on whether to accept the two areas of specialization in which the student requests to be examined.

Professional Development Training Each student must complete the following professional training courses: SOC 232 and SOC 293. Normally SOC 232 (Proseminar in Sociology) is completed in the fall of the first year as part of the core program. SOC 293 (Research Topics in Sociology) is required once each year until a student is advanced to candidacy. In addition, SOC 301: Directed Studies in the Teaching of Sociology is required prior to or concurrent with the completion of teaching assistantships in the program.

Period of Specialization After admission to two areas of specialization (see M.A. Thesis and Oral Examination, above), students are expected to consult with faculty who constitute the membership of each standing specialization committee. Under the faculty’s guidance, a student is expected to work out a program of graduate seminars, directed reading courses, and research experiences that prepare the student for examination in the chosen two areas of specialization. The primary areas of specialization offered in the department are as follows:

1. Criminology and Sociolegal Studies
2. Social Psychology
3. Gender Studies
4. Organizations and Institutions
5. Political Economy and Global Social Change
6. Race and Class Inequality
7. Sociological Theory and Evolutionary Sociology

A student’s program must include at least one academic quarter of classroom teaching experience at the college level. A student must complete three courses in a primary specialization area and two courses in a secondary specialization area (see the Graduate Student Handbook on the department's website for the course requirements and options for each specialization) with a grade of “B” or better in each course. In addition, students are required to take one course outside their two areas of specialization and at least one course (or the equivalent. 4 units) of advanced methods with a grade of “B” or better in each course.

Examination Sequence

1. Standing committees composed of faculty in each area administer the written qualifying examinations in the student’s two areas of specialization. A student must complete written examinations in each of the two areas of specialization before the end of the fourth year of graduate study.

2. Upon completion of 1) the two written area examinations, 2) the selection of a dissertation committee approved by the graduate advisor, and 3) a dissertation proposal, the student must complete and pass an oral examination covering the areas of specialization and the dissertation proposal. The oral examination is conducted by a committee of at least five faculty members, including 1) at least one faculty member from each of the two specialization areas, 2) three members of the student’s dissertation committee (who may also represent the areas of specialization), and 3) one “outside member” from another department representing the faculty as a whole.

Students who pass the oral examination and all course requirements are advanced to candidacy for the Ph.D. degree.

Dissertation and Final Oral Examination The dissertation is normally completed within one year after advancement to candidacy. After the dissertation is prepared according to the rules and format of the Graduate Division and signed and approved by a student’s dissertation committee, an oral defense of the dissertation is held. The defense may be waived in exceptional circumstances. The dissertation must be filed electronically with the Graduate Division.

Lower-Division Courses

SOC 001 Introduction to Sociology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Covers the basic concepts and theories relating to the study of humans as participants in group life, analysis of culture, social institutions, personality development, and processes of social interaction. Credit is only awarded for one of SOC 001 or SOC 001H.

SOC 001H Honors Introduction to Sociology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to SOC 001. An in-depth look at concepts and theories relating to the study of humans as participants in group life, analysis of culture, social institutions, personality development, and processes of social interaction. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of SOC
SOC 002 (E) Sociological Foundations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 OR SOC 001H. Selected topics which promote critical thinking skills essential for success in upper-division sociology courses. For hours and prerequisites, see segment descriptions.

SOC 002F The City (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. An introductory exploration of urban processes. Examines definition, form, structure, and growth of urban regions as seen from the viewpoints of various disciplines.

SOC 002G Introduction to Global Change and Inequality (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. Introduces basic concepts and perspectives in the macro-comparative study of social change and inequality worldwide. Explores causes and consequences of globalination in the arenas of economy, polity, and culture. Emphasizes its impacts upon various forms of inequality worldwide.

SOC 002H Inequality in American Society (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. Examines inequality in modern American society and how gender, race, ethnicity, and social class maintain inequality.

SOC 002I Juvenile Delinquency (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. Analyzes the nature and patterning of crime and delinquency and juvenile justice in American society. Emphasizes diverse models for administering justice, including pre-court stages, intake procedures, custody treatment, detention and release, adjudication, disposition, and post-adjudicationary supervision (including institutionalization).

SOC 002M Introduction to Criminology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. Analyzes the nature and patterning of crime, criminal and legal methodological issues encountered in research. Examines explanations and crime control policies regarding linkages among social conflicts and inequalities, criminal laws and enforcement practices, and social deviance.

SOC 002R Racial and Ethnic Issues in American Society (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. Introduces issues and topics associated with racial and ethnic populations in U.S. society. Focuses on social processes that stratify American society by ethnicity and race.

SOC 002S Social Problems (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. The application of major sociological theories, concepts, and perspectives to the study of social problems in contemporary society. Utilizes an analytical approach.

SOC 003 Theoretical Perspectives in Sociology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. Introduces basic concepts and theoretical approaches that sociologists use to understand the social world. Prepares for upper-division sociology courses by examining major issues in sociology through the lens of different theoretical perspectives. Credit is awarded for only one of SOC 003 or SOC 003H.

SOC 003H Honors Theoretical Perspectives in Sociology (4) Lecture, 3 hours; discussion, 1 hour, written work, 1 hour; extra reading, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. SOC 001 or SOC 001H. Honors course corresponding to SOC 003. Introduces the basic concepts and theoretical approaches that sociologists use to understand the social world. Prepares for upper-division sociology courses by examining major issues in sociology through the lens of different theoretical perspectives. May be taken for letter grade only. Credit is awarded for only one of SOC 003 or SOC 003H.

SOC 004 Methods of Sociological Inquiry (5) Lecture, 3 hours; discussion, 1 hour; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H with a grade of “C-” or better. Applies the fundamentals of science to social research. Investigates problems of research design, sampling, measurement of social phenomena, conduct of field studies, and interpretation of qualitative and quantitative social data.

SOC 005 Statistical Analysis (5) Lecture, 3 hours; discussion, 1 hour; outside research, 3 hours. Prerequisite(s): SOC 004 with a grade of “C-” or better. Covers logical and procedural aspects of the application of statistical methods for data reduction and hypothesis testing in sociology. Includes distributions, tabulations, central tendency, variability, independence, contrasts, correlation and regression, and nonparametrics.

SOC 010 The Sociological Imagination (4) Lecture, 3 hours; extra reading, 7 hours; written work, 2 hours. Prerequisite(s): none. Designed to fulfill the breadth requirement for non-sociology majors in the humanities, arts, and social sciences. Introduces the sociological imagination through films and popular readings. Teaches sociological concepts as a means to think analytically about the social world and its diverse populations.

SOC 011 Introduction to Applied Demography (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 004 with a grade of “C-” or better. Examines the evolution of theoretical demographers, including terminology, materials, and analytic tools.

SOC 020 American Society (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): none. Examines the culture and structure of American society. Topics include beliefs, key institutions, community patterns, and systems of inequality.

SOC 021 Technology, Society, and Culture (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. Examines the co-evolution of material technology, society, and culture in societies up to the post-industrial era. Explores processes of innovation and diffusion of innovations, as well as anticipated and unanticipated consequences of technology for society and culture.

SOC 028 Introduction to the Sociology of Gender (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduces gender as a system of inequality that organizes social life and shapes the distribution of resources, power, and privilege in ways that benefit men over women, including the social construction of gender in everyday life and the gendering of organizations and institutions such as the workplace.

SOC 030 Identity and Society (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): none. Studies the nature of the self, one’s identities, and their role in social behavior. Examines the processes of self-verification, self-esteem, self-efficacy, and authenticity using social psychological theories. Introduces research methods that allow the study of self and identity processes.

SOC 031 Couples and Families (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Examines the nature of the family, family life and the gendering of family life and the gendering of relationships. Focuses on how inequality and diversity affect loving and family relations. Discusses the dynamics of gender inequality among families and couples and how family life is shaped by race and ethnicity, social class, gender, and sexuality.

Upper-Division Courses

SOC 110 Multivariate Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a grade of “C-” or better. Involves computer analysis of social and behavioral data using statistical inference, multiple-regression, simulation, and multivariate nonparametric techniques.

SOC 112 Sociology of the Labor Movement (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Introduces sociological literature related to the labor movement. Provides a comparative and historical overview of research on unions, workers’ centers, and other organizational forms and collective actions through which working-class people have sought to improve their working and living conditions. Credit is awarded for only one of SOC 112 or SOC 112S.

SOC 112S Sociology of the Labor Movement (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; outside research, 4 hours; term paper, 4 hours. Prerequisite(s): SOC 001 or SOC 001H. Introduces sociological literature related to the labor movement. Provides a comparative and historical overview of research on unions, workers’ centers, and other organizational forms and collective actions through which working-class people have sought to improve their working and living conditions. Credit is awarded for only one of SOC 112 or SOC 112S.

SOC 120 Human Social Institutions (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 003 with a grade of “C-” or better or consent of instructor. A comparative analysis of the historical and evolution-ary development of basic human institutions including economy, kinship, religion, polity, law, education, medicine, and science. Emphasizes the historical emergence and differentiation of institutions and the dynamic interconnections among institutions in contemporary societies.

SOC 121 Sociology of the 1960s (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H or consent of instructor. A sociological approach to the economic, political, and cultural events of the 1960s. Examines the impact of such phenomena as civil rights, popular culture, theology, and political participation. Discusses the present-day legacy including personal histories of former activists. Credit is awarded for only one of SOC 121 or SOC 121S.

SOC 121S Sociology of the 1960s’ (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; outside research, 4 hours; term paper, 4 hours; written work, 4 hours. Prerequisite(s): SOC 001 or SOC 001H or consent of instructor. Introduces sociological literature related to the labor movement. Provides a comparative and historical overview of research on unions, workers’ centers, and other organizational forms and collective actions through which working-class people have sought to improve their working and living conditions. Credit is awarded for only one of SOC 121 or SOC 121S.

SOC 122 Social Change (5) Lecture, 3 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 003 with a grade of “C-” or better or consent of instructor. A study of patterns of social change, resistance to change, and change-producing processes and agencies.

SOC 123 Human Societies (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 003 with a grade of “C-” or better or consent of instructor. Analyzes the emergence and development of human societies from hunters and gatherers to horticultural, agrarian, and industrial forms of social organization. Explores social networks, societal change, the transition from food collecting to food producing, early Germanic societies, the rise of the West, and the causes of the Industrial Revolution.

SOC 125 Evolutionary Sociology (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): SOC 003 with “C-” or better or consent of instructor. Examines the objectives and scope of a cross-section of approaches that use evolutionary reasoning to examine overarching topics as social evolution, human evolution, our primate...
heritage, neurobiology, and human nature.

SOC 127 Sociological Determinants of Health (4) Lecture, 3 hours; discussion, 1 hour; extra reading, 5 hours; outside research, 5 hours. Prerequisite(s): SOC 001 or SOC 001H with a grade of “C-” or better. Introduces the role that social factors play in shaping the occurrence and distribution of disease and death in populations with an emphasis on socioeconomic status, race, social relationships and social stress. A particular emphasis is placed on sociological origins of health inequalities.

SOC 128 Chicanos Sociology (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of the Mexican experience in U.S. society. Explores the history as a minority; mass migration in the twentieth century; relationships with American institutions; present social economic situations from region to region; political emergence and variations in values; and social relations and integration with non-Mexicans. Cross-listed with ETST 128. Credit is awarded for only one of ETST 128/SOC 128 or ETST 128S/SOC 128S.

SOC 128S Chicanos Sociology (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; individual study, 4 hours; outside research, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of the Mexican experience in U.S. society. Explores the history as a minority; mass migration in the twentieth century; relationships with American institutions; present social economic situations from region to region; political emergence and variations in values; and social relations and integration with non-Mexicans. Cross-listed with ETST 128S. Credit is awarded for only one of ETST 128/SOC 128 or ETST 128S/SOC 128S.

SOC 129 Racism in Western Society (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. An analysis of the origins, character, maintenance, and consequences of racism in Western society focusing on the United States.

SOC 130 Race and Ethnic Relations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with “C-” or better or consent of instructor. A study of underrepresented racial and ethnic groups. Involves a comparative analysis of the dynamics and consequences of discrimination of racial and ethnic groups in the United States.

SOC 131 (E-Z) Selected Ethnic Groups (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. In-depth studies of particular ethnic groups in the United States. Treats a specific ethnic group for an entire quarter: F. Black Americans; 001 or SOC 001H. In-depth studies of particular ethnic groups for an entire quarter: F. Black Americans; 001 or SOC 001H; extra reading, 3 hours; extra reading, 4 hours; outside research, 4 hours. Prerequisite(s): SOC 001 or SOC 001H. Analysis of the sources of social conflict, especially class conflict. Studies social movements arising out of such conflicts, which attempt to bring about fundamental social change. Credit is awarded for only one of SOC 135 or SOC 135S.

SOC 135 Conflict (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Analysis of the sources of social conflict, especially class conflict. Studies social movements arising out of such conflicts, which attempt to bring about fundamental social change. Credit is awarded for only one of SOC 135 or SOC 135S.

SOC 135S Conflict (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 4 hours; outside research, 4 hours; term paper, 4 hours. Prerequisite(s): SOC 001 or SOC 001H. Analysis of the sources of social conflict, especially class conflict. Studies social movements arising out of such conflicts, which attempt to bring about fundamental social change. Credit is awarded for only one of SOC 135 or SOC 135S.

SOC 136 American Asians (4) Lecture, 3 hours; extra reading, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Examines two waves of Asian immigration: the late nineteenth- and early twentieth-century immigrations from China, Japan, and the Philippines; and the post-1965 “new immigration” from Southeast Asia, Korea, and Taiwan. Emphasizes the experiences of immigrants, adaptation of Asians to the United States, and society’s reactions to their presence. Credit is awarded for only one of SOC 136 or SOC 136S.

SOC 136S American Asians (5) Lecture, 5 hours; discussion, 1 hour; extra reading, 3 hours; outside research, 2 hours; term paper, 3 hours; written work, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Examines two waves of Asian immigration: the late nineteenth- and early twentieth-century immigrations from China, Japan, and the Philippines; and the post-1965 “new immigration” from Southeast Asia, Korea, and other parts of Asia. Considers causes of immigration, adaptation of Asians to the United States, and society’s reactions to their presence. Credit is awarded for only one of SOC 136 or SOC 136S.

SOC 136S Asian Americans (5) Lecture, 3 hours; extra reading, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. Introduction to the study of human populations including theories, concepts, and measures. Explores the social causes and consequences of population trends. Emphasizes population problems including population growth, fertility, migration, and mortality.

SOC 137 Population (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. Involves the study of fundamental social change. Credit is awarded for only one of SOC 136 or SOC 136S.

SOC 138S Asian Americans (5) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 or SOC 001H. An introduction to law, jurisprudence, and legal reasoning focusing on the roles that race, class, gender, culture, and language play in law and jurisprudence. Includes an overview of the development of modern American legal thought and various schools of jurisprudence such as legal realism. Discusses modern challenges to legal formalism, critical legal studies, critical race theory, and feminist jurisprudence. Analyzes the equal protection doctrine and recent legal attacks on affirmative action and immigrants.

SOC 139 Family Violence (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. A comparative and historical treatment of the family. Explores major theoretical developments for conceptualizing the family as a social system within the context of the relation between social structure and family group processes.

SOC 139 Family Violence (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. A comparative and historical treatment of the family. Explores major theoretical developments for conceptualizing the family as a social system within the context of the relation between social structure and family group processes.

SOC 140 The Sociology of Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): GSST 001 or SOC 001H with a grade of “C-” or better or consent of instructor. A comparative and historical treatment of the family. Explores major theoretical developments for conceptualizing the family as a social system within the context of the relation between social structure and family group processes.

SOC 140 The Sociology of Women (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): GSST 001 or SOC 001H with a grade of “C-” or better or consent of instructor. A comparative and historical treatment of the family. Explores major theoretical developments for conceptualizing the family as a social system within the context of the relation between social structure and family group processes.

SOC 141 Men and Masculinity (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. A comparative and historical exploration of the social and personal meanings of masculinity focusing on the American experience. Topics include socialization, sports and war, friendship, intimacy, sexuality, fathering, and work. Concentrates on the role of masculinity in systems of gender inequality.

SOC 142 Sociology of the Family (5) Lecture, 3 hours; discussion, 1 hour; field, 3 hours. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. A comparative and historical treatment of the family. Explores major theoretical developments for conceptualizing the family as a social system within the context of the relation between social structure and family group processes.

SOC 143 Urban Sociology (5) Lecture, 3 hours; extra reading, 3 hours; field, 3 hours. Prerequisite(s): SOC 005 or SOC 001H or consent of instructor. A comparative examination of metropolitan and other urban communities, with emphasis on processes of urbanization. Cross-listed with URST 145.

SOC 144 Family Violence (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. A comparative and historical treatment of the family. Explores major theoretical developments for conceptualizing the family as a social system within the context of the relation between social structure and family group processes.

SOC 145 Law and Subordination (5) Lecture, 3 hours; field, 6 hours. Prerequisite(s): upper-division standing in Ethnic Studies or Sociology; ETST 128/SOC 128 or ETST 128S/SOC 128S. A comparative and historical analysis of subordinated communities and law emphasizing integrating theoretical understanding of racial, class, and gender subordination. Includes field experience working directly with groups that have traditionally lacked equal access to the legal and judicial system. Cross-listed with ETST 145.

SOC 146 Gender in Global Perspective (4) Lecture, 3 hours; extra reading, 3 hours; written work, 3 hours. Prerequisite(s): GSST 001 or SOC 001H or GSST 001S or SOC 001H. SOC 028. Examines gender using global and comparative perspectives. Explores how gender is constructed in different societies. Proves the relationship between gender and globalization. Considers resistance to global processes that create and reinforce gender inequalities.

SOC 147 Corrections (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. Involves a review, analysis, and criticism of the major techniques of reeducation of adult and juvenile offenders. Surveys the history, application, and theory of probation, parole, incarceration, and delinquency prevention programs. Discusses the methods involved in evaluating the effectiveness of correctional programs. May provide opportunities for field work.

SOC 148 Special Topics Discussion in Sociology (2) Discussion, 2 hours; written work, 2 hours; extra reading, 2 hours. Prerequisite(s): upper-division standing in Sociology or consent of instructor. Selection of topics in Sociology through readings, weekly papers, and active student participation in seminar discussions. Topics and content of the course varies and are announced as the course is offered. Course is repeatable as topics change for a maximum of 8 units.

SOC 149 Organized Crime (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 005 with a “C-” or better or consent of instructor. A review of the operations, structures, history, and theories of syndicated crime in the United States. Emphasizes the implications of organized crime on the development of criminological theory, the operation of formal organizations, and American ethnic relations.

SOC 150 The Sociology of Economic Organizations (4)
Sociology / 444

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines how the scope and nature of formal and informal organizations are shaped by sociological processes external to them, such as the influence of governments, institutions, networks, and resources. Illustrates the processes with examples from contemporary United States and from other periods and cultures.

SOC 151 Formal Organizations (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the structures, how they operate to restrict individual networks, corporate and elite networks, and personal work. Topics include neighborhood and community organizations on local social systems.

SOC 152 Qualitative Research Seminar with a Focus on Occupations (2) Seminar, 1 hour; outside research, 3 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing in Sociology or consent of instructor. Provides undergraduate Sociology majors with intensive training in qualitative research data collection and analysis. Presents the opportunity for hands-on practice in interviewing and qualitative data analysis. Includes conducting audio-recorded interviews, transcribing and analyzing them, and presenting a final research report. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeated as content changes to a maximum of 6 units.

SOC 153 Sexualities (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 005 and SOC 028 with grades of "C-" or better or consent of instructor. Examines the evolution of knowledge about sexuality; historical and cultural variations in sexual norms and identities; sexual politics and popular culture; and the social control of sexuality (e.g., moral panics, sexual violence, and state regulation of sexual identities or practices).

SOC 154 Sport and Gender (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 with a grade of "C" or better or SOC 01H with a grade of "C-" or better; SOC 004 with a grade of "C-" or better. Considers the intersection of politics, economics, society, culture, and representation in sport. Combines theoretical work and applied study related to sociological theory and cultural studies. Assumes that gender is a fundamental factor in sport and vice versa.

SOC 155 (E-Z) Topics in the Sociology of Gender (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H; SOC 028. Intensively studies selected topics in the sociology of gender. E. Feminist Movements in the United States; G. Queer Theory. Segments are repeatable.

SOC 156 Community (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Involves a historical and comparative treatment of the community as a social system; political and economic forces shaping the sense of community; and influences of final research report, and bureaucratisation on local social systems.

SOC 157 Social Networks (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 003 with a grade of "C-" or better or consent of instructor. Examines the linkages among individuals in social networks. Topics include neighborhood and community networks, corporate and elite networks, and personal "ego" networks. Examines the dynamics of social structures, how they operate to restrict individual behavior, and how they convey resources for social support and career success.

SOC 158 Sociology of Religion (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 004 and SOC 005 with grades of "C-" or better, or consent of instructor. A comparative and analytic treatment of religion as a social institution. Focuses on the relationships of religion and other social institutions with particular emphasis on the American experience. Topics include religion as an agent of change, as well as stability in society.

SOC 159 Sociology of Law (5) Lecture, 3 hours; discussion, 1 hour; field, 3 hours. Prerequisite(s): SOC 001 with a grade of "C" or better or SOC 01H with a grade of "C-" or better. SOC 004 with a grade of "C-" or better. Introduction to social scientific perspectives and research on the nature, sources, dimensions, and impact of law. Particular attention is given to the "values question" in defining and studying law as a set of social phenomena; conceptual issues and methodological strategies in establishing and interpreting linkages between legal and other social structures and processes; and analyzing the uses and limits of law in maintaining order and promoting social change.

SOC 160 Sociology of Education (5) Lecture, 3 hours; discussion, 1 hour; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative analysis of educational institutions in complex societies and their relation to a society's political and economic structure. Examines the school as a societal subsystem consisting of teacher, student, and administrative roles with its own evolving subculture.

SOC 161 Immigration and Society (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Examines the linguistic diversity that has characterized the socio-historical development of United States society.

SOC 162 Linguistic Diversity in the United States (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Examines the linguistic diversity that has characterized the socio-historical development of United States society.

SOC 163 Social Forces and the Educational Condition of Chicana/o Community (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 01H. Examines the social forces that have shaped the Chicana/o educational condition and evaluates models in the sociology of education that explain their educational situation.

SOC 164 Racial and Ethnic Diversity Issues in Higher Education (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Examines the social forces that have shaped the Chicana/os' educational condition and evaluates models in the sociology of education that explain their educational situation.

SOC 165 Socialization and Personality (4) Lecture, 3 hours; discussion, 1 hour; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Examines the regional and social variation in language use within the Chican/o community. Focuses on the maintenance of Spanish language by Chicanos. Also examines language, the need for bilingual social services, language as a human right versus language as a constitutional right, and the political economy context of language. Also addresses general sociolinguistic theory and methodology.

SOC 166 Development of Sociological Theory (5) Lecture, 3 hours; discussion, 1 hour; written work, 3 hours. Prerequisite(s): SOC 003 and SOC 005 with grades of "C-" or better or consent of instructor. Covers the emergence of sociology as a systematic discipline. Provides a critical analysis of sociological theory from 1850 to 1920. Includes the theories of Comte, Tocqueville, Spencer, Marx, Simmel, Weber, Durkheim, and others from this period.

SOC 167 The Sociology of Work in Organizations (4) Lecture, 3 hours; discussion, 3 hours. Prerequisite(s): SOC 001 or SOC 001H and SOC 004 and SOC 005 with grades of "C-" or better, or consent of instructor. Examines organizational models that challenge the alleged superiority of bureaucratic organization. Topics range from cooperatives, professional partnerships, and worker-owned firms to the use of participative management, autonomous teams, and employee stock ownership in otherwise conventionally owned firms. Recommended for Business Administration majors.

SOC 168 Modern Sociological Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 003 and SOC 005 with grades of "C-" or better or consent of instructor. An analysis and critical evaluation of sociological theory from 1920 to the present. Explores the growth of current sociological theories and recent trends in conceptual formulations.

SOC 171 Alternatives to Bureaucratic Organizations (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): SOC 005 with a grade of "C-" or better or consent of instructor. Examines organizational models that challenge the alleged superiority of bureaucratic organization. Topics range from cooperatives, professional partnerships, and worker-owned firms to the use of participative management, autonomous teams, and employee stock ownership in otherwise conventionally owned firms. Recommended for Business Administration majors.

SOC 173 Social Psychology: Sociological Orientation (5) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): SOC 003 and SOC 005 with grades of "C-" or better or consent of instructor. A study of the sociological contributions to theory and research in social psychology. Focuses on the relationship between culture and group life to human behavior and personality.

SOC 174 Socialization and Personality (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 003 and SOC 005 with grades of "C-" or better or consent of instructor. Examines the role of socialization from various theoretical perspectives with emphasis on the impact of patterns of child rearing on personality development. Provides a historical and cross-cultural treatment focusing on the relationship among family, social structure, and socialization processes.

SOC 175 Social Roles and Interaction (4) Lecture, 3 hours; discussion, 3 hours. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 004 and SOC 005 with grades of "C-" or better, or consent of instructor. Covers the nature of face-to-face contact between persons in everyday life. Examines the relationship among the self, social roles, and communication in the day-to-day activities of people in informal groups, closed establishments, and public contacts.

SOC 176 The Sociology of Work in Organizations (4) Lecture, 3 hours; discussion, 3 hours. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 004 and SOC 005 with grades of "C-" or better, or consent of instructor. Examines the role of socialization from various theoretical perspectives with emphasis on the impact of patterns of child rearing on personality development. Provides a historical and cross-cultural treatment focusing on the relationship among family, social structure, and socialization processes.

SOC 177 Social Psychology: Sociological Orientation (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 030. Intensively studies selected topics in social psychology such as the individual and social change, attribution theory, experimentation in social psychology, exchange and consistency theories in social psychology, and applied social psychology. E. Social Psychology of Gender; G. Theories of Interpersonal Behavior.

SOC 178 Sociology of Emotions (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 004 and SOC 005 with grades of "C-" or better, and SOC 173 or SOC 174 or SOC 175, or consent of instructor. Surveys theory and research on emotions. Focuses on sociological and social psychological theories. Also covers evolutionary, biological, and cognitive theories. Studies a range of emotions such as shame and embarrassment; guilt, empathy, and sympathy; jealousy and envy; and anger.

SOC 179 Social Movements and Collective Action (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 004 and
SOC 005 with grades of "C" or better, and SOC 168 or SOC 169, or consent of instructor. Examines the emergence of outcomes and effects of collective action and political movements. Considers the conditions under which social movements develop and why they succeed or fail. Utilizes sociological theories to understand collective action and social movements. Includes analysis of the U.S. civil rights movement, feminist movement, and LGBT movement.

SOC 180 Deviance and Control (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): SOC 001 (or SOC 001H) and SOC 004 and SOC 005 with grades of "C" or better, or consent of instructor. An introduction to the sociological analysis of deviance as defined by informal and formal processes of social control in varying cultural, legal, and political contexts. Emphasizes the social construction and imposition of standards (norms) by which some personal and collective attributes are socially regulated and penalized, while others are positively evaluated and rewarded.

SOC 181 World-Systems and Globalization (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 002 (E-Z) with a grade of "C-" or better; and one of the following: ECON 101, PSYC 011, SOC 005, STAT 040, STAT 048 with a grade of "C-" or better, or consent of instructor. Systematic comparisons of societies and world-systems with emphasis on changes in the logic of social development.

SOC 182 Urban Problems (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An interdisciplinary examination of selected urban problems such as civil disorders, transportation, housing, welfare, and planning. Cross-listed with URST 182.

SOC 183 Environmental Sociology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Explores special topics in sociology. Emphasis on sociological implications of environmental reform; the nature of distributive questions. Proceeds with discussion of how to collect strategies for deriving theoretically informed empirical questions. Emphasizes the use of the general linear model for normal linear regression with continuous or categorical multiple independent variables. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 184 Environmental Sociology (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H and SOC 004 and SOC 005 with grades of "C" or better, or consent of instructor. A sociological approach to the study of mainstream environmental policies and non-governmental social movements. Considers both governmental and non-governmental policies as means to pursue environmental justice. Emphasizes the importance of systemic and social forces that influence political decision-making. Cross-listed with MAPP 184.

SOC 185 Population Forecasting (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H. Introduces the fundamentals of population forecasting, including terminology, materials, and methods.

SOC 186 Environmental Sociology (4) Seminar, 3 hours; assignment of remaining hours vary from segment to segment. Prerequisite(s): SOC 003 and SOC 004 with grades of "C-" or better, upper division standing in Sociology, or consent of instructor. For additional activity hours see individual segments. Aims to examine and evaluate the functioning of social systems. Topics include population and political economy, race, gender, and social inequality. May be taken Satisfactory (S) or No Credit (NC) grading is not available.

SOC 186E Mind, Brain and Society: Interdisciplinary Issues in Evolutionary Theory and Neurosociology (4) Seminar, 3 terms; term paper, 2 hours; individual study, 6 hours. Prerequisite(s): SOC 003 and SOC 004 with grades of "C-" or better, upper division standing in Sociology, or consent of instructor. Discusses selected topics in evolutionary theory and neurosociology focusing on mind, brain, and society. Satisfactory (S) or No Credit (NC) grading is not available.

SOC 186E Seminar in Micro Sociology (4) F Seminar, 3 hours; individual study, 6 hours, written work, 2 hours; extra reading, 1 hour. Prerequisite(s): SOC 003 and SOC 004 with grades of "C-" or better, upper division standing in Sociology, or consent of instructor. Seminar on the theoretical and empirical work on the dynamics of the mind (S). Examines emotions, motivations, status, roles, social structure, culture, interpersonal demography, and situational ecology. Satisfactory (S) or No Credit (NC) grading is not available.

SOC 187 Capstone Seminar in Sociology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 003 and SOC 004 with grades of "C-" or better, upper-division standing, a major in sociology. Examines selected topics in Sociology through readings, oral presentations, research and writing, and active student participation in seminar discussions. Course is repeatable as topics change to a maximum of 12 units.

SOC 190 Special Studies (1-5) Individual study, 3-15 hours. Prerequisite(s): upper-division standing; consent of instructor and Department Chair. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable to a maximum of 15 units.

SOC 195 Senior Thesis (2-4) Total credit may not exceed 12 units. Required for all participants in the department’s senior honors program, who must enroll for 4 units per quarter for a total of three quarters. Students wishing to undertake senior thesis projects outside the senior honors program, may enroll in SOC 195 for 2-4 units per quarter for one, two, or three quarters.

SOC 197 Research for Undergraduates (1-4) variable hours. Prerequisite(s): upper-division standing with consent of instructor. Directed original research. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 198-1 Individual Internship in Sociology (1-12) Written work, 1-12 hours; internship, 2-24 hours. Prerequisite(s): senior standing; grades of "C-" or better in SOC 001 or SOC 001H, SOC 004, and 12 upper-division units in sociology; consent of instructor. Individual internships in community agencies to observe community processes. Course is repeatable to a maximum of 16 units.

SOC 199H Senior Honors Research (1) Outside research, 3 hours. Prerequisite(s): senior standing in Sociology. Required for all participants in the department’s senior honors program. Must be taken in conjunction with SOC 195, and for a total of three quarters. Course is repeatable.

Graduate Courses

SOC 200 Research Design (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides basic training in research design for sociologists. Begins with strategies for deriving theoretically informed empirical questions. Proceeds with discussion of how to collect and analyze data most appropriate to answer such questions. This course is required for both the M.A. and Ph.D. in Sociology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 201 Research Perspectives: Quantitative Methods (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing; or consent of instructor. An analysis of methodological questions, conceptualization and measurement issues, survey research design, sampling strategies, principles of survey administration, experimental design, and data processing.

SOC 202A History of Sociological Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the development of sociological theory from 1830 to 1930, stressing the major ideas, concepts, and principles developed by early social theorists.

SOC 202B Contemporary Sociological Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 202A or equivalent. Examines sociological theory from 1930 to the present, stressing the major ideas, analyses, and principles developed by contemporary theorists.

SOC 203A Quantitative Methods I (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing in Sociology or consent of instructor. Covers principles of partial and joint association, variance, and statistical estimation and the use of the general linear model for normal linear regression with continuous or categorical multiple independent variables. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 203B Quantitative Methods II (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing in Sociology; SOC 203A or equivalent or consent of instructor. Covers generalizations of the general linear model to non-normal dependent variables. Also covers mixed models for data arising from nested, time-series, and pooled cross-sectional and time-series designs. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 204 Quantitative Methods II (4) Lecture, 3 hours; extra reading, 2 hours; outside research, 2 hours. Prerequisite(s): SOC 204A, graduate standing or consent of instructor. Designed to develop skills in conducting qualitative research. Emphasizes with the organization, interpretation/analysis, and presentation of textual data. Students who take this course to meet Sociology M.A. or Ph.D. requirements receive a letter grade; other students may be graded Satisfactory (S) or No Credit (NC) with consent of the instructor.

SOC 205 Category and Survival Data Analysis (4) Seminar, 3 hours; laboratory, 1 hour, extra reading, 2 hours. Prerequisite(s): SOC 203B, graduate standing or consent of instructor. Introduces the analysis of limited dependent variables in social science and epidemiologic research. Covers in detail survival analysis including recent advances and emerging controversies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 206 Proseminar in Quantitative Sociology (2) Seminar, 2 hours. Prerequisite(s): SOC 206A. Graduate standing or consent of instructor. Discusses sociological works in the quantitative tradition. Emphasizes developing and refining skills in quantitative methods. Normally graded Satisfactory (S) or No Credit (NC); but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 12 units.

SOC 208 Proseminar in Qualitative Sociology (2) Seminar, 1 hour, extra reading, 3 hours. Prerequisite(s): graduate standing in Sociology or consent of the instructor. Discusses sociological works in the qualitative tradition. Emphasizes developing and refining skills in qualitative methods. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the
instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 12 units.

SOC 210 Citizenship (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Considers theories of citizenship. Focuses on the intersection of politics, economics, and culture, combining theoretical work and applied study. Designed for graduate students interested in social and political theory, cultural studies, and cultural policy studies. Sociology graduate students who are not advanced to candidacy for the Ph.D. receive a letter grade; other students receive a letter grade or petition for a Satisfactory (S) or No Credit (NC) grade.

SOC 222 Evolutionary Sociology (4) Seminar, 3 hours; term paper, 3 hours. Prerequisite(s): graduate standing. Reviews theory and research within sociology on evolutionary concepts. Reviews current theories and methods of the evolutionary theory of societal evolution, rise and demise of inter-societal or world systems, and biological bases for human behavior, interaction, and social organization.

SOC 232 Proseminar in Sociology (2) Lecture, 2 hours. Prerequisite(s): admission to the graduate program. An orientation to sociology as a scholarly discipline and empirical science. Includes an overview of ethical standards and conflicts of interest of the American Sociological Association and training in seeking external fellowships and grants. Required of all first-year graduate students. Graded Satisfactory (S) or No Credit (NC).

SOC 240 Sociology of Gender (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 242 (E-Z) Sociological Theory (4)

SOC 242 (E-Z) Sociological Theory (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 202A or SOC 202B; graduate standing; consent of instructor. Advanced study in sociological theory: E. History of Theory, F. Issues in Contemporary Theory; G. Issues in Theory Construction; M. Macrostructural Analysis. May be graded Satisfactory (S) or No Credit (NC) with permission of Graduate Advisor.

SOC 243 (E-Z) Special Topics in Sociology (4) Lecture, 3 hours; assignment of the remaining hours varies from segment to segment. Prerequisite(s): graduate standing; consent of instructor. Critical analysis of current sociological theory and research in special areas of sociology. Covers a single topic not contained in a regular course. Each topic is announced when the course is offered. Students who take the course to meet specialization requirements receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

SOC 244 Institutional Analysis (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. The comparative and historical analysis of human social institutions, with emphasis on: (a) the emergence and development of the basic institutional systems of economy, polity, kinship, religion, law, and education; (b) the structure and process of these institutions in varying types of societies; (c) the interrelation of these institutions to each other and to other structuring processes. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 245 Large-Scale Organizations (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A review of the sociological literature on large-scale organizations. Provides an introduction to rational, political, ecological, economic, and institutional models of large-scale organizations. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 246 Race and Class Inequality (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the various theories of racial and class inequality. Areas covered will include social scientific explanations for racial and ethnic inequality; ideologically based justifications for racial and class inequality; intersection of caste, class, and race in world inequality; and strategies to end inequality. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 248 Core Course on Social Psychology (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A review of the sociological literature on social psychology. Students who take the course to meet specialization requirements receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

SOC 249 Contemporary Research and Theory in Criminology and Sociological Studies (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Review of basic research paradigms and methodology. Includes new developments and techniques for testing conditionall hypotheses and visualization. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 250 Thesis Preparation (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 200. Imparts the logic, process, and style of professional sociological research as students engage in supervised research integrating theory with data to satisfy the thesis requirements. Includes strategies to complete and communicate a thorough literature review, formulate theoretically driven empirical questions, report analytical results in a style consistent with professional standards. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 251 Current Research in Political Economy and Global Social Change (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): extra work or examination. Course is repeatable to a maximum of 12 units.

SOC 252 Research Practicum on Transnational Social Movements (2) Lecture, 2 hours; discussion, 1 hour; extra reading, 1 hour; written work, 1 hour; outside research, 1 hour. Prerequisite(s): graduate standing in Sociology. Examines the history of and current developments in transnational social movements, including inter-movement relations and North-South issues within movements, as well as the development of global civil society. Focuses on collaborative research projects, though may also include development of individual projects. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable for a maximum of 12 units.

SOC 253 Current Research in Organizations and Institutions (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Reviews current research in the field of political economy and global social change, with special emphasis on new developments and promising new directions. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 255 Current Research in Social Psychology (4) Seminar, 2 hours; outside research, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Reviews current theories and research and addresses future directions in social psychology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

SOC 255 (E-Z) Topics in Large-Scale Organizations (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced study of large-scale organizations: I. Organizational Theory; L. Methods of Organizational Research; M. The Sociology of Work; N. Economic Organization; O. Social Organization of Societies. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 256 Current Research in Feminist and Gender Sociology (4) Seminar, 2 hours; extra reading, 3 hours; written work, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Reviews current theory and research in feminist and gender sociology, with particular attention to new developments in the field. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units.

SOC 257 (E-Z) Topics in Institutional Analysis (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced seminars in institutional analysis: E. Economic Sociology; F. The Sociology of Family and Kinship; G. The Sociology of Education; J. Political Sociology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 258 Quantitative Macro Comparative Methods (4) Seminar, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Imparts methodological skills necessary to advance quantitative-macro comparative social science. Begins with the logic and trans-methodological concerns of macro-comparative analysis. Quantitative methods covered include models for static time-series cross-section and panel data, dynamic panel data, nested data, structural equations, social network analysis, and identification of causal issues. Focuses on advances in software and techniques for testing conditional hypotheses and visualization. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 259 Research Practicum on the Evolution of Settlements and Polities (2) Lecture, .5 hours; discussion, .5 hours; practicum, 1 hour; workshop, .5 hours; extra reading, 2.5 hours; individual study, 2.5 hours; outside research, 2.5 hours; written work, 2.5 hours. Prerequisite(s): graduate standing in Sociology. Focuses on ongoing collective research projects on the evolution of politics and settlements. Studies the growth and decline of human settlements and political systems through macrohistorical and evolutionary perspective including those in nomadic and small-scale sedentary societies, early states, and the emergence of empires and contemporary world cities. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable for a maximum of 12 units.

SOC 260 Research Practicum on the Evolution of Settlements and Polities (2) Lecture, .5 hours; discussion, .5 hours; practicum, 1 hour; workshop, .5 hours; extra reading, 2.5 hours; individual study, 2.5 hours; outside research, 2.5 hours; written work, 2.5 hours. Prerequisite(s): graduate standing in Sociology. Focuses on ongoing collective research projects on the evolution of politics and settlements. Studies the growth and decline of human settlements and political systems through macrohistorical and evolutionary perspective including those in nomadic and small-scale sedentary societies, early states, and the emergence of empires and contemporary world cities. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable for a maximum of 12 units.

SOC 261 World-Systems Analysis (4) Seminar, 4 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on social evolution, world-systems analysis, and globalization. Students who take the course to meet specialization requirements receive a letter grade; other students receive a letter grade or Satisfactory (S) or No Credit (NC) grade.

SOC 262 Feminist Theory (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Provides an overview of recent debates about theory and method in gender studies. Explores relationships between feminist theory, feminist practice, and social science. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 263 Women and Work in World Historical Sociology  / 446
Perspective (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Examines the role of women as workers in a variety of societies. Considers the role of women in development and the impact of development on women’s economic roles. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 264 (E-Z) Topics in Gender Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced study in the sociology of gender. E. Gender and Families; F. Domestic and Sexual Violence; G. The Sociology of Men; M. Gender in Comparative Perspectives; P. Gender, Politics, and Public Policy. T. Transnational Sex, Romance, and Marriage. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 265 (E-Z) Topics in Race and Class Inequality (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. A review of sociological literature on race and ethnic minorities, patterns of conflict and ethnic antagonism, and systems of dominance. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 268 Law, Race, Class, and Gender (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Presents an analysis of how issues of race, class, and gender shape legal thought and jurisprudence. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 278 Punishment and Correction: Evaluating Theories and Policies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Takes a critical and evaluative approach to the punishment and correctional systems, assessing what “works and doesn’t work” in efforts to reduce crime and delinquency. Examines prisons, probation, and other crime control measures from a perspective emphasizing the need for systematic evaluation research. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 280 (E-Z) Topics in Criminology and Sociological Studies (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced seminars in criminology and sociological studies. E. Patterns of Criminal and Deviant Behavior; F. Ecological Perspectives on Crime and Delinquency; G. Biological and Psychobiological Studies of Crime and Delinquency; I. Conflict and Radical Approaches in Criminology and Sociological Studies; J. Sociological Theories of Law; K. Law, Power, and Social Conflict; M. Political Criminality; S. Substance Use and Crime. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 282 Political Economy and Global Social Change (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on classical and contemporary political economy, social movements, and the historical development of social systems. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 282 International Migration (4) Seminar, 4 hours. Prerequisite(s): SOC 203A. A hands-on research course in the concepts, theories, and techniques used in the analysis of international migration. Covers the nature and origins of patterns and trends in global migration from colonial times to the twenty-first century. Provides experiences in the process of migration, migration policies, and current research on immigration. Course is repeatable.

SOC 285 (E-Z) Topics in Social Psychology (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Advanced study in family and social psychology. E. Theory in Social Psychology; G. The Interaction Process; I. Sociolinguistics; J. Social Psychology of Emotions; K. Small Groups; N. Social Psychology of Gender; S. Self and Identity. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.

SOC 290 Directed Research (1-6) scheduled research, 3-15 hours; consultation, 1 hour. Prerequisite(s): graduate standing and consent of instructor. This course is designed to provide students with reading and research work under the tutorial supervision of a faculty member in support of developing their knowledge of specialty areas and/or preparing original research work. With consent of the graduate advisor, this course may be taken for a letter grade to satisfy required seminars in the period of specialization. Regular seminars are not available. Otherwise course will be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 291 Individual Study in Coordinated Areas (1-12) Individual study, 3-36 hours. Prerequisite(s): graduate standing. A program of study designed to advise and assist candidates who are preparing for doctoral examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 293 Research Topics in Sociology (2) Lecture, 2 hours. Prerequisite(s): graduate standing in Sociology. A series of lectures by guests, faculty, and advanced graduate students on research topics in sociology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): graduate standing. Individual research performed under the direction of a faculty advisor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 299 Research for Thesis or Dissertation (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

SOC 301 Directed Studies in the Teaching of Sociology (2) Consultation, 1 hour; practicum, 3 hours. Prerequisite(s): consent of instructor; prior or concurrent enrollment in the Teaching Assistant Development Program offered by the Graduate Division. Discussion and evaluation of pedagogical techniques and materials used in the teaching of sociology at the college level. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 302 Teaching Practicum (2-4) Consultation, 1 hour; practicum, 3-9 hours. Prerequisite(s): teaching assistant status in the Sociology Department or consent of instructor. Supervised teaching in a college-level class. Deals with the problems and techniques of teaching, including handling discussions, preparation and grading of examinations and written work, and student-instructor relations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SOC 401 Grant Writing in the Social Sciences (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Presents an overview of successful grant writing. Topics include proposal planning, the grant writing process, logic and research model development, integrating proposal elements, and what to do if a grant is rejected. Participants actively develop a research proposal and review potential funding sources. Graded Satisfactory (S) or No Credit (NC).

Soil and Water Sciences

Subject abbreviation: SWSC
College of Natural and Agricultural Sciences

James Sickman, Ph.D., Director
Robert C. Graham, Ph.D., Graduate Advisor
soilwater.ucr.edu

Professors
Michael A. Anderson, Ph.D. Environmental Chemistry (Environmental Sciences)
David E. Crowley, Ph.D. Soil Microbiology (Environmental Sciences)
Jiangying “Jay” Gan, Ph.D. Environmental Chemistry (Environmental Sciences)
Robert C. Graham, Ph.D. Soil Mineralogy and Pedology (Environmental Sciences)
Daniel Schlenk, Ph.D. Aquatic Ecotoxicology (Environmental Sciences)
James Sickman, Ph.D. Watershed Hydrology and Biogeochemistry
Jiri Simunek, Ph.D. Hydrology (Environmental Sciences)
Laosheng Wu, Ph.D. Soil Physics (Environmental Sciences)
Marylynn V. Yates, Ph.D. Environmental Microbiology (Environmental Sciences)

Professors Emeriti
Christopher Amrhein, Ph.D. Soil Chemistry (Environmental Sciences)
Andrew C.-S. Chang, Ph.D. Agricultural Engineering (Environmental Sciences)
Walter J. Farmer, Ph.D. Soil Chemistry (Environmental Sciences)
William T. Frankenberg, Jr., Ph.D. Soil Microbiology (Environmental Sciences)
William A. Jury, Ph.D. Soil Physics (Environmental Sciences)
John Letey, Jr., Ph.D. Soil Physics (Environmental Sciences)
Lanny J. Lund, Ph.D. Soil Morphology, Genesis, and Classification (Environmental Sciences)
Albert L. Page, Ph.D. Soil Chemistry (Environmental Sciences)
David R. Parker, Ph.D. Soil Biogeochemistry (Environmental Sciences)
Paul J. Ziemann, Ph.D. Atmospheric Chemistry (Environmental Sciences)

Associate Professors
David M. Crohn, Ph.D. Biosystems Engineering (Environmental Sciences)

The graduate program in Soil and Water Sciences is not currently accepting new students. Students interested in graduate study in soil or water sciences can be accommodated in other graduate programs and are encouraged to contact the Environmental Sciences Student Affairs Offices at (951) 827-2441 for more information on how to apply.

Graduate Program

The graduate program in Soil and Water Sciences is administered by the Department of Environmental Sciences and offers both M.S. and Ph.D. degrees.

Admission

The university requires GRE General Test scores (verbal, quantitative, analytical). As well as fulfilling the university requirements for admission to the Graduate Division, students must satisfy certain program requirements.
Admission to the program requires a baccalaureate degree with preparation in both physical and life sciences. Students should have completed one year of general chemistry, as well as courses in general physics, organic chemistry, calculus through integrals, general biology, statistics, and physical geography or physical geography. Students who have not taken these courses are directed by the admissions and review committee and their major advisor to the appropriate curriculum to correct the deficiencies.

**Course Work** Students, in consultation with their advisory committee and other faculty as appropriate, develop a program of course work to satisfy the degree requirements and the career objective. A study list of required and elective courses must be completed by the end of the second quarter of study and submitted to the admissions and review committee.

Students must complete one course in each of the following four broad categories of soil and water sciences: chemistry, physics, biology, and natural structure and diversity. Students may have completed these prior to admission or they may take them early in their graduate program. Courses at UCR that meet the requirement of each category are listed below.

**Chemistry**
- ENSC 104 (Environmental Soil Chemistry)
- CHEM 136/ENSC 136 (Chemistry of Natural Waters)

**Physics**
- ENSC 107 (Soil Physics)
- ENSC 163 (Hydrology)

**Biology**
- ENSC 133/MCBL 133 (Environmental Microbiology)
- BPSC 134/ENSC 134 (Soil Conditions and Plant Growth)
- ENSC 141/MCBL 141 (Public Health Microbiology)

**Natural Structure and Diversity**
- ENSC 138/GEO 138 (Soil Morphology and Classification)
- ENSC 140 (Linnology)

Students must present a departmental seminar summarizing results of their thesis or dissertation or internship during the final quarter of matriculation.

For a complete description of the program’s requirements, students are referred to the Guidelines for Graduate Students available in the Environmental Sciences Student Affairs Office. Other general university requirements for advanced degrees are given in the Graduate Studies section of this catalog.

**Master’s Degree**

The Department of Environmental Sciences offers the M.S. degree in Soil and Water Sciences.

Only seminar courses, directed study, internship, thesis and dissertation hours may be taken on a Satisfactory (S)/No Credit (NC) basis.

**Plan I (Thesis)** Students must complete a minimum of 36 quarter units of graduate and upper-division undergraduate courses in, or significantly related to, soil and water sciences. At least 24 of the 36 units must be in graduate courses. A maximum of 12 of these units may be in graduate research for the thesis. No more than 4 units of SWSC 290 and 2 units of SWSC 250 may be applied toward the degree. Students must pass a final oral examination.

**Plan II (Comprehensive Examination)** Students must complete a minimum of 36 quarter units of graduate and upper-division undergraduate courses in or significantly related to soil and water sciences. At least 18 units must be in graduate courses. Students may count no more than 2 units of SWSC 250 and 6 units of SWSC 298-I toward the required 18 units and no units from graduate research for thesis or dissertation (SWSC 297 or SWSC 299).

Students take a comprehensive written examination that covers fundamental topics in soil and water sciences. The written exam, which is three to four hours long, is prepared and evaluated by a committee appointed by the department chair. The exam is taken during the latter part of the final quarter in the M.S. program. Students must wait at least eight weeks before retaking a failed examination. Students failing the examination twice are dismissed from the program.

**Doctoral Degree**

The Department of Environmental Sciences offers the Ph.D. in Soil and Water Sciences.

The Ph.D. program provides specialized, research-based training in a variety of soil and water sciences fields. In addition to the four core courses enumerated above, the minimum requirements for the Ph.D. degree include the following:

1. Complete all course work with an average GPA of 3.0 or greater
2. Pass both the written and oral qualifying examinations
3. Complete at least 4 units of Teaching Practicum (SWSC 302)
4. Submitting an approved research dissertation

**Course Work** Before advancement to candidacy, Students must complete all required course work as approved by their advisory committee with an average GPA of 3.0 or greater.

**Written and Oral Qualifying Examinations**

Students must pass written qualifying examinations administered by a five-member committee and an oral examination administered by the same committee; the latter includes the defense of an original research proposal. The examining committee must include one member from outside the graduate program. After successfully completing these examinations and complying with university rules, students are advanced to candidacy.

**Dissertation**

Students must submit a dissertation consisting of original research in the field of soil and water sciences. The dissertation must be accepted by a three-member dissertation committee. Students must then pass a final oral examination, which deals primarily with the dissertation and is conducted by the dissertation committee.

**Normative Time to Degree** 15 quarters

**Graduate Courses**

SWSC 203 Surface Chemistry of Soils (4) W, Odd Years Lecture, 4 hours. Prerequisite(s): CHEM 109 or CHEM 110A; ENSC 104; or consent of instructor. Quantitative description of the properties of and reactions at the soil-water interface including charge properties, the electric double layer, ion exchange, and surface complexation reactions.

SWSC 204 Environmental Organic Chemistry (4) Lecture, 4 hours. Prerequisite(s): CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LHB; CHEM 100 or CHEM 100A; or consent of instructor. EnSC 104 is recommended. Considers the properties and reactions of organic contaminants in soils and surface waters including partitioning, exchange, and transformation reactions.

SWSC 208 Ecotoxicology (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BIOL 005A, BIOL 005B, CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 08HLA; CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 08LHB; or consent of instructor. Introduction to the impact of chemicals upon ecological systems. Examination of the fate and effects of environmental chemicals in various hierarchies of biological organization to learn how to carry out precise and accurate assessments of ecological risk. Cross-listed with ENSC 208 and ENTX 208. Schlenk

SWSC 211 Microbial Ecology (3) §, Even Years Lecture, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Application of ecological principles to microbial communities. Emphasizes methods for analysis of diversity and community structure and statistical methods relating genetic and biochemical fingerprints to functional properties. Case studies explore applications for agriculture, disease biocontrol, and bioremediation of environmental contaminants. Cross-listed with MCBL 211.

SWSC 213 Soil Mineralogy (3) W, Even Years Lecture, 3 hours. Prerequisite(s): both CHEM 001C and CHEM 011C or both CHEM 01HC and CHEM 1HLC; GEO 001. ENSC 104 and ENSC 138/GEO 138 are recommended. Covers the composition, structure, and classification of minerals commonly found in soils. Focuses on the origin, occurrence, and properties of soil minerals in relation to chemical, pedologic, and geomorphic conditions. Includes theory of mineral identification techniques including X-ray diffraction, thermal and infrared analysis, and electron microcopy.

SWSC 213L Soil Mineralogy Laboratory (4) W, Even Years Discussion, 1 hour; laboratory, 9 hours. Prerequisite(s): concurrent enrollment in SWSC 213. Training in methods of soil mineralogical analysis, including sample preparation, X-ray diffraction, electron microscopy, thermal analysis, infrared spectroscopy, and surface area analysis. Data interpretation and presentation.

SWSC 217 Vadose Zone Processes (4) W, Even Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENSC 107, MATH 090B or MATH 099B; or consent of instructor. Studies physical and mathematical descriptions of transient flow and transport processes in the vadose zone. Emphasizes numerical solutions to equations describing the movement of water, gas, contaminants, and heat including chemical and biological reactions. Explores mathematical models for direct and inverse solutions, spatial heterogeneity, and determination of soil hydraulic properties. Cross-listed with ENSC 217.
449 / Programs and Courses

SWSC 226 Soil Geomorphology (4) F Lecture, 2 hours; laboratory, 6 hours; two Saturday field trips per quarter. Prerequisite(s): ENSC 138/GEOL 138, GEOL 162, or equivalents. Examines the interaction of pedogenic and geomorphic processes during the Quaternary with an emphasis on the rate of these processes. Group research includes field data collection and analysis. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Cross-listed with GEOL 226.

SWSC 232 Biogeochemistry (4) W, Odd Years Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing. Consists of three of the following lecture courses: the biogeochemical cycling and exchange of carbon and important nutrients (N, S, base cations) between the lithosphere, hydrosphere, and atmosphere. Quantitatively describes processes at scales ranging from local to global. Addresses modern concerns about water and atmospheric quality, including global climate change. Cross-listed with ENSC 232.

SWSC 299 Research for Thesis or Dissertation (1-12) Outside research, 3-36 hours. Graduate standing. Supervised research in Soil and Water Sciences or Environmental Sciences Courses. Required for all teaching assistants in Soil and Water Sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Course

SWSC 302 Teaching Practicum (1-4) F, W Practicum, 4-12 hours. Prerequisite(s): graduate standing. Supervised teaching in Soil and Water Sciences or Environmental Sciences Courses. Required for all teaching assistants in Soil and Water Sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Southeast Asian Studies Minor

Subject abbreviation: SEAS
College of Humanities, Arts, and Social Sciences
Christina Schwenkel, Ph.D., Director
Program Office, INTS 3111
(351) 827-5521; seatrip.ucr.edu

The SEATRIP Program at the University of California, Riverside—Southeast Asia: Texts, Rituals, Performance—brings together scholars who share an ongoing interest in the arts and humanities and are actively engaged with the languages and expressive cultures of Southeast Asia.

The Southeast Asian Studies minor is an interdepartmental program centered on the study of the arts and cultures of Southeast Asia. The scholars associated with the Program address regionally-specific texts, rituals, and performances. They seek to develop better understandings of the forms and practices through which ideas and ideologies are creatively expressed, shaped and communicated within and among different societies of Southeast Asia as well as the Southeast Asian diaspora.

1. Lower-division requirements (8 units)
   a) Four (4) units from lower lower-division lecture courses on Southeast Asian literature and culture:
      AST 049/HIST 049/SEAS 047, AST 062/CPLT 062, AST 063/CPLT 063, AST 064/MCS 049/VNM 064, AST 065
   b) Four (4) units chosen from above or from one of the Southeast Asian languages (Vietnamese/Indonesian/Tagalog).

2. Upper-division requirements (16 units): a) Sixteen (16) units in Southeast Asian literature and culture chosen from:
   b) No more than Four (4) units may count from performance ensemble courses.

Southeast Asian Studies Graduate Program

Subject abbreviation: SEAS
College of Humanities, Arts, and Social Sciences
Christina Schwenkel, Ph.D., Director
Program Office, INTS 3111
(951) 827-5521; seatrip.ucr.edu

Committee in Charge
Muhamad Ali, Ph.D. (Religious Studies)
David Biggs, Ph.D. (History)
Charmaine Craig, M.F.A. (Creative Writing)
Weihsin Gui, Ph.D. (English)
Tamara Ho, Ph.D. (Gender and Sexuality Studies)
Mariam Beeli Lam, Ph.D. (Comparative Literature and Foreign Languages)
René T.A. Leysoff, Ph.D. (Music)
Hendrik M.J. Maier, Ph.D. (Comparative Literature and Foreign Languages)
Sally A. Ness, Ph.D. (Anthropology)
Victoria Reyes, Ph.D. (Sociology)
Maria Santia See, Ph.D. (Media & Cultural Studies)
Christina Schwenkel, Ph.D. (Anthropology)
Deborah A. Wong, Ph.D. (Music)

Graduate Program

The Master's Program in Southeast Asian Studies is an interdepartmental program centered on the study of the arts and cultures of Southeast Asia and its diasporas. To understand Southeast Asia as a region, students need to make sense of and engage with its diverse expressive forms of culture (including visual arts, literature, and performance) which are crucial in building and maintaining individual as well as group identity both within and across national or ethnic boundaries. This program is designed for students with a strong interest in Southeast Asia, including those already admitted or enrolled in another graduate program. Students can be concurrent-ly enrolled in both the Southeast Asian Studies M.A. program and another graduate degree program. Students may also apply concurrently for the Southeast Asian Studies M.A. - Ph.D. Track in Anthropology, Comparative Literature, Ethnic Studies, History or Music.

Admission
All applicants must fulfill the standard admission requirements as established by the Graduate Division. Additionally, applicants must submit a Statement of Purpose to indicate a serious interest in Southeast Asian Studies (or a specific country or area in this region) as well as a writing sample (such as a past term paper or course essay) to demonstrate basic skills of scholarship.

Foreign Language
Students must acquire (or increase) a distinct level of proficiency in at least one language relevant to Southeast Asian Studies prior to beginning research for the thesis and no later than the fifth quarter in the program. The required proficiency can be demonstrated by way of an exam, by completing one year of course work with a “B” or better, or by alternate certification, including completion of an approved intensive summer language program. International students from Southeast Asia may use their native language to fulfill this requirement.

Course Work
All students are required to pass the Proseminar in Southeast Asian Studies (ANTH 203/CLPT 200/SEAS 200) with a “B” or better. Additionally, students must pass (with a “B” or better) a graduate level seminar in four of the following six areas (any 100-level course must be paired with SEAS 292):

1. Southeast Asian performance
2. Southeast Asian religions
   ANTH 257/RLST 253/SEAS 202, RLST 111, RLST 150/SEAS 150, RLST 208, RLST 252
3. Southeast Asian cultures
   SEAS 203/ANTH 203, ANTH 136/SEAS 136, ANTH 140I
4. History of Southeast Asia
   SEAS 204/HIST 242, AST 126/HIST 185/SEAS 185, AST 129/HIST 186/SEAS 186, AST 160/HIST 184/SEAS 184/VNM 184
5. Literatures of Southeast Asia
   SEAS 205/CLPT 205, AST 163/CLPT 163/SEAS 163, AST 167/CLPT 167/SEAS 167
6. Media in Southeast Asia
   SEAS 206, AST 187/MCS 167/SEAS 177, CLPT 173U/MCS 173U

In addition, students can select four other graduate seminars or approved upper division undergraduate courses in accordance with their main field of interest and after approval by the Graduate Advisor and the student’s Thesis Committee. A total of 40 units of coursework, including thesis, are required for the degree in
Southeast Asian Studies. Students concurrently enrolled in another graduate program may, when appropriate, include units earned in that program toward the 40 units of the M.A. in Southeast Asian Studies. However, there must be at least 36 units uniquely applied to the Southeast Asian Studies degree.

Plan I (Thesis) Students enrolled in the Southeast Asian Studies Graduate Program (for the terminal M.A.) must submit an essay (thesis) of 50-70 pages reflecting original research, written under the supervision of a member of the program who also functions as the chair of their Thesis Committee. At the beginning of the second year students should write a research proposal outlining their research project. Approximately ten pages in length this proposal should describe the aims of the research and provide a broader theoretical framework. After this is approved students begin to conduct individual research in the field or in the library. Students must enroll in a minimum of 4 units of Thesis Study (SEAS 299) or Directed Research (SEAS 297) under the supervision of a Southeast Asian Studies faculty. Before filing the thesis with the Graduate Division students must pass a formal oral examination.

Plan II (Comprehensive Exam) Students concurrently enrolled in another degree program requiring an M.A. thesis may (with the approval of the Southeast Asian Studies faculty) be awarded the M.A. degree by passing a comprehensive examination.

Concurrent Enrollment
Concurrent Enrollment students are enrolled in both the M.A. SEAS program and a Ph.D. program in a cooperating department. These students must complete the following 40 units to earn the degree:

- 20 units of core courses, listed above, unique to SEAS program.
- 4 courses from the 6 above areas
- 16 elective units can be from the home Ph.D. program with the approval of SEAS faculty.
- 4 units in either SEAS 297 or 299 toward completing the comprehensive exam or thesis.

M.A. – Ph.D. Track
M.A. – Ph.D. Track students are in the M.A. SEAS program and have been preliminarily accepted to a Ph.D. program in a cooperating department. These students must complete the following 40 units to earn the degree:

- 20 units of core courses, listed above, unique to SEAS program.
- 4 courses from the 6 above areas
- 16 elective units can be from the home Ph.D. program with the approval of SEAS faculty.
- 4 units in SEAS 299 toward completing the thesis.

Continuation in the Ph.D. program is not guaranteed, but subject to review by the cooperating department. After completion of the M.A. in Southeast Asian Studies, M.A. – Ph.D. track students will need to reapply through Graduate Admissions (fee waived) to the cooperating department for approval and official admission into the Ph.D. program.

University Requirements.
All master’s students must be enrolled for at least three quarters to fulfill the University residency requirement and must hold at least a 3.00 GPA in all upper division and graduate level course work related to the degree. A minimum of 40 units must be completed of which 36 must be graduate level (200 level) or approved upper division undergraduate (100 level) and apply only to the M.A. in Southeast Asian Studies.

Normative Time to Degree Two years

Lower-Division Courses

SEAS 047 Introduction to Southeast Asian History (4)
Lecture, 3 hours; extra reading, 3 hours. Introduces major themes and events in Southeast Asian history. Covers from prehistory to contemporary events in the region. Develops basic historical approaches to understanding contemporary trends, such as the spread of world religions, regional differences and connections, trading patterns, cultural forms, and historically important sites. Cross-listed with AST 049 and HIST 046.

SEAS 062 Introduction to Southeast Asian Literature (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to modern and contemporary Southeast Asian literature and culture with a focus on individual national histories. Explores the relationship between aesthetics, politics, and academic scholarship. Readings are in translation; classes conducted in English. Cross-listed with AST 062 and CPLT 062.

SEAS 063 Reading Southeast Asian Stories (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to the modern short story in Southeast Asia with a focus on literariness and the act of reading. Readings are in translation; classes conducted in English. Course is repeatable as content changes to a maximum of 8 units. Cross-listed with AST 063 and CPLT 063.

SEAS 064 Introduction to Vietnamese and Diasporic Film Culture (4)
Lecture, 3 hours; screening, 3 hours. Prerequisite(s): none. Engages in critical viewing strategies and analytical visual critique. Explores the revival of film production in Vietnam following the Vietnam War, with a focus on the means of production, state control, and international funding. Readings are in translation; classes conducted in English. Cross-listed with AST 064, MCS 049, and VNM 064.

SEAS 065 Introduction to Southeast Asian Cultures (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): none. An introduction to the world of Southeast Asia with a focus on aspects of local cultures. Cross-listed with AST 065.

Upper-Division Courses

3 hours; screening, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduction to the roles and genres of expressive culture in Southeast Asia, including dance, music, theater, film, and digital culture. Performance is discussed as both a time-honored and a contemporary medium for cultural production, from the courts to everyday experience. Cross-listed with ANTH 126, AST 123, DANCE 123, and MUS 123.

SEAS 136 Anthropological Perspectives on Gender in Southeast Asia (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the intersections of gender/power, and sexuality in post-colonial Southeast Asia. Revisits early ethnographic claims of gender equality. Address current anthropological literature on the effects of colonialism, capitalism, and globalization on gender roles and relations within national and transnational contexts. Cross-listed with ANTH 136.

SEAS 137 The Vietnamese Americans: The Refugee and Immigrant Experience (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on the Vietnamese American experience in contemporary society. Emphasizes the relationship of Vietnamese Americans to the larger society and on intergenerational strains and conflicts. Topics include society, kinship, and educational problems, family, religion, and the relationship between Vietnamese Americans and other ethnic groups. Cross-listed with ETST 137.

SEAS 143A Critical Filipino(a) Studies: Histories and Legacies of U.S. Conquest, Colonialism, and Empire (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): one of the following courses: ETST 001, ETST 001H, ETST 002, ETST 002H, ETST 003, ETST 004/HIST 004, ETST 005, ETST 005H, ETST 007, ETST 007H, ETST 008, ETST 012, ETST 012H, ETST 012W, ETST 012X, ETST 014; or consent of instructor. Critically examines and theorizes the historical impact and legacies of U.S. conquest and colonialism in the Philippines. Analyzes the origins of Filipino American civic existence and its links to histories of U.S. racial formation, racialized industrialization, and racialized frontier warfare. Cross-listed with ETST 143A.

SEAS 143B Critical Filipino(a) Studies: Interrogating the Filipino American Present (4)
Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): one of the following courses: ETST 001, ETST 001H, ETST 002, ETST 002H, ETST 003, ETST 004/HIST 004, ETST 005, ETST 005H, ETST 007, ETST 007H, ETST 008, ETST 012, ETST 012H, ETST 012W, ETST 012X, ETST 014, ETST 143A/SEAS 143A, upper-division standing; or consent of instructor. Critically analyzes the emergence of Filipino American community and identity in relation to the U.S. emancipation of the Philippines and the complex restructuring of a neocolonial and imperial relation. Examines the theoretical and conceptual premises of Filipino Americanism through counterhegemonic social movements, cultural production, and identity formation. Cross-listed with ETST 143B.

SEAS 145 Buddhism in Southeast Asia (4)
Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): RLST 106 or consent of instructor. Explores various textual, magical practices, forms of meditation, rituals, and beliefs of ancient and modern Buddhism, focusing on the ways in which they are transformed by nuns, monks, and the laity in Burma, Cambodia, Laos, Thailand, and California. Cross-listed with RLST 145.

SEAS 149 Southeast Asian Religions (4)
Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): one Religious Studies course or upper-division standing or consent of instructor. Introduces various religions in Southeast Asia as distinct religious traditions. Cross-listed with ETST 149.

SEAS 150 Islam in Southeast Asia (4)
Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the religious, intellectual, and cultural history of Muslim
Southeast Asia. Includes Indonesia, Malaysia, and Brunei, as well as minority communities in Singapore, Thailand, Cambodia, and the southern Philippines. Examines a series of contextualized readings in translated primary sources. Approaches texts from historical, anthropological, literary, and other disciplinary perspectives. Cross-listed with RLST 150.

SEAS 161 Translating Modern Southeast Asian Texts (4) Lecture, 3 hours; term paper, 1.5 hours; written work, 1.5 hours. Prerequisite(s): upper-division standing; knowledge of one Southeast Asian language is recommended. An introduction to translating modern Southeast Asian texts into English. Presents translations of texts from Vietnam, Indonesia, and the Philippines in a context of theory. Materials are in English. Course is repeatable as content changes to a maximum of 8 units. Cross-listed with AST 161.

SEAS 162 Vietnamese Literary History (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing. A historical analysis of Vietnamese literature from its oral tradition to contemporary fiction. Follows the formation of the nation-state and the subsequent struggles with the Chinese, French, Japanese, and Americans. No knowledge of Vietnamese required. Readings are in translation or bilingual editions. Classes are conducted in English. Cross-listed with AST 162, HIST 187, and VNM 162.

SEAS 163 Nationalism and the Novel (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the novel and its role within nationalism as a representative summary or mirror of the nation. Cross-listed with AST 163 and CPLT 163.

SEAS 164 Vietnamese American Culture (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the pervasive aspects of Vietnamese American culture. Includes shared histories, acculturation patterns, class diversity, identity struggles, community-building literary and cultural production, youth issues, and cultural survival. Also introduces foundational literature, visual culture, and scholarship in the field. Cross-listed with AST 164 and VNM 164.

SEAS 165 (E-2) Themes in Vietnamese Literature (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An exploration of Vietnamese literature in translation with an eye toward the lens of a particular theme or issue. Focuses on the implications of gender and sexuality on nation formation. All materials are read or viewed in English. E. Women and War. Cross-listed with AST 165 (E-2), GSST 165 (E-2), and VNM 165 (E-2).

SEAS 166 Vietnam and the Philippines (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the countries and their histories of Vietnam and the Philippines by way of great literary works in various genres including poetry, short fiction, and novels. All materials are read in English. Cross-listed with AST 166, CPLL 166, and VNM 166.

SEAS 167 Postcolonial Literature and Criticism in Southeast Asia and South Asia (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the theoretical concepts of postcolonial criticism informing and challenge the literature of Southeast Asia and South Asia, as the literature itself pushes the limits of the criticism. Addresses themes of nation, identity, space, gender, home, diaspora, alterity, history, sexuality, transnationalism, neocolonialism, tourism, and education. Cross-listed with AST 167 and CPLL 167.

SEAS 168 Javanese Gamelan Ensemble: Beginning (2) Studio, 6 hours. Prerequisite(s): upper-division standing and consent of instructor. Study and performance of the Central Javanese ganglen, consisting mainly of gongs and gong-chime instruments. Readings and discussions focus on Javanese culture. Course is repeatable. Cross-listed with AST 168 and MUS 168.

SEAS 170 Rondalla Ensemble (1-2) Studio, 2-4 hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of the Filipino rondalla, an ensemble consisting of various sizes of lute-like and guitar-like instruments. Discussions focus on Filipino culture. Course is repeatable. Cross-listed with AST 170 and MUS 170.

SEAS 172 Gender in Southeast Asian Diasporic Literature and Film (5) Lecture, 3 hours; screening, 3 hours; written work, 1 hour; extra reading, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on former Indonesian refugees who are producing literature and films in the United States and France. Examines how the perception of Indonesia has changed among the community. Cross-listed with AST 172 and MUS 170.

SEAS 175 Asian American Women: Writing the Self in Literature and Film (4) Lecture, 3 hours; screening, 1 hour; written work, 1 hour; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Analyses Asian American autobiographies and films written and directed by women. Explores why the genre of autobiography is enabling and contentious within Asian American women’s lives. Examines how such women filmmakers contend with memory, gender, and identity. Cross-listed with GSST 122 and MCS 142.

SEAS 177 Vietnamese and Overseas Vietnamese Cinema (4) Lecture, 3 hours; screening, 3 hours. Prerequisite(s): MCS 020 or upper-division standing or consent of instructor. Explores the thematics and cultural context of Vietnamese cinema in both Vietnam and the diaspora. Cross-listed with AST 177 and MUS 177.

SEAS 184 The Vietnam Wars (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the major periods of the Vietnam War (1945-1975). Explores how Vietnam was a microcosm of the larger war. Cross-listed with AST 184, HIST 184, and VNM 184. Credit is awarded for only one of the following: AST 160/HIST 184/SEAS 184/VNM 184 or AST 160S/HIST 184S/SEAS 184S/VNM 184S.

SEAS 184S The Vietnam Wars (S) Lecture, 3 hours; discussion, 1 hour; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Vietnamese history in the twentieth century. Covers the three Indochina wars (1945-1986) from different Vietnamese perspectives. Topics include experiences during French colonial rule; the anticolonial movements; periods of French and American military involvement up to 1975; the postwar society; and the post-<b>Vo</b> <b>Van</b> <b>Nguyen</b> era. Cross-listed with AST 160S, HIST 184S, and VNM 184S. Credit is awarded for only one of the following: AST 160/HIST 184/SEAS 184/VNM 184 or AST 160S/HIST 184S/SEAS 184S/VNM 184S.

SEAS 185 Southeast Asia, Prehistory to 1800 (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to Southeast Asian prehistory and evolution. Topics include the early periods of human settlement, ancient stories, religious systems, technologies, and art forms in forming traditional Southeast Asian identities, as well as the influences on these identities from outside the region. Cross-listed with AST 126 and HIST 185.

SEAS 186 Modern Southeast Asia, 1800 to Present (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the formation of modern Southeast Asian nations and cultures since 1800. Compares and contrasts colonial and postcolonial experiences in the region. Studies the formation of nationalist movements and the relationship of nationalist history with traditional and local histories. Consider the role of the individual, modern media, and global trade in the near-present. Cross-listed with AST 129 and HIST 186.

SEAS 189 Encountering Vietnam (5) Lecture, 6 hours; tutorial, 6 hours; project, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on literary and historical accounts of Vietnam. Utilizes translated travel writings from different genres and eras. Proficiency in Vietnamese not required. Taught in Vietnamese (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as content changes to a maximum of 12 units. Cross-listed with AST 189, HIST 189, and VNM 189.

Graduate Courses

SEAS 200 Topics in Southeast Asian Studies (4) Seminar, 3 hours; written work, 2 hours; term paper, 1 hour. Prerequisite(s): graduate standing or consent of instructor. Focuses on former Indochinese refugees who are producing literature and films in the United States and France. Examines how the perception of Indonesia has changed among the community. Cross-listed with AST 200, HIST 185.

SEAS 202 Southeast Asian Religions (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on former Indochinese refugees who are producing literature and films in the United States and France. Examines how the perception of Indonesia has changed among the community. Cross-listed with AST 202 and CPLL 200.

SEAS 203 Southeast Asian Cultures (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Surveys ethnographic literature on Southeast Asian cultures, with an emphasis on contemporary research. Covers anthropological case studies of culture, text, ritual, and performance practices; intercultural dynamics; the impact of colonialism and nationalism on tradition- al cultures; and globalization. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor. Course is repeatable as topic changes to a maximum of 8 units. Cross-listed with ANTH 257 and RLST 253.

SEAS 204 Approaches to Southeast Asian History (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on former Indochinese refugees who are producing literature and films in the United States and France. Examines how the perception of Indonesia has changed among the community. Cross-listed with AST 204, HIST 185.

SEAS 205 Literature of Southeast Asia (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on former Indochinese refugees who are producing literature and films in the United States and France. Examines how the perception of Indonesia has changed among the community. Cross-listed with CPLL 205.
SEAS 206 Southeast Asian Diasporic Literature and Film (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Explores the contemporary works by Southeast Asian immigrants within the United States and France. Emphasizes the concept that the dynamic production of culture is a negotiation of power and an expression of resistance. Provides an interdisciplinary framework by utilizing historical as well as theoretical works to contextualize the cultural productions. May be taken repeatable (S) or No Credit (NC). Course is repeatable as content changes to a maximum of 12 units.

SEAS 243A Research Seminar in Southeast Asian History (4) Seminar; 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 243A/SEAS 243A, HIST 243B/SEAS 243B. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is assigned. After completing both HIST 243A/SEAS 243A and HIST 243B/SEAS 243B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units. Cross-listed with HIST 243A.

SEAS 243B Research Seminar in Southeast Asian History (4) Seminar; 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor; HIST 243A/SEAS 243A, HIST 243B/SEAS 243B. Discusses Southeast Asian topics from regional, comparative, and local perspectives. Students produce a substantial research paper that continues their work from HIST 243A/SEAS 243A. May be taken as a one- or two-quarter course (HIST 243A/SEAS 243A, HIST 243B/SEAS 243B). After completing both HIST 243A/SEAS 243A and HIST 243B/SEAS 243B, students may repeat the sequence once for credit; total credit for each course may not exceed 8 units. Cross-listed with HIST 243B.

SEAS 290 Directed Studies (1-6) Individual study, 3-18 hours. Prerequisite(s): consent of instructor and graduate advisor. Directed study to meet special curricular needs. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SEAS 292 Concurrent Analytical Studies in Southeast Asian Studies (1-4) Individual study, 3-12 hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Taken concurrently with a 100-series course, but on an individual basis. Devoted to research, criticism, and written work at the graduate level related to the 100-series course. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SEAS 297 Directed Research (1-6) Outside research, 3-18 hours. Prerequisite(s): consent of instructor; graduate standing. Individualized research under the sponsorship of specific faculty members. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

SEAS 299 Research for the Thesis (1-12) Thesis, 3-36 hours. Prerequisite(s): consent of thesis director. Research and preparation for the thesis. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Southeast Asian Studies Designated Emphasis

Subject abbreviation: SEAS
College of Humanities, Arts, and Social Sciences
Christina Schwenkel, Ph.D., Director
Program Office, INTS 3111
(951) 827-5521; seatrip.ucr.edu

Committee in Charge
Muhammad Ali, Ph.D. (Religious Studies)
David Biggs, Ph.D. (History)
Charmaine Craig, M.F.A. (Creative Writing)
Weihsin Gui, Ph.D. (English)
Tamara Ho, Ph.D. (Gender and Sexuality Studies)
Mariam Beve Lam, Ph.D. (Comparative Literature and Foreign Languages)
René T.A. Lysloff, Ph.D. (Music)
Hendrik M.J. Maier, Ph.D. (Comparative Literature and Foreign Languages)
Sally A. Ness, Ph.D. (Anthropology)
Victoria Reyes, Ph.D. (Sociology)
Maria Sarita See, Ph.D. (Media & Cultural Studies)
Christina Schwenkel, Ph.D. (Anthropology)
Deborah A. Wong, Ph.D. (Music)

The Designated Emphasis in Southeast Asian Studies, a specialization that includes new methods of inquiry in conjunction with a student's disciplinary field of interest, is awarded in addition to a Ph.D. degree. A total of 16 units of coursework is required:

1. 12 units of course work in SEAS, from at least two departments
   a. 4 units in (required)
      • ANTH 202/ CPLT 200/SEAS 200
   b. Choose the additional 8 units from the lists below

Graduate Seminars:
ANTH 257/ RLST 253/ SEAS 202, ANTH 203/ SEAS 203, HIST 242/ SEAS 204, CPLT 205/ SEAS 205, SEAS 206, SEAS 243A, SEAS 243B

Upper Division Undergraduate Courses:
2. 4 units of Thesis Study (SEAS 299) or directed Research ( SEAS 297) resulting in a paper supervised by a member of the Southeast Asian Studies Program.

Courses taken for the Designated Emphasis cannot be used toward the Ph.D. Language proficiency is preferable, though not required.

Speculative Fictions and Cultures of Science Designated Emphasis
Subject abbreviation: SFCS
College of Humanities, Arts, and Social Sciences
Sherryl Vint (English), Director
Office, 1202, HMNSS
sherryl.vint@ucr.edu

Advisory Committee & Participating Faculty
Derek Burriel (Media and Cultural Studies)
Stephanie Hammer (Comparative Literature & Foreign Languages)
Tamara Ho (Gender and Sexuality Studies)
Nalo Hopkinson (Creative Writing)
Tim Krieger (Theatre, Film and Digital Production)
Tim Labor (Music and Media and Cultural Studies)
Juliet McMullen (Anthropology)
Yolanda Moses (Anthropology)
Lisa Raphals (Comparative Literature & Foreign Languages)
Dana Simmons (History)
Eric Schwitzgebel (Philosophy)
Stephen Sohn (English)
Chikako Takeshita (Gender and Sexuality Studies)
James Tobias (English)
Susan Ziegler (English)

Designated Emphasis Requirements
The Designated Emphasis is a 12-unit interdisciplinary graduate course of study, requiring coursework across at least two departments. Two of the three required courses, if otherwise eligible, may count toward the student’s Ph.D. requirements.

1. All students must complete an ENGL 297 graduate course (4 units) with an affiliated faculty member that produces an approximately 25-page research paper. This course will fulfill the research requirement of the Designated Emphasis.
2. Two (2) courses (8 units) selected from ANTH 262, CPLT 272, CPLT 273, CPLT 275, CPLT 276, CWPA 255, ENGL 246, ENGL 247, ENGL 248, ETST 243F, HIST 287A, MUS 251, MUS 264, and PHIL 237. Studies may ask to count another course with relevant content as approved by the Designated Emphasis Director. Students must select courses from at least two different departments or programs, one of which may be their home department. Undergraduate courses taken to fulfill these requirements must be accompanied by a 292 course with extra work mutually agreed upon by professor and student.

All requirements for the Designated Emphasis must be satisfied before a student advances to candidacy in their Ph.D. field; a minimum GPA of 3.0 is required for the award of the Designated Emphasis.
Statistics

Subject abbreviation: STAT
College of Natural and Agricultural Sciences

Xinping Cui, Ph.D., Chair
Department Office 1337 Olmsted Hall
statistics.ucr.edu

Business Office
(951) 827-3774

Graduate Student Affairs
1140 Batchelor Hall
(951) 827-4716 or (800) 735-0717
stat@ucr.edu

CNAS Undergraduate Advising Center
1223 Pierce Hall
(951) 827-7294

Professors
Barry C. Arnold, Ph.D.
Xinping Cui, Ph.D.
Subir Ghosh, Ph.D.
Daniel R. Jeske, Ph.D.

Professors Emeriti
Robert J. Beaver, Ph.D.
Keh-Shin Lii, Ph.D.
S. James Press, Ph.D.
Christopher A. Robertson, Ph.D.
David J. Strauss, Ph.D.

Associate Professors
James M. Flegel, Ph.D.
Jun Li, Ph.D.
Shujie Ma, Ph.D.
Weixin Yao, Ph.D.
Zhongye Zhang, Ph.D.

Assistant Professors
Esra Kürüm, Ph.D.
Weixin Ma, Ph.D.
Shemra Rizzo, Ph.D.

Lecturers
Analisa Flores, Ph.D.
Linda M. Penas, Ph.D.
Jill Smith, M.S.

Lecturer Emerita
Barbara Beaver, M.S.

Major

The Department of Statistics is concerned with teaching, research, and statistical consulting. The courses offered present a comprehensive spectrum of statistical and probability theory, in so far as such theory is necessary for the understanding and analysis of observational data. The applications of the theory delineated in the courses may be made in any field of experience. Laboratory classes in which examples related to the student’s actual field of interest are worked out, play an essential part. The department offers both B.A. and B.S. degrees in Statistics as well as a B.S. in Statistics with options in Statistical Computing and Quantitative Management; the M.S. degree in Statistics; and the Ph.D. degree in Applied Statistics.

The courses STAT 040, STAT 048, STAT 100A, STAT 100B, STAT 104/BUS 104, STAT 110, STAT 130, STAT 140, STAT 146, and STAT 155 are intended for students of other departments who wish a knowledge of statistical techniques. Some of them may be taken as electives by statistics majors. The objective of these courses is to acquaint the student with the elements of statistics with only the necessary amount of mathematical training.

STAT 147 and STAT 157 are computer-oriented courses intended for students who would like to learn about computer programming in the most important languages and who would like to learn about statistical computing.

Transfer Students

Students transferring to the Statistics major must complete courses comparable to the following one-year sequence before they transfer:

1. First-year calculus, equivalent to MATH 009A, MATH 009B, MATH 009C, each course completed with a grade of “B-” or better.

Computing Laboratories

The department has two large undergraduate Windows-based teaching laboratories. These laboratories provide users access to a wide variety of statistical software packages including SAS, R, Minitab, and SPSS, and other popular software packages including Mathematica, Adobe Acrobat, and Microsoft Office. The department also houses the Garber Research Computing Laboratory, which is a combination of a UNIX/Linux-based system with multiple workstations and several Windows-based machines. The department recently added a Windows-based simulations laboratory in Summer 2014.

Statistical Consulting Collaboratory

The Statistical Consulting Collaboratory provides a broad range of analytical and statistical support services, including design of experiments, statistical inference, hypothesis testing, and data modeling for the campus community, and promotes cooperative research between statisticians and other investigators in all fields of the application of statistics. The Collaboratory is staffed by:

Daniel R. Jeske, Ph.D., Faculty Director
Karen Huaying Xu, Ph.D., Associate Director
and rotating graduate students.

Change of Major Criteria

All courses taken to fulfill major requirements must be completed with grades of “C-” or better after repeats.

Freshman (0-44.9 units earned)

Completion of the following with grade of “C-” or better and must be in good academic standing.

(2.0 quarter and cumulative GPA)

MATH 009B or MATH 009A, MATH 009B

Sophomores (45-89.9 earned units)

Completion of the following with grade of “C-” or better and must be in good academic standing.

(2.0 quarter and cumulative GPA)

MATH 008B or MATH 009A, MATH 009B, MATH 009C

(4) four additional units of college-level Mathematics or Statistics (STAT 100A recommended)

Juniors (90-134.9 earned units)

Completion of the following with grade of “C-” or better and must be in good academic standing.

(2.0 quarter and cumulative GPA)

MATH 008B or MATH 009A, MATH 009B, MATH 009C

12 (twelve) additional units of college level Mathematics or Statistics (MATH 031, STAT 100A and STAT 147 recommended)

Seniors (135 or more earned units)

Completion of the following with grade of “C-” or better and must be in good academic standing.

(2.0 quarter and cumulative GPA)

MATH 008B or MATH 009A, MATH 009B, MATH 009C, MATH 031, STAT 100A (or equivalent), STAT 100B (or equivalent), STAT 147, STAT 157

Major change requests are reviewed during the 2nd, 3rd, 4th & 10th weeks of each quarter.

Transfer Selection Criteria

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major.

Courses must be completed with “C” grades or better:

MATH 009A, MATH 009B, and MATH 009C (mandatory). A grade of “B-” or better is required in this series.

And at least one sequence from:

1. BIOL 005A/BIOL 051A and BIOL 005B (and BIOL 005C, if articulated)

2. CHEM 001A, CHEM 011A, CHEM 001B, CHEM 011B, CHEM 001C, and CHEM 011C (mandatory)

3. Organic chemistry (one-year lower-division), each course completed with a grade of “B-” or better

4. PHYS 002A, PHYS 021A, PHYS 002B, PHYS 021B PHYS 002C, and PHYS 021C

5. PHYS 040A, PHYS 040B, and PHYS 040C

6. MATH 010A and MATH 010B, or one course in linear algebra.

Courses must be completed with a letter grade, with no grade lower than a “C.” Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

Some of the following requirements for the ma-
Major Requirements

The department offers both a B.A. and a B.S. degree in Statistics as well as a B.S. in Statistics with options in Statistical Computing and Quantitative Management.

The major requirements for the B.A. and the B.S. degrees in Statistics are as follows:

For the Bachelor of Arts

1. Core requirements (24–25 units)
   a) CS 010, MATH 009A, MATH 009B, MATH 009C, MATH 010A
   b) MATH 031

2. Upper-division requirements
   a) Thirty-six (36) units of upper-division course work
      (1) STAT 147, STAT 157, STAT 160A, STAT 160B, STAT 160C, STAT 170A, STAT 170B, STAT 170C
      (2) Four (4) units of STAT 183 taken during senior year

Note: An introductory Statistics class such as STAT 048, or STAT 100A is strongly recommended.

For the Bachelor of Science

1. Core requirements (24–25 units)
   a) CS 010, MATH 009A, MATH 009B, MATH 009C, MATH 010A
   b) MATH 031

2. Upper-division requirements (52 units)
   a) Thirty-six (36) units of upper-division course work
      (1) STAT 147, STAT 157, STAT 160A, STAT 160B, STAT 160C, STAT 170A, STAT 170B, STAT 171
      (2) Four (4) units of STAT 183 taken during senior year
   b) Sixteen (16) units of additional course work chosen, with the approval of the major advisor from STAT/BUS 104, STAT 127/BUS 127, STAT 130, STAT 140, STAT 146, STAT 161, or from related fields.

Note: An introductory Statistics class such as STAT 048, or STAT 100A is strongly recommended.

Statistical Computing Option

The requirements for this option are in addition to the requirements for the B.S. in Statistics, except that the option requirement takes the place of the 16 units in 2.b) above.

1. Lower-division requirements (8 units): CS 012, CS 014

2. Upper-division requirements (16 units)
   a) Sixteen (16) units of coursework selected from
      (1) CS 141, CS 177
      (2) MATH 120, MATH 135A, MATH 135B
      (3) STAT 198-I

Quantitative Management Option

The requirements for this option are in addition to the requirements for the B.S. in Statistics, except that the option requirement takes the place of the 16 units in 2.b) above.

1. Lower-division requirements (18 units)
   a) ECON 002, ECON 003
   b) BUS 010, BUS 020

2. Upper-division requirements (16 units)
   a) Three courses from one area and four (4) additional units from one other area
      (1) Marketing: BUS 103, BUS 113, BUS 117
      (2) Finance: BUS 106/ECON 134, BUS 134, BUS 135, BUS 136, BUS 138
      (3) Accounting: BUS 108, BUS 165A, BUS 165B, BUS 168A, BUS 168B
      (4) Management Information Systems: BUS 101, BUS 171, BUS 173

Minor

The minor in Applied Statistics is designed to give students in either the social sciences or the physical sciences a cohesive set of statistics courses to deal with the data analytic aspects of their disciplines and to understand the statistical summaries that are encountered in everyday activities.

The requirements for the minor consist of at least 24 and not more than 28 upper-division units in Statistics to include the following:

1. STAT 100A, STAT 100B
2. Eight (8) units from STAT 110, STAT 127/BUS 127, STAT 130, STAT 140, STAT 146
3. Four (4) units from STAT 147, STAT 157
4. Four (4) additional units from 2. or 3. above

Of the specified upper-division units, a minimum of 16 must be unique to the minor and may not be used to satisfy major requirements.

No more than 4 units may be in courses numbered 190 through 199.

See Minors under the College of Natural and Agricultural Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Graduate Programs

The Department of Statistics offers the M.S. degree in Statistics and the Ph.D. degree in Applied Statistics.

Admission

Domestic and international applicants must supply scores from the GRE general exam. In addition, TOEFL scores must be supplied by applicants whose first language is not English who do not hold a degree from a U.S. institution. The department considers applications for teaching assistantships at the same time as those for fellowships. Normally, Ph.D. eligible admitted students are awarded five year financial assistantship.

Master's Program

The Department of Statistics offers the M.S. degree in Statistics.

Admission

Students entering the Master’s program must have completed a bachelor’s degree with sufficient training in Mathematics and a strong background in Statistics or have taken STAT 160A, STAT 160B, STAT 160C, STAT 161 and STAT 170A, STAT 170B, STAT 171, covering basic areas of probability and statistics.

Students must also meet the other requirements for admission as specified by the Graduate Division. The program is Plan II (Comprehensive Examination) described in the Graduate Studies section of this catalog. No foreign language is required.

Course Work

Graduate students in Statistics must have taken appropriate courses in Mathematics to give them the proper background for graduate work in Statistics. Important areas include Calculus (at least MATH 009A, MATH 009B, MATH 009C, and MATH 010A) and Linear Algebra (at least MATH 131).

Degree Requirements

Students are required to complete a minimum of 41 units that must include STAT 201A, 201B, 201C, STAT 202A, 202B, 202C, STAT 206, STAT 208, STAT 288, and two consecutive quarters of STAT 293.

Comprehensive Examination

All M.S. students are required to take a written comprehensive examination and pass at the M.S. level, with no more than two attempts allowed to pass. The written qualifying exam is offered two times in each year, the first one at the beginning of Spring quarter and the second one toward the end of Spring quarter. All second year students in the program are required to take their first attempt of the exam at the BEGINNING of Spring quarter. The second exam in each year can only be taken by the students who fail to pass the exam in their first attempt at the beginning of Spring quarter. Exceptions can be made based on the approval of Graduate advisor. A program proposal is not required.

Advancement to Candidacy

Advancing to candidacy takes place when students complete all the course requirements and pass the written exam.

Professional Development Requirement:

1. Two quarters of STAT 293 give students training in (a) the ability to use fundamental statistical techniques to formulate problem and solution in diverse real-world application; (b) the ability to use at least one statistical software package to conduct statistical data analysis; (c) the ability to communicate with researchers in statistical community and other disciplines by using graphical methods to display and interpret information. Other disciplines by using graphical methods to display and interpret information.
Petition to Change Degree Objective

Some students can petition to change their degree objective from the M.S. degree to the Ph.D. program in Applied Statistics depending on their performances in the written comprehensive exam and coursework.

Doctoral Degree

The Department of Statistics offers the Ph.D. degree in Applied Statistics.

The program emphasizes both the theory of statistics and its application to special fields of interest. In addition to courses in statistics, a student would take courses in a substantive field from which a thesis problem requiring a statistical approach should arise. The substantive field may be chosen from areas such as biology, economics, political science, psychology or administration. Specialties might include, for example, population genetics, biological control, hydrology, epidemiology, geology, discrimination in learning, or scales and measurements.

Admission

Students entering the program must have completed either a bachelor's degree or a Master's degree in Statistics, Computer Science, Mathematics, or some other quantitatively based discipline. Students lacking sufficient preparation for some statistics graduate classes must complete some preparatory work in Statistics, Computer Science, or Mathematics depending on their background. Students also have to meet the general requirements listed in the Graduate Studies section of this catalog.

Change Degree Objective

Students with a Bachelor's degree in the Ph.D. program who have satisfied all the requirements for the Master's degree may apply for this degree while completing requirements for the Ph.D. program.

Ph.D. Course Requirements

I. Course Requirements


(B) 20 units of additional 200 level Statistics courses not graded S/NC, including 201A, STAT 201B, STAT 201C, STAT 231A and STAT 231B.

(C) Substantive: Four units (or equivalent) in substantive field with a minimum GPA of 3.00 appropriate to the student's interest. The requirement may be waived if the student already has the background in the substantive area.

II. Teaching: At least three quarters of teaching service.

III. Miscellaneous: In preparation for the written qualifying examinations, a student can register for up to 6 units of STAT 291 (Individual Studies in Coordinated Areas) only during quarters that the student actually participates in qualifying examinations.

Foreign Language Requirement

None.

Written and Oral Qualifying Examination

All Ph.D. students are required to take a written qualifying examination and pass at the Ph.D. level, with no more than two attempts allowed to pass. The written qualifying exam is offered two times in each year, the first one at the beginning of the Spring quarter and the second one toward the end of the Spring quarter. All second year students in the program are required to take their first attempt of the exam at the BEGINNING of Spring quarter. The second exam in each year can only be taken by the students who fail to pass the exam in their first attempt at the beginning of the Spring quarter. Exceptions can be made based on the approval of the Graduate advisor. After passing the written exam the student will work with advisor to prepare for the oral examination.

Advancement to Candidacy

Oral Qualifying Exam must be completed no later than the end of year 3 of the student's graduate training. Exceptions can be made based on the approval of Graduate advisor. Advancing to candidacy takes place when students complete all the course requirements and pass the written and oral exams.

Dissertation

The dissertation is pertinent to a problem area specified by the candidate's substantive field and is submitted in accordance with the requirements of the Graduate Division, Riverside.

Teaching Requirement

All students in the program, for at least three quarters, assist with laboratory (practice) sections of undergraduate Statistics courses or individual tutorial (consultative) work with undergraduate students.

Professional Development Requirement:

1. STAT 293 gives students training in
   (a) the ability to use fundamental statistical techniques to formulate problem and solution in diverse real-world application;
   (b) the ability to use at least one statistical software package to conduct statistical data analysis;
   (c) the ability to communicate with researchers in statistical community and other disciplines by using graphical methods to display and interpret information.

2. Professional writing development: Students are trained to prepare a research proposal on topics relevant to the student’s research area as part of their written qualifying exam.

3. Pedagogy: Ph.D. students are required to enroll in Teaching Assistant Development Program (TADP) Orientation in order to TA and enroll in STAT302 during the quarter they teach. Three quarters of TA experience is required.

Normative Time to Degree

15 quarters

Lower-Division Courses

STAT 040 Elements of Statistics

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A Bayesian introduction to statistics. Advocates that estimates, hypothesis tests, and decisions be made from information developed from a formal combination of current and prior data. Topics include summarizing and displaying data; designing experiments; probability; Bayes’s rule; inferences from proportions and normal populations; sampling; and regression analysis. Utilizes Minitab. Credit is not awarded for STAT 040 if it has already been awarded for STAT 048, STAT 100A, or STAT 100B.

STAT 048 Statistics for Business

Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): CS 008 or equivalent; MATH 004 or MATH 005 or MATH 006B or MATH 007A or MATH 009A or equivalent. An introduction to statistics using business applications. Topics include descriptive statistics, probability, discrete and continuous distributions, Bayes’ theorem, random variables, estimation and confidence intervals, hypothesis testing, analysis of variance, and simple linear regression. Credit is awarded for only one of STAT 048 or STAT 100A.

Upper-Division Courses

STAT 100A Introduction to Statistics

Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): MATH 005 or MATH 006B or MATH 007A or MATH 009A or MATH 094A or equivalent. A general introduction to descriptive and inferential statistics. Topics include histograms; descriptive statistics; probability, normal, binomial, and Poisson distributions; sampling distributions; hypothesis testing; and confidence intervals. Credit is awarded for only one of STAT 048 or STAT 100A.

STAT 100B Introduction to Statistics

Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): STAT 100A. *An introduction to statistics* with a grade of C- or better. Topics include linear regression, correlation, analysis of variance, and simple experimental designs.

STAT 104 Decision Analysis and Management Science

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 008 or equivalent; STAT 048 or STAT 100A or equivalent; upper-division standing. A survey of deterministic and probabilistic models for decision making. Topics include linear programming and extensions, networks, dynamic programming, decision trees, queueing models, and simulation. Explores the application of these models in decision making. Emphasizes use of the computer. Cross-listed with BUS 104.

STAT 110 Biostatistical Methods in Life Sciences

Lecture, 3 hours; discussion, 1 hour; laboratory, 3 hours. Prerequisite(s): STAT 100B or consent of instructor. Provides undergraduate students majoring or interested in life sciences with statistical tools for analyzing different types of data frequently encountered in life sciences. Emphasizes applications of methodology, including contingency table analysis, linear regression and ANOVA, maximum likelihood method and the estimation-maximization algorithm, logistic regression, Poisson regression, and survival analysis.

STAT 127 Introduction to Quality Improvements

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 048 or STAT 100A or consent of instructor. Explores Deming’s 14 points for management, graphical methods, fishbone diagram, Pareto analysis, control charts for attributes and variables, cusum and moving average charts, process-capability, economic design, acceptance sampling, Taguchi method, parameter design, tolerance design, reliability, hazard rate, censoring, and accelerated life testing. Cross-listed with BUS 127.

STAT 130 Sampling Surveys

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B, or equivalent. Covers simple random sampling, address-stratified sampling, cluster sampling, and ratio and regression estimates. Explores random response, capture-recapture, and jack-knife techniques.

STAT 140 Nonparametric Techniques

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B or equivalent. Covers randomization tests, rank tests, and distribution-free tests.
STAT 146 Statistical Forecasting Techniques (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B or equivalent. Topics include exponential smoothing, simple and multiple regression analysis, time series, trend analysis, and seasonal analysis.

STAT 147 Introduction to Statistical Computing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100A or equivalent. Addresses problem-solving and data analysis and statistical inference using both the R and SAS packages. Topics include input, output, and editing of data; graphical procedures; descriptive statistics; cross-tabulation; inferential statistical techniques including estimation and testing; and analysis of variance.

STAT 155 Probability and Statistics for Science and Engineering (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B with a grade of C- or better, or equivalents; STAT 147 with a grade of C- or better; or consent of instructor. The study of major statistical packages including SAS with the emphasis on the advanced SAS programming. Topics include advanced statistical procedures, linear models (regression and analysis of variance), multivariate techniques, and SAS macros.

STAT 160A Elements of Probability and Statistical Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B with a grade of C- or better, or equivalents; STAT 147 with a grade of C- or better; or consent of instructor. A study of major probability packages including SAS with the emphasis on the advanced SAS programming. Topics include statistical regularity, probability spaces, fundamental theorems in discrete probability, Bayes’ theorem, random variables, densities and distribution functions, and continuous distributions.

STAT 160B Elements of Probability and Statistical Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 160A with a grade of C- or better. Topics include transformations of random variables and central limit theorem, distributions of sample statistics, statistical inference, and estimation.

STAT 160C Elements of Probability and Statistical Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 160B with a grade of C- or better. Topics include hypothesis testing, chi-square tests, and nonparametric methods.

STAT 161 Introduction to Probability Models (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 160B with a grade of C- or better. Covers random processes, branching processes, and random walk. Explores continuous time models such as Poisson process and queuing models.

STAT 170A Regression Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 157, STAT 160C, or equivalents. Topics include simple and multiple linear regression, scatter-plotting, analysis of variance, and interval estimation. Addresses prediction, testing, calibration, interpretation, and practical applications of multiple regression. Explores simple, partial, and multiple correlation; variable selection methods; diagnostic procedures; and regression for longitudinal data.

STAT 170B Design of Experiments (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 170A with a grade of C- or better. Topics include principles of design; completely randomized designs; and one-way analysis of variance. Covers complete block designs and multiple comparison concepts; and complete factorial experiments. Explores fixed, random, and mixed models; split-plot designs; nested designs; analysis of covariance; sample size determination; and power analysis.


STAT 183 Statistical Consulting (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 155; STAT 157; STAT 170B; STAT 171 (may be taken concurrently); senior standing. Introduces the statistical consulting process. Promotes consulting skills including: developing effective communication skills, applying statistical methodology to client projects, and learning how to manage time and resources in a consulting environment. Satisfactory (S) or No Credit (NC) grading is available.

STAT 190 Special Studies (1-5) hours to be arranged. To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable to a maximum of 10 units.

STAT 197 Research for Undergraduates (2-4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 157; STAT 201A or equivalent, graduate standing; or consent of instructor. Topics include Bayesian estimation; prior selection; loss functions; admissibility; hypothesis testing; Neyman-Pearson lemma; size, power; UMP tests; likelihood ratio tests; sequential tests; nonparametric tests; and bootstrap. Credit is not awarded for STAT 197 if it has already been awarded to STAT 210B if STAT 210B was taken prior to Fall 2013.

STAT 202A Regression, ANOVA, and Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B or equivalent; or consent of instructor. Topics include Bayesian estimation; prior selection; loss functions; admissibility; hypothesis testing; Neyman-Pearson lemma; size, power; UMP tests; likelihood ratio tests; sequential tests; nonparametric tests; and bootstrap. Credit is not awarded for STAT 202A if it has already been awarded to STAT 210C if it has already been awarded to STAT 210C.

STAT 210A Theory of Probability and Statistics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B; STAT 160C or STAT 201B or equivalent; or consent of instructor. Topics include exponential families; decision theory, inference, point estimation; unbiasedness; completeness; and consistency. Also explores relative efficiency; maximum likelihood; method of moments; interval estimation; pivots; and approximate intervals and regions. Credit is not awarded for STAT 210B if it has already been awarded to STAT 210B if STAT 210B was taken prior to Fall 2013.

STAT 210B Design of Experiments (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 210A or equivalent; or consent of instructor. Topics include Bayesian estimation; prior selection; loss functions; admissibility; hypothesis testing; Neyman-Pearson lemma; size, power; UMP tests; likelihood ratio tests; sequential tests; nonparametric tests; and bootstrap. Credit is not awarded for STAT 197 if it has already been awarded to STAT 210B if STAT 210B was taken prior to Fall 2013.

STAT 210C Theory of Probability and Statistics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 210A or equivalent; or consent of instructor. Topics include exponential families; decision theory, inference, point estimation; unbiasedness; completeness; and consistency. Also explores relative efficiency; maximum likelihood; method of moments; interval estimation; pivots; and approximate intervals and regions. Credit is not awarded for STAT 210B if it has already been awarded to STAT 210B if STAT 210B was taken prior to Fall 2013.

Graduate Courses

STAT 201A Theory of Probability and Statistics (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): MATH 010B; STAT 160C or equivalent; graduate standing; or consent of instructor. Topics include probability and conditional probability; random variables and univariate and multivariate distributions; independ-
umn, crossover and repeated measure designs; factor­
erial experiments; confounding; fractional factorials; response surface designs; method of steepest ascent; canonical representation; rotatable, minimum bias, variance, and mean square error designs.

STAT 204B Advanced Design and Analysis of Experi­ments (4) Lecture, 3 hours; discussion, 1 hour. Prere­quiste(s): STAT 204A or equivalent, graduate standing; or consent of instructor. Topics include mixture experiments; split-plot; optimum design theory; locally optimal designs; binomial experiments; dose response experiments; group sequential and time sequential design and analysis for failure time end points; adaptive designs.

STAT 205 Discrete Data Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 160A, STAT 160B, STAT 160C, or equivalents; or consent of instructor. The Markov proper­

Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 160A, STAT 160B, STAT 160C, or equivalents. Topics include mixture processes, autoregressive-moving average (ARIMA) processes, trend, seasonality, model building, estimation and forecasting, and spectral analysis and estimation.

STAT 216B Time Series Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 216A or equivalent of instructor. Topics include spectral analysis and estimation, higher-order spectral analysis, Kalman filtering and prediction, and nonlinear, nonstationary, and non-Gaussian time series.

STAT 217 Mixture Models and Their Applications (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 210A, STAT 210C, or equivalents. An introduction of mixture models (also known as latent class models or unsupervised learning models). Includes expectation-maximization (EM) algorithm, mixtures of regression models, and their applications such as clustering and density estimation.

STAT 220A Multivariate Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 160A, STAT 160B, STAT 160C, or equivalents; familiarity with multivariate algebra. Topics include algebra and calculus of vectors and matrices, special multivariate distributions (Normal, Wishart, Hotelling’s T-squared, multivariate T, multivariate log-normal, etc).

STAT 220B Multivariate Analysis (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 220A or equivalent of instructor. Topics include categorical depend­
tent variable regression, loglinear models, inference in the multivariate normal distribution, multivariate multiple regression, hypothesis testing, likelihood ratio tests, multivariate analysis of variance and covariance, principal components analysis, factor analysis, and classification and discrimination models.

STAT 230 Sampling Theory (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 201A and STAT 201B or equivalents; or consent of instructor. Topics include computational aspects of optimization; numerical integration; Advanced Monte Carlo methods; expectation maximization (EM) algo­
rithm; Markov chain and Monte Carlo methods; and other current computational methods.

STAT 231A Statistics for Biological Sciences (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B or equivalent of instructor; graduate standing in Biochemistry and Molecular Biology, Biomedical Sciences; Botany; Cell, Molecular, and Developmental Biology; Entomology, Environmental Toxicology; Genetics, Genomics, & Bioinformatics; Evolution, Ecology, and Organismal Biology; Micro­biology; Neurobiology; Neuroscience; Plant Biology; Plant Genetics; Plant Pathology; Plant Science. Covers one- and two-sample tests, one- and two-way analysis of variance, multiple comparison, simple and multiple linear regression, nonparametric statistics, and cate­
gorical data.

STAT 231B Statistics for Biological Sciences (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 100B or equivalent of instructor; graduate standing in Biochemistry and Molecular Biology; Biomedical Sciences; Botany; Cell, Molecular, and Developmental Biology; Entomology, Environmental Toxicology; Genetics, Genomics, & Bioinformatics; Evolution, Ecology, and Organismal Biology; Micro­biology; Neurobiology; Neuroscience; Plant Biology; Plant Genetics; Plant Pathology; or Plant Science. Covers one- and two-sample tests, one- and two-way analysis of variance, multiple comparison, simple and multiple linear regression, nonparametric statistics, and cate­
gorical data.
Track 1: Literature, History, Criticism and Dramaturgy

Upper-division requirements (40/44 units)

1. Literature, History, Criticism requirement (20 units)
   a) Literature, History, and Criticism emphasis (12 units): TFDP 100, TFDP 120A, TFDP 120B
      1) Eight (8) additional units from TFDP 121, TFDP 122, TFDP 123, TFDP 124A, TFDP 124B, TFDP 125 (E-Z), TFDP 127, TFDP 191 (E-Z)
   b) Dramaturgy emphasis (12 units): TFDP 100, TFDP 120A, TFDP 120B
      1) Eight (8) additional units from TFDP 121, TFDP 122, TFDP 123, TFDP 124A, TFDP 124B, TFDP 125 (E-Z), TFDP 127, TFDP 191 (E-Z)

3. Production requirement (8/12 units)
   a) Literature, History, and Criticism emphasis: Eight (8) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174, or TFDP 175
   b) Dramaturgy emphasis: TFDP 174 (4 units) and eight (8) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, or TFDP 175

Track 2: Writing for the Performing Arts

Upper-division requirements (44 units)

1. Literature, History, and Criticism (12 units)
   a) TFDP 120A, TFDP 120B (8 units)
   b) Four (4) units from TFDP 122, TFDP 123, TFDP 124A, TFDP 124B, TFDP 125 (E-Z), TFDP 127, TFDP 191 (E-Z)

2. Writing for the Performing Arts (24 units)
   a) TFDP 164A, TFDP 164B, TFDP 164C
   b) TFDP 166A, TFDP 166B, TFDP 166C

3. Production requirement (12 units)
   a) TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174, or TFDP 175

Track 3: Film Making

Upper-division requirements (40 units)

1. Film Making (16) units from TFDP 154, TFDP 155, TFDP 156A, TFDP 156B, or TFDP 157

2. Screenwriting (8) units from TFDP 166A and TFDP 166B

3. Four (4) units from TFDP 101, TFDP 102, TFDP 109, TFDP 115, TFDP 150A, TFDP 150B, TFDP 163, TFDP 165A, TFDP 165B, TFDP 166C, TFDP 167, TFDP 168, TFDP 198-I

4. Production requirement (12) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174, or TFDP 175

Track 4: Acting and Directing

Upper-division requirements (52 units)

1. Acting/Directing (20 units)
   a) Acting emphasis: TFDP 109, TFDP 110A, TFDP 110B (12 units)
      1) Eight (8) additional units from TFDP 111A, TFDP 111B, TFDP 111C, TFDP 111D, TFDP 120A, TFDP 120B (8 units)
   b) Directing emphasis: TFDP 109, TFDP 110A, TFDP 150A (12 units)
      1) Eight (8) additional units from TFDP 111A, TFDP 111B, TFDP 111C, TFDP 111D (8 units)

2. Literature History and Criticism (16 units)
   a) TFDP 100, TFDP 120A, TFDP 120B (12 units)
   b) Four (4) units from TFDP 121, TFDP 122, TFDP 123, TFDP 124A, TFDP 124B, TFDP 125 (E-Z), TFDP 127, TFDP 191 (E-Z)


4. Production requirement (12) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174, or TFDP 175

Track 5: Production and Design

Upper-division requirements (44 units)

1. Literature, History, and Criticism (12 units)
   a) TFDP 120A, TFDP 120B (8 units)
   b) Eight (8) units from TFDP 122, TFDP 123, TFDP 124A, TFDP 124B, TFDP 125 (E-Z), TFDP 127, TFDP 191 (E-Z)

2. Writing for the Performing Arts (24 units)
   a) TFDP 164A, TFDP 164B, TFDP 164C
   b) TFDP 166A, TFDP 166B, TFDP 166C

3. Four (4) additional units from TFDP 110A, TFDP 110B, TFDP 114, TFDP 115, TFDP 150A, TFDP 150B, TFDP 150D, TFDP 151, TFDP 152, TFDP 167, TFDP 168, TFDP 198-I

4. Production requirement: Four (4) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174, or TFDP 175

The Department of Theatre, Film and Digital Production offers a B.A. in Theatre, Film and Digital Production. The major focuses on three broad areas of theatre and film: literature, history, and criticism; performance, design, direction, and technology; and the elements of production. Students have the opportunity to write, perform, direct, and design. Four stages are available for rehearsals and performances: the 500-seat proscenium University Theatre, the 150-seat Studio Theatre in the Arts building with state-of-the-moment equipment for facilities, the 120-seat Rehearsal Lab, and the 50-seat Barn Theatre.
1. Production and Design (16 units)
   a) TFDP 101 (4 units)
   b) Twelve (12) units from TFDP 131, TFDP 132, TFDP 133, TFDP 135, TFDP 136, TFDP 142, TFDP 143, TFDP 144, TFDP 145, TFDP 149, TFDP 180 (E-Z)

2. Literature, History, and Criticism (12 units)
   a) TFDP 100 (4 units)
   b) Eight (8) units from TFDP 120A, TFDP 120B, TFDP 121, TFDP 122, TFDP 124A, TFDP 124B, TFDP 125 (E-Z), TFDP 191 (E-Z)

3. Four (4 units) from TFDP 109, TFDP 115, TFDP 150A, TFDP 150B, TFDP 163, TFDP 165A, TFDP 165B, TFDP 167, TFDP 168, TFDP 198-4

4. Production requirement (12) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174, or TFDP 175

Minor

The minor in Theatre, Film and Digital Production follows the structure of the major requirements by exposing students to each of the areas that are essential to the creation of theatre, with the opportunity to take an additional course for depth or more exposure. The inclusion of production courses TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174 and TFDP 175 gives the students the opportunity to put course work into the proper context and provides them with a practical understanding of the workings and problems of production. The minor in Theatre, Film and Digital Production provides students with a basic understanding in major areas of study including theatre literature, performance, and design. It also introduces the nonmajor to the discipline, providing breadth for those students majoring in unrelated disciplines.

Requirements for the minor (20 units)

1. TFDP 100, TFDP 101, TFDP 109
2. Four (4) units from TFDP 170, TFDP 171, TFDP 172, TFDP 173, TFDP 174 or TFDP 175
3. One 4-unit upper-division course selected from the department’s Literature, History, Criticism area or the Performance, Direction, Playwriting, Screenwriting, Design, and Theatre Technology area.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Education Abroad Program

The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses to earn units toward graduation. Students should plan study abroad well in advance to ensure that the courses taken fit with their overall program at UCR. Consult the departmental student affairs officer for assistance. For further details, visit Study Abroad Programs at ea.ucr.edu or call (951) 827-4113.

See Education Abroad Program in the Educational Opportunities section of this catalog. A list of participating countries is found under Education Abroad Program in the Programs and Courses section. Search for programs by specific areas at uc.eap.ucop.edu.

Graduate Program

The Department of Theatre, Film and Digital Production in conjunction with the Department of Creative Writing offers the M.F.A. degree in Creative Writing and Writing for the Performing Arts. See Creative Writing and Writing for the Performing Arts in this catalog for more information and program requirements.

Lower-Division Courses

TFDP 010 Introduction to Acting (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Introduction to acting in theatre, film, television, and performance art. Through exercises, lectures, videos, and on-site visits, explores the work of actors and their collaborations with other artists in historical and contemporary settings. Recommended for nonmajors.

TFDP 020 Production Techniques for Theatre, Film, and Television (4) Lecture, 3 hours; laboratory, 3 hours. A study of technical production practices, equipment, and architecture for theatre, film, and television design. Explores the application of production practices and principles of stagecraft in relation to scenic, costume, lighting, sound, and projection design.

TFDP 021 Introduction to Latina/o Cultural Production on Stage and Screen (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. An introduction to Latina theatre and film from 1965 to the present. Examines the major works of playwrights and important films and videos.

TFDP 022 Shakespeare in Performance (4) Lecture, 2 hours; workshop, 2 hours. Prerequisite(s): none. A study of contemporary Shakespearean production on stage and film. Considers the problems of adapting the text, creating visual elements, speaking the language, and performing the characters. Explores a wide range of performance styles. Credit is awarded for only one of ENGL 018 or TFDP 022.

TFDP 042 Costume Construction (4) Lecture, 2 hours; laboratory, 6 hours. A theoretical and practical study of theatrical costume production. Topics include draping and flat pattern development, fabric, fitting, and sewing techniques. Costume projects are required. Sewing skills helpful but not essential.

TFDP 044 Makeup for Theatre, Film, and Television (4) Discussion, 4 hours. A study of the theory and practice of makeup for theatre, film, and television. Includes demonstrations by industry professionals.

TFDP 050 Public Speaking (4) Lecture, 3 hours; studio, 3 hours. Covers the principles and practice of effective speech composition and delivery. Provides the communicative skills essential in professional careers and community life. Credit is awarded for only one of TFDP 050 or TFDP 050S.

TFDP 050S Public Speaking (4) Lecture, 3 hours; discussion, 1 hour. Covers the principles and practice of effective speech composition and delivery. Provides the communicative skills essential in professional careers and community life. Credit is awarded for only one of TFDP 050 or TFDP 050S.

TFDP 052 Advanced Public Speaking (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): TFDP 050 or TFDP 050S or consent of instructor. An intense practice-based laboratory that builds on Public Speaking (TFDP 050). Designed to strengthen practical and professional skills in conducting research, writing, and presenting. Includes incorporating visual aids into presentations, participating in debate, preparing for the written work and impromptu speaking one encounters in job interviews.

TFDP 066 Screenwriting: How Movies Work (4) Lecture, 3 hours; discussion, 1 hour; screening, 8 hours per quarter. Prerequisite(s): none. An Introduction to writing for stage and screen. Addresses structure, character, dialogue, theme, and story. Cross-listed with CRWT 066 and MCS 066.

TFDP 067 Introduction to Playwriting and Screenwriting (4) Workshop, 3 hours; written work, 3 hours; screening, group activity, 3 hours/quarter; screening, individual activity, 3 hours/quarter. Prerequisite(s): CRWT 066/MCS 066/TFDP 066 with a grade of “C-” or better or consent of instructor. An introduction to writing for stage and screen. Addresses structure, character, dialogue, theme, and story.

TFDP 090 Introduction to the Theatre Department (1) Lecture, 1 hour. Prerequisite(s): none. An introduction to the faculty and areas of study offered by the Department of Theatre. Promotes a better understanding of undergraduate opportunities, graduate training, and careers in the entertainment industry. Graded Satisfactory (S) or No Credit (NC).

Upper-Division Courses

TFDP 100 Play Analysis (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. In-depth analysis of selected plays. Explores structure, character, and imagery.

TFDP 101 Introduction to Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. A comprehensive introduction to design for theatre, film, and television. Topics include design principles and practice of set, costume, and lighting; the history of design; and conceptual approaches and research.

TFDP 109 Acting: The Process (4) Lecture, 3 hours; studio, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the process of acting. Includes imagination, communication, and the psychophysical development of the actor’s instrument. Explores basic approaches to acting process through monologues and introductory scene study.

TFDP 110A Acting: Fundamentals (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): TFDP 109 or consent of instructor. A study of the acting fundamentals and the actor’s basic toolkit. Topics include text analysis, actions and activities, problems and objectives, and audition technique. Through audition practice, monologues, and scene study, explores basic approaches to characterization using methods such as Stanislavsky’s ‘system’, the American Method, and/or Meisner Technique.

TFDP 110B Acting: Techniques (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): TFDP 110A or consent of instructor. An examination of acting techniques from various global practitioners. Topics include advanced psychophysical work, advanced text analysis, the architecture of the stage space, and the actor-audience relationship in dynamic storytelling. Explores analysis and performance of scenes from a range of world dramas.

TFDP 111A Advanced Acting: Shakespeare and the Power of Language (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): TFDP 110B or consent of instructor. Advanced scene study in classic theatre to develop the actor’s skills with heightened language. Emphasizes works by Shakespeare. Topics include performance styles and working on text, voice, and the power of images.

TFDP 111B Advanced Acting: Acting with Facts and
Playing with the Truth (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): TFDP 111A or consent of instructor. Advanced scene study in world theatre of the realistic mode to expand the actor’s emotional repertoire, character range, and worldview. Includes in text and subtext, performance styles in fact-based and verbatim dramas, and the nature of truth in acting. Explores realism from Anton Chekhov to Anna Deavere Smith.

TFDP 111C Advanced Acting: Acting for the Camera (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): TFDP 111B or consent of instructor. A practical exploration of acting for film. Includes the study of and artistic movements of its time. Offered simultaneously with the Theatre Department’s production of the play. May also consider related works and writings. Course is repeatable as content changes to a maximum of 8 units.

TFDP 122 Theatre for Social Change (4) Lecture, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines theatre for social change as created by grassroots theatrical organizations. Focuses on how community-based theatre groups develop works and how theatre in public or private spaces redefines traditional theatre practices.

TFDP 123 Asian/American Theatre: Disorienting the Stage (4) Seminar, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the histories, theories and texts of Asian/American theatre. Examines themes such as Orientalism, imperialism, and immigration.

TFDP 124A American Theatre, 1900-1945 (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examination of the major American playwrights, theatrical figures, and movements from 1900 through World War II.

TFDP 124B American Theatre, 1945-Present (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Examination of the major American playwrights, theatrical figures, and movements from World War II to the present.

TFDP 125 (E-Z) History of the Theatre (4) Lecture, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the plays, playhouses, and players of the following theatrical eras: E. Classical Theatre; F. Medieval Theatre; G. Renaissance Theatre; H. Romantic Theatre; J. Realistic Theatre; K. Contemporary Theatre; M. American Theatre; N. Neo-Classical Theatre; P. American Theatre and Drama of the Great Depression; Q. American Musical Theatre; R. Asian Theatre; S. Experimental Theatre in America. Segments are repeatable.

TFDP 126A History of Dress (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the plays, playhouses, and players of the following theatrical eras: A. Classical Theatre; B. Medieval Theatre; C. Renaissance Theatre; D. Romantic Theatre; E. Realistic Theatre; F. Contemporary Theatre; G. American Theatre; H. Neo-Classical Theatre; I. American Theatre and Drama of the Great Depression; J. American Musical Theatre; K. Asian Theatre; L. Experimental Theatre in America. Segments are repeatable.

TFDP 126B History of Dress (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the plays, playhouses, and players of the following theatrical eras: A. Classical Theatre; B. Medieval Theatre; C. Renaissance Theatre; D. Romantic Theatre; E. Realistic Theatre; F. Contemporary Theatre; G. American Theatre; H. Neo-Classical Theatre; I. American Theatre and Drama of the Great Depression; J. American Musical Theatre; K. Asian Theatre; L. Experimental Theatre in America. Segments are repeatable.

TFDP 126C History of Dress (4) Lecture, 2 hours; studio, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the plays, playhouses, and players of the following theatrical eras: A. Classical Theatre; B. Medieval Theatre; C. Renaissance Theatre; D. Romantic Theatre; E. Realistic Theatre; F. Contemporary Theatre; G. American Theatre; H. Neo-Classical Theatre; I. American Theatre and Drama of the Great Depression; J. American Musical Theatre; K. Asian Theatre; L. Experimental Theatre in America. Segments are repeatable.

TFDP 127 Theories of the Modern Theatre (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the major theories underlying twenty-first century theatre practice. Special attention is paid to the ideas of important theatre artists such as Konstantin Stanislavsky, E. Gordon Craig, Antonin Artaud, and Bertolt Brecht.

TFDP 128 Seminar on the Life and Work of Tomás Rivera (4) Seminar, 3 hours; research, 3 hours. Prerequisite(s): consent of instructor. Explores the life and work of Tomás Rivera, UCR Chancellor (1979-1984) and foundational Chicana/o author. Explores the breadth of Rivera’s writing (novel, poems, short stories, speeches) and his contributions through administrative leadership in higher education as well as personal papers in the UCR Tomás Rivera Archives in Special Collections.

TFDP 129 History of the Modern Theatre: Nineteenth Century - Present (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): upper division standing. Introduces the major developments modern theatre from a global perspective. Explores major historical developments in theatre as a response to globalization, colonization, feminism, and other cultural developments. Course is repeatable as content changes to a maximum of 8 units.

TFDP 130 Sound Design for Theatre, Film, and Television (4) Lecture, 2 hours; workshop, 2 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces sound design for theatre, film, and television productions. Covers topics such as critical listening, psychoacoustics, computer editing, sound recording and processing, and copyright laws pertaining to sampling.

TFDP 132 Lighting Design for Theatre, Film, and Television (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): TFDP 120A or consent of instructor. A study of design, technical production practices, and equipment for lighting in theatre, film, and television. Explores the application of production practices and principles of design light for entertainment. Develops skills associated with the creation and execution of a lighting design.

TFDP 133 Scene Design for Theatre, Film, and Television (4) Lecture, 4 hours. Prerequisite(s): TFDP 101. An introduction to basic skills and techniques for theatre design and to issues of contemporary design for theatre, film, and television. Topics include sketching, rendering, drafting, and model making.

TFDP 135 Costume Design for Theatre, Film, and Television (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): TFDP 101. A study of theory, principles, and practice of costume design for theatre, film, and television.

TFDP 136 History of Theatre Design (4) Lecture, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the development of scenic, costume, and lighting design in theatre. Explores different styles of theatrical aesthetics throughout history focusing on Western culture.

TFDP 138 Art Direction for Film and Television (4) Lecture, 3 hours, individual study, 1.5 hours; screening, 1.5 hours. Prerequisite(s): TFDP 101 or consent of instructor. An introduction to the design principles and methods professional art directors use in the entertainment industry. Projects related to feature film and television design explore current methods of presentation and composition for the film and television camera.

TFDP 143 Scene Painting (4) Lecture, 2 hours; studio, 2 hours; individual study, 3 hours. Prerequisite(s): TFDP 102 or consent of instructor. Introduces sound design for theatre, film, and television. Explore and applies techniques and materials used to create the various elements of scene design. Includes methods of set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wall papering.

TFDP 145 Computer-Aided Design (CAD) for Theatre, Film, and Television (4) Lecture, 2 hours, individual study, 3 hours. Prerequisite(s): TFDP 102, TFDP 099, or consent of instructor. Explores and applies techniques and materials used to create the various elements of scene design. Includes methods of set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wall papering.

TFDP 148 Stage Management (4) Lecture, 2 hours; studio, 2 hours; examination, 2 hours. Prerequisite(s): TFDP 109. Explores the role and function of the stage manager in theatrical production. Provides basic skills to work in the field of stage management emphasizing organization, documentation, and dissemination of information.

TFDP 150A Directing (4) Lecture, 4 hours. Prerequisite(s): TFDP 110B or consent of instructor. A comprehensive introduction to directing in the stage. Topics include working with actors, articulation of stage space, and theories of directing.

TFDP 150B Directing (4) Lecture, 4 hours. Prerequisite(s): TFDP 150A or consent of instructor. An examination of the rehearsal process focusing on combining...
TFDP 154 Introduction to Filmmaking (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces filmmaking, basic elements of film sets, functions and terminology of various roles on a film set, and mechanics of the film industry.

TFDP 155 Introduction to Digital Film Production (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CRWT 066/MCS 066/TFDP 066 or upper-division standing or consent of instructor. Introduces the skills needed for making a narrative film. Also includes examining and utilizing scripts, cameras, lighting, sound, and editing. Includes filmmaking projects.

TFDP 156A Digital Film Production (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): TFDP 155 with a grade of “C” or better or consent of instructor. Examines the techniques of narrative filmmaking and directing for the camera. Emphasizes the working relationship with actors.

TFDP 156B Digital Film Production (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): TFDP 156A or consent of instructor. Examines the techniques of production and postproduction for narrative filmmaking. Emphasizes sound and editing processes.

TFDP 157 Introduction to Film Editing (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the art and craft of editing the narrative film. Includes hands-on work in editing a montage, a short documentary, and a narrative fiction scene.

TFDP 158 Storytelling of Witnesses: Introduction to Documentary Theatre and Film (4) Lecture, 3 hours; screening, 2 hours; research, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Introduces vocabulary, themes, genres, and methods of documentary storytelling in theater and film. Explores the evolution of documentary storytelling focusing on signature works by noted playwrights and filmmakers. Addresses craft, voice, and legacy of documentary storytelling from strictly recorded (verite, interview) to creatively devised narratives (post-event recreation, hybrid forms).

TFDP 159 Documentary Production (4) Workshop, 3 hours; laboratory, 3 hours. Prerequisite(s): TFDP 158. Creation of independent documentaries through hands-on experience in pre-production, production, and post-production. Presents works in progress and finished pieces throughout the quarter, and considers peer feedback.

TFDP 160 The Filmmaker’s Life (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An overview of the various jobs (and their requirements) connected to the process of creating products for film and television entities.

TFDP 161 African American Drama (4) Lecture, 4 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the major African American plays and playwrights from the 1800s to the present.

TFDP 162 Writing the Half-Hour Television Comedy (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): TFDP 166A or consent of instructor. Introduction to the style, form, content, and creation of a half-hour television comedy series.

TFDP 163 Writing the Short Film (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): TFDP 166C or consent of instructor. Addresses the mechanical and creative components of crafting a screenplay for a short film.

TFDP 164A Beginning Playwriting (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): CRWT 056 or TFDP 100 or consent of instructor. Seminar in the practice of playwriting centering on the construction of a plot. Cross-listed with CRWT 164A.

TFDP 164B Intermediate Playwriting (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): CRWT 164A/TFDP 164A. Seminar in the practice of playwriting. Revisions of works in progress emphasizing character development and techniques for writing dialogue. Cross-listed with CRWT 164B.

TFDP 164C Advanced Playwriting (4) Seminar, 3 hours; discussion, 1 hour. Prerequisite(s): CRWT 164B/TFDP 164B. Seminar in the practice of playwriting. Includes playwrights’ participation in staged readings of their work. With consent of instructor, course is repeatable to a maximum of 8 units. Cross-listed with CRWT 164C.

TFDP 166A Screenwriting: Introduction (4) Lecture, 3 hours; extra reading, 3 hours; extra reading activity: outside reading consists of textbook assignments, film viewing and reading each other’s work for comment and discussion. Prerequisite(s): CRWT 166A or consent of instructor. Explores the fundamentals of screenwriting. Includes story development, plotting, and characterization as they are used in creating a complete script for television or feature film.

TFDP 166B Screenwriting: Outline to First Draft (4) Lecture, 3 hours; extra reading, 3 hours; extra reading activity: outside reading consists of screenplay texts, film viewing and reading each other’s work for comment and discussion. Prerequisite(s): TFDP 166A or consent of instructor. Explores the fundamentals of screenwriting. Includes story development, plotting, and characterization as they are used in creating a complete script for television or feature film. Course is repeatable to a maximum of 8 units.

TFDP 166C Screenwriting: Rewrites and Writing for Television (4) Lecture, 3 hours; extra reading, 3 hours; extra reading activity: outside reading consists of screenplay texts, film viewing and reading each other’s work for comment and discussion. Prerequisite(s): TFDP 166B or consent of instructor. Explores the fundamentals of screenwriting. Includes story development, plotting, and characterization as they are used in creating a complete script for television or feature film. Course is repeatable to a maximum of 12 units.

TFDP 167 Writing for Television: Creating the One-Hour Series (4) Workshop, 3 hours; written work, 3 hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the craft of writing for television focusing on production of original work. Includes writing a one-hour pilot, creating series guidelines, and formulating working leading to a 13-episode series. Course is repeatable to a maximum of 12 units.

TFDP 168 Writing for the Family Audience (4) Lecture, 2 hours; discussion, 1 hour. Prerequisite(s): CRWT 168C. An introduction to the demands and challenges of writing film and television projects designed for the family audience.

TFDP 169 Rewriting the Script (4) Workshop, 4 hours. Prerequisite(s): CRWT 164C/TFDP 164C or TFDP 166C; consent of instructor is required for students repeating the course. Covers rewriting a full-length script (screenplay or play). Course is repeatable to a maximum of 8 units. Credit is awarded for only one of CSPA 269 or TFDP 169.

TFDP 170 Performance in Production (1-4) Studio, 5-20 hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the business and arts management including the study of film and television production, stage management, and music
production. Offers hands-on experience for practicing management skills working in partnership with local organizations and artists of Riverside and the Inland Empire. Cross-listed with MUS 185. Credit is awarded for only one of MUS 185/TFDP 185 or MUS 185S/TFDP 185S.

TFDP 185S Arts, Management, and Community (4)
Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to business and arts management including the study of film and television production, stage management, and music production. Offers hands-on experience for practicing management skills working in partnership with local organizations and artists of Riverside and the Inland Empire. Cross-listed with MUS 185S. Credit is awarded for only one of MUS 185/TFDP 185 or MUS 185S/TFDP 185S.

TFDP 190 Special Studies (1-5)
Outside research, 3-15 hours. Prerequisite(s): consent of the chair of the department. Independent study and research by qualified undergraduate students under supervision of a faculty member. Course is repeatable to a maximum of 20 units.

TFDP 191 (E-Z) Seminar in Theatre (4) Seminar, 3 hours; extra reading, 3 hours. Prerequisite(s): consent of instructor. Covers various topics on a rotating basis. Includes playwriting, acting, directing, scenic design, theatre history, and dramatic literature. E. Hamlet: Who is Hamlet and Why Should You Care?; M. American Frontier in American Drama; N. Theatre of Eugene O’Neill; S. Script to Production; T. Women in Theatre: Theory and Performance.

TFDP 195 Senior Thesis (1-4) Thesis, 3-12 hours. Prerequisite(s): senior standing; consent of Department Chair. Open by invitation only. Presentation of a significant piece of creative work with faculty supervision. Course is repeatable to a maximum of 8 units.

TFDP 198-I Individual Internship in Theatre (1-12) Internship, 3-36 hours; reading and written work, 1-12 hours. Prerequisite(s): upper-division standing; consent of instructor. An internship in a theatre, television, or film production company. Includes work with directors or designers in one or more areas of professional production such as acting, design, costumes, lighting, and sound. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

TFDP 199 Senior Research (1-4) Outside research, 3-12 hours. Prerequisite(s): consent of chair of the department. Research in the practice and/or theory of the theatre. Open to seniors by invitation only.

UC Riverside Washington Academic Internship Program (UCDC)
Subject abbreviation: UCDC
College of Humanities, Arts, and Social Sciences
Jennifer Merolla, Ph.D., Chair
1100A Hinderaker Hall
(951) 827-2634
ucdc.ucr.edu

Committee in Charge
Mohsen El-Hefsi, Ph.D. (Operations and Supply Chain Management)
Randolph C. Head, Ph.D. (History)
Jeanette Kohl, Ph.D. (Art History)
S. Karthick Ramakrishnan, Ph.D. (Political Science)
Kurt A. Schwabe, Ph.D. (Environmental Sciences)
Milagros Peña Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The UCR Washington Academic Internship Program provides undergraduate students with a multi-dimensional educational experience in Washington, D.C. Students undertake academic pursuits as well as cultural and social activities. The program combines coursework with field research and internship experience. Students also have the opportunity to tour local sites and dialogue with distinguished professionals in the Speaker Series. For more information see UCR Washington Academic Internship Program in the front of this catalog.

Curriculum
The UCDC Program is open to all UCR undergraduate students with upper-division standing and a 3.0 cumulative GPA. All UCDC participants remain UCR students during the program. Students must be accepted into the UCDC program at UCR, be residents of the UC Washington Center, and enroll in an academic internship taking place in the Washington, D.C. region in order to participate in the UCDC curriculum.

During the Fall, Winter, and Spring quarters, students enroll in 12 to 16 units comprising internship units, a seminar, and an elective course. For summer enrollments, please consult with the program staff at UCR.

Internship (4-8 units)
The focal point of the academic program is the internship, which is based on the students’ interests and major, and it is arranged before the student leaves for Washington, D.C. Students must enroll in a 198I course, which is usually taken in the student’s major department. These courses may be letter graded or S/NC depending on discipline. Visit ucdc.ucr.edu for sample internships.

Seminar in Washington, D.C. (4 units) UCR students must enroll in a seminar from the UCDC 191 A-M series. Students meet weekly with an instructor and conduct research linked to their internship. Students must take seminars for a letter grade only, and should consult with their major department concerning the applicability of UCDC seminars to major requirements.

Elective (4 units)
Students choosing an elective may select courses from the UCDC 150-159 series. Students may take these courses for a letter grade or for S/NC by petition. Students should consult with their major department about the grading basis and about the applicability of UCDC electives to major requirements.

Further information on the courses available each quarter is available at ucdc.ucr.edu/academic. Students should consult with their departmental advisors and with the program staff before enrolling.

Upper-Division Courses
UCDC 150 Special Topics in Political Science (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): upper-division standing or consent of the instructor; admission to the UCR Wash-

ington Center program. Addresses topics in Political Science from the perspective of politics in Washington, D.C. Topics vary each term and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 151 Special Topics in International Relations (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): upper-division standing or consent of the instructor; admission to the UCR Washington Center program. Addresses topics in International Relations from the perspective of politics in Washington D.C. Topics vary each term and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 152 Special Topics in Social Science (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): upper-division standing or consent of the instructor; admission to the UCR Washington Center program. Addresses topics in the social sciences from the perspective of Washington D.C. Topics vary each term and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 153 Special Topics in Economics and Business (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics in business and economics from the perspective of Washington, D.C. Topics vary each term and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 154 Special Topics in Arts (4) Lecture, 3 hours; outside research, 2 hours; field trip, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics in the arts from the perspective of Washington, D.C. Topics vary each term, and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 155 Special Topics in Humanities (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics in the humanities from the perspective of Washington, D.C. Topics vary each term, and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 156 Special Topics in History (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics in the humanities from the perspective of Washington, D.C. Topics vary each term, and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 157 Special Topics in Media and Communications (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics in the media and communications from the perspective of Washington, D.C. Topics vary each term, and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 158 Special Topics in Science, Technology, Engineering and Mathematics (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics in the natural sciences, technology, engineering and mathematics from the perspective of Washington, D.C. Topics vary each term, and may be viewed at www.ucdc.edu. Course is repeatable as topics change to a maximum of 8 units.

UCDC 159 Washington Special Topics (4) Lecture, 3 hours; term paper, 2 hours; outside research, 1 hour. Prerequisite(s): admission to the UC Washington Center program. Addresses topics relevant to Washin-
University Honors

Subject abbreviation: HNPG
College of Humanities, Arts, and Social Sciences

Richard A. Cardullo, Ph.D.,
Howard H Hays, Jr. Endowed Chair and
Faculty Director, University Honors;
Interim Vice Provost, Undergraduate Education
34-1 Surge (951) 827-5323; honors@ucr.edu
honors.ucr.edu

Outstanding students from all disciplines and majors can participate in University Honors. University Honors challenges honors students to take an active role in shaping their education through a variety of curricular, co-curricular, extracurricular and service learning opportunities. Students benefit from University Honors staff support in the areas of professional development, including guidance on applying for internships, summer enrichment programs, scholarships, fellowships, awards, and graduate and professional schools. A seminar room, student lounge, laptop computers, and printing privileges are available to University Honors students.

First Year Experience

Admission to the First Year component of University Honors is based on an application, essay, high school grades, aptitude scores and achievement test scores. Students take University Honors courses and participate in workshops, personal growth, and community service activities. First-year courses encourage innovative approaches to introductory courses and provide an avenue for faculty to present topics in a multidisciplinary approach that ignite the students’ minds in regards to how research is conducted. A goal of University Honors courses is to expose students to methods of conceptualizing issues and framing questions that characterize disciplines.

Sophomore Applied Learning

The sophomore component of University Honors is designed for continuing Honors students, as well as serving as an entry portal for high-achieving UCR students who did not have the opportunity to participate in the first-year component. This component offers students an introduction to the Honors experience and the wealth of opportunities available to undergraduates at UC Riverside. Our goal is that participants will engage in an array of meaningful scholarly endeavors throughout their years of undergraduate study. Interested students must apply to the program and meet the minimum GPA and units earned by spring quarter of their freshman year at UCR. For details, visit honors.ucr.edu.

Upper-Division Honors

The upper-division curriculum provides students with the framework to produce a capstone project, resulting from faculty-mentored, undergraduate research. This structure is adaptable to almost any major and allows each student the flexibility to work with a faculty-mentor to shape a research program to meet the ambitions of the project. We have excellent student-faculty research and leadership opportunities for juniors and seniors participating in University Honors. Continuing UCR students with an excellent academic record may apply to participate in University Honors. Students who transfer to UCR as juniors with excellent academic records may also apply to University Honors. During the junior year, students narrow their research or leadership focus, select a faculty mentor, and prepare to undertake the honors project. The program provides support in all phases of this planning. The honors project is usually undertaken by the first two quarters of the senior year and is completed well before graduation. The completed thesis or project is submitted to the faculty mentor for approval. The approved capstone project and a cumulative GPA of 3.4 will qualify a student for graduation with University Honors distinction. The honors designation appears on the official transcript.
HNPG 001A Transition to UCR and Success in Honors (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Provides transfers to the current perceptions of success in college and guidance on how to become an expert learner in college. Presents an “inside-out” approach to taking a proactive role in one’s education. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 001B Motivation of a University Honors Student (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Investigates what motivates people to act like they do. Refers to experiments in human behavior to challenge societal norms and enable questioning of personal beliefs as related to motivation. Provides challenges to how one views education and the world. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 002A Principles of Civic Engagement (2) Lecture, 1 hour; workshop, 1 hour. Prerequisite(s): admission to University Honors Program or consent of instructor. Aims to cultivate, enhance, and facilitate students’ interest in social change. Bridges their academic and personal lives by providing knowledge and tools for civic engagement. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 002B Implementing Civic Engagement I (1) Workshop, 1 hour. Prerequisite(s): admission to University Honors Program or consent of instructor; HNPG 002A with a grade of “B” or better. Guides students through the initiation, planning, research, and implementation of a civic engagement plan. Applies the principles of civic engagement towards creating social change on campus and in the community. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 002C Implementing Civic Engagement II (1) Workshop, 1 hour. Prerequisite(s): admission to University Honors Program or consent of instructor; HNPG 002B with a grade of “B” or better. Continues the process of students working on the research, implementation, assessment, and presentation of their selected civic engagement project initiated in HNPG 002B. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 009 Honors Workshop (2) Workshop, 1 hour; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program. Explores civic engagement and its role in liberal arts education. Includes opportunity for dialogue, clarification of values and beliefs, and deeper exploration of topics that develop critical thinking and communication. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 10 First-Year Colloquium (1) Colloquium, 1 hour. Prerequisite(s): only to students in the University Honors Program who are freshmen or first-year transfer students. Introduces students to academic research conducted by UCR faculty. Presentations are multidisciplinary and cover the sciences, humanities, and social sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 2 units.

HNPG 12 Global Health, Agriculture, and Economic Development (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Focuses on human health and agriculture in developing countries and their relationship to global poverty, economic development, and technology. Emphasizes developing solutions using an interdisciplinary focus. Provides potential leadership skills in addressing worldwide poverty. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 15 Ignition Seminar in Honors (4) Seminar, 3 hours; screening, 1 hour per quarter; term paper, 1 hour; individual study, 1 hour; extra reading, 1 hour. Prerequisite(s): admission to University Honors or consent of instructor. Additional prerequisites may be required for segments of this course. Addresses interdisciplinary topics drawn from the arts, business, engineering, humanities, natural sciences, or social sciences. Provides opportunities to explore what the university has to offer by meeting with a faculty mentor. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable as topics change up to a maximum of 12 units.

HNPG 025 (E-Z) Honors Seminar in Physical Sciences (4) Seminar, 3 hours; assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course: see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Physical Sciences. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 031 (E-Z) Honors Seminar in the Fine Arts (4) Seminar, 3 hours; assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course: see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Fine Arts. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 036 (E-Z) Honors Seminar in History (4) Seminar, 3 hours; assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course: see the University Honors Program. Introduces research and methods at the frontiers of history. Topics and instructors vary and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 089 (E-Z) Honors Seminar in Philosophy (4) Seminar, 3 hours; assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course: see the University Honors Program. Introduces research and methods at the frontiers of philosophy. Topics and instructors vary and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 4 units.

HNPG 090A Foundations of Leadership (4) Seminar, 3 hours; term paper, 2 hours; written work, 2 hours. Prerequisite(s): admission to the University Honors Program (UHP) or consent of instructor; consent of the Director of the UHP; HNPG 056A. An introduction to the nature, styles, skills, and concepts of leadership that utilizes historic and contemporary models and emphasizes moral roots of responsible leadership. Examines an array of leadership styles and ethical considerations for leaders. Students apply what they are learning through campus and community involvement. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 096B Ethical Leadership in Practice: Philosophy of Leadership (4) Seminar, 3 hours; term paper, 2 hours; extra reading, 2 hours. Prerequisite(s): admission to the University Honors Program (UHP) or consent of instructor; consent of the Director of the UHP; HNPG 056A. Provides leadership experiences and the opportunity to develop leadership skills through theoretical and practical methods. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 4 units.

HNPG 096C Mentors in Action: Student Leadership and Communities (4) Seminar, 3 hours; extra reading, 2 hours; practicum, 6 hours. Prerequisite(s): admission to the University Honors Program (UHP) or consent of instructor; consent of the Director of the UHP. HNPG 056A. Provides leadership experiences and the opportunity to develop leadership skills through the planning and implementing of student activities and services. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 4 units.

HNPG 098 Individual Internship (4-Feb) Consultation, 1-2 hours; internship, 4-8 hours; written work, 1-2 hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Internship placement on or off campus that provides opportunities to acquire skills and experience for future endeavors. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 4 units.

HNPG 150 Research and Creative Activity across the Disciplines (2) Lecture, 1 hour; discussion, 1 hour. Prerequisite(s): admission to the university honors program or consent of instructor, upper-division standing. Addresses the questions “What is knowledge?” and “What is research?”. Illustrates how researchers select a significant issue, review what is already known about it, and pose a research question whose answer promises to advance knowledge. Explores ways in which these processes differ across the humanities, social sciences, and natural sciences. Graded Satisfactory (S) or No Credit (NC).

HNPG 151 Individual Projects in Research or Creative Activity (2) Lecture, 3 hours per quarter; workshop, 3 hours per quarter; outside research, 4 hours; written work, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor; upper-division standing; project approved with a “S” or better, an approved discipline specific research methodology course or co-curricular creative experience, approval of course credit is determined by Honors Faculty Director. Under the direction of faculty advisors, facilitates the discovery, design, and develop-
ment of a capstone project to be pursued during the senior year. Graded Satisfactory (S) or No Credit (NC).

HNPG 190 Special Studies (4-Jan) Consultation, 1 hour; outside research, 3-12 hours. Prerequisite(s): good standing; admission to the upper-division University Honors Program or consent of instructor; a written proposal approved by the program chair. Structured to meet specific educational needs. Addresses course content, style, and requirements determined in collaboration with the instructor. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

HNPG 195H Senior Honors Thesis (4-Jan) Thesis, 3-12 hours. Prerequisite(s); admission to the University Honors Program; senior standing. Students complete research and write and present a senior honors thesis under the guidance of a faculty member of the University Honors Program. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

HNPG 197H Research for Undergraduates (4-Jan) Outside research, 3-6 hours; individual study, 3-6 hours. Prerequisite(s); admission to the University Honors Program or consent of instructor; upper-division standing. An introduction to research under the supervision of University Honors Program faculty. Requires a research project. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

HNPG 198-I Honors Individual Internship (4-Jan) Consultation, 1 hour; internship, 3-12 hours; written work, 1-4 hours. Prerequisite(s); admission to the University Honors Program or consent of instructor; upper-division standing. Internship placement on or off campus that provides opportunities to acquire skills and experience for future endeavors. Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable to a maximum of 12 units.

Elective Discipline-Specific Honors Courses

A number of approved honors courses are offered by many departments. These courses are given an "H" designation. See departmental listings for details.

Urban Studies Minor

Subject abbreviation: URST
College of Humanities, Arts, and Social Sciences
Patricia Morton, Ph.D., Chair
Office, 232 Arts
(951) 827-4634; urbanstudies.ucr.edu

Committee in Charge
Richard Arnott, Ph.D. (Economics)
John Ganim, Ph.D. (English)
Milagros Peña, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Urban Studies minor is an adaptation of a well-developed interdisciplinary focus on urban concepts, issues, and problems in order to offer the chance for increased understanding of urban processes. The minor also provides preparation leading to increased employment opportunities at the municipal, state, or federal level, or to graduate work in one of several areas related to urban studies.

Requirements for the minor (24 units)
1. SOC 002F
2. URST 143/143/SOC 143
3. URST 146/ECON 146
4. URST 172/POSC 172
5. URST 182/POSC 182
6. URST 184/AHS 184

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Lower-Division Courses

URST 14 Popular Musics of the World (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s); none. Introduction to issues surrounding popular and urban musics of the world, focusing on three major geographical areas: Africa, Asia, and the Americas. Emphasizes the relationships between mass-mediated music and issues of cultural hegemony, resistance, and subversion. Examines the cultural impact of media technology on music performance and reception. Cross-listed with ENST 014 and MUS 014.

URST 21 Introduction to Architecture and Urbanism (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s); none. An introduction to the built environment including buildings, gardens, and cities, examined in terms of historical, cultural, social, technological, and political factors. Emphasis is on examples from Southern California. Cross-listed with AHS 021.

Upper-Division Courses

URST 143 Urban Sociology (5) Lecture, 3 hours; extra reading, 3 hours; field, 3 hours. Prerequisite(s); SOC 001 or SOC 001H or consent of instructor. A comparative examination of metropolitan and other urban communities, with emphasis on processes of urbanization. Cross-listed with SOC 143.

URST 146 Urban Economic Problems (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s); ECON 102 or ECON 104A. Applies economic principles to the major problems of the modern urban community, such as poverty, discrimination, deterioration of the environment, and housing problems. Explores programs for alleviation of or solution to these issues. Cross-listed with ECON 146.

URST 172 Urban Politics and Policies (4) Lecture, 3 hours; term paper and extra reading, 3 hours. Prerequisite(s); upper-division standing; POSC 010 or POSC 010H or POSC 010W. A general analysis of urban politics in the United States. Topics include theories of urban politics, structure of political competition, leading political roles, and major policy problems. Cross-listed with POSC 172.

URST 178 The Modern City (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s); upper-division standing or consent of instructor. Examines the modern metropolis from the Industrial Revolution to the present. Explores the history and theory of modern urbanism through case studies of metropolitan areas with a rich urban culture, architecture, and morphological features. Investigates approaches to the problems of the large urban agglomeration in the context of social, political, and cultural conditions. Cross-listed with AHS 178.

URST 182 Urban Problems (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s); upper-division standing or consent of instructor. An interdisciplinary examination of selected urban problems such as civil disorders, transportation, housing, welfare, and planning. Cross-listed with SOC 182.

URST 184 Modern Architecture (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s); sophomore, junior, or senior standing; or consent of instructor. History of architectural thought from Vitruvius to the present, emphasizing the modern period. Surveys the major themes of architectural theory and investigates the relationships between ideas about architecture and architectural production. Cross-listed with AHS 185. Morton

Visual Arts
See Art (Graduate Program)

Western American Studies Minor

College of Humanities, Arts, and Social Sciences
Clifford E. Trafton, Ph.D., Chair
Office, 1212 Humanities and Social Sciences
(951) 827-5401
westernamericanstudies.ucr.edu

Committee in Charge
Rebecca Kugel (History)
Milagros Peña, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Western American Studies minor is intended to provide the student with a basic understanding of the history and institutional development of the Western United States — the Great Plains, the Southwest, and California — including the geographical and cultural factors that have shaped their history.

Requirements for the Western American Studies minor are 20 units distributed as follows:
1. HISA 137, HISA 138
2. One course from each of the following groups:
   a) ETST 004/HIST 004, ETST 180/HISA 140, ETST 181/HISA 141, ETST 182/HISA 142, ETST 183/HISA 143
   b) ANTH 115E, ANTH 140F, ETST 110M
   c) ETST 108-I, ETST 108L, ETST 110K

History majors are not allowed to count HISA 137 or HISA 138 toward both the major and a minor in Western American Studies. If HISA 137 or HISA 138 is counted toward the major, then for the minor and additional course from (a) and an additional course from (b) are required.

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.

Women’s Studies
(See please Gender and Sexuality Studies)
## Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Department</th>
<th>Institutions/Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reza Abbaschian (2005)</td>
<td>Distinguished Professor, Mechanical Engineering</td>
<td>B.S., University of Tehran; M.S., Michigan Technological University, Houghton, MI; Ph.D., UC Berkeley</td>
</tr>
<tr>
<td>Nael Abu-Ghazaleh (2014)</td>
<td>Professor, Computer Science and Engineering, Electrical and Computer Engineering</td>
<td>B.Sc., University of Jordan; M.Sc., Ph.D., University of Cincinnati</td>
</tr>
<tr>
<td>Byron Adams (1989)</td>
<td>Professor, Music</td>
<td>B.M., Jacksonville University; M.M., University of Southern California; D.M.A., Cornell University</td>
</tr>
<tr>
<td>Michael E. Adams (1985)</td>
<td>Professor, Entomology/Molecular, Cell and Systems Biology</td>
<td>A.B., Ph.D., UC Riverside</td>
</tr>
<tr>
<td>James E. Adaskaveg (1995)</td>
<td>Professor, Plant Pathology and Microbiology</td>
<td>B.Sc., University of Connecticut; M.S., Ph.D., University of Arizona</td>
</tr>
<tr>
<td>Ademide Adelusi-Adeluyi (2015)</td>
<td>Assistant Professor, History</td>
<td>B.Sc., Northeastern University; M.A., Ph.D., New York University</td>
</tr>
<tr>
<td>Guillermo Aguilar (2003)</td>
<td>Professor, Mechanical Engineering</td>
<td>B.S., Universidad Nacional Autónoma de México; M.S., Ph.D., UC Santa Barbara</td>
</tr>
<tr>
<td>Adalberto Aguirre, Jr. (1980)</td>
<td>Professor, Sociology</td>
<td>B.A., UC Santa Cruz; M.A., Ph.D., Stanford University</td>
</tr>
<tr>
<td>Huiwang Ai (2011)</td>
<td>Assistant Professor, Chemistry</td>
<td>B.S., Tsinghua University, Beijing; Ph.D., University of Alberta</td>
</tr>
<tr>
<td>Hoori Ajami (2016)</td>
<td>Assistant Professor, Environmental Sciences</td>
<td>B.S., Isfahan University of Technology; M.S., University of Tehran; Ph.D., University of Arizona</td>
</tr>
<tr>
<td>Vivek Aji (2009)</td>
<td>Associate Professor, Physics</td>
<td>M.S. Indian Institute of Technology, KampusPh.D., University of Illinois, Urbana-Champaign</td>
</tr>
<tr>
<td>Omar Akbari (2015)</td>
<td>Assistant Professor, Entomology</td>
<td>B.S., M.S., Ph.D., University of Nevada, Reno</td>
</tr>
<tr>
<td>Mark Alber (2016)</td>
<td>Distinguished Professor, Mathematics</td>
<td>M.S., Moscow Institute of Technology; Ph.D., University of Pennsylvania</td>
</tr>
<tr>
<td>Michael Alexander (2008)</td>
<td>Associate Professor, Religious Studies</td>
<td>B.A., University of Pennsylvania; Ph.D., Yale University</td>
</tr>
<tr>
<td>Muhammad Ali (2007)</td>
<td>Associate Professor, Religious Studies</td>
<td>B.A., The State Institution for Islamic Studies; M.Sc., Edinburgh University Ph.D., University of Hawaii at Manoa</td>
</tr>
<tr>
<td>Michael F. Allen (1998)</td>
<td>Distinguished Professor, Plant Pathology and Microbiology</td>
<td>B.S., Southwestern College; M.S., Ph.D., University of Wyoming</td>
</tr>
<tr>
<td>Robert J. Allen (2011)</td>
<td>Associate Professor, Earth Sciences</td>
<td>B.S., M.S., Cornell University; M.Phil., Ph.D., Yale University</td>
</tr>
<tr>
<td>Scott Allen (2011)</td>
<td>Professor, Medicine</td>
<td>B.S., Bates College; M.D., Hon. , Brown University, Providence, RI</td>
</tr>
<tr>
<td>Juliann E. Allison (1997)</td>
<td>Associate Professor, Gender and Sexuality Studies</td>
<td>B.A., University of Southern California; M.A., UC Davis; Ph.D., UC Los Angeles</td>
</tr>
<tr>
<td>G. John Andersen (1990)</td>
<td>Professor, Psychology</td>
<td>B.A., Ph.D., UC Irvine</td>
</tr>
<tr>
<td>Garrett R. Anderson (2016)</td>
<td>Assistant Professor, Cell Biology and Neuroscience</td>
<td>B.S. Colorado State University; Ph.D. University of Minnesota</td>
</tr>
<tr>
<td>Kurt Anderson (2009)</td>
<td>Associate Professor, Biology</td>
<td>Ph.D., UC Santa Barbara</td>
</tr>
<tr>
<td>Michael A. Anderson (1990)</td>
<td>Professor, Environmental Sciences</td>
<td>B.S., Illinois Benedictine College; M.S., Bemidji State University; Ph.D., Virginia Polytechnical Institute and State University</td>
</tr>
<tr>
<td>Michael G. Anderson (2017)</td>
<td>Associate Professor of Teaching in Physics</td>
<td>B.S., University of California, Davis campus; Ph.D., University of California, Davis campus</td>
</tr>
<tr>
<td>Bahman Anvari (2006)</td>
<td>Professor, Bioengineering</td>
<td>B.A., UC Berkeley; M.S., CSU Sacramento; Ph.D., Texas A&amp;M University</td>
</tr>
<tr>
<td>Barry C. Arnold (1979)</td>
<td>Professor, Statistics</td>
<td>B.Sc., McMaster University, Canada; M.S., Ph.D., Stanford University</td>
</tr>
<tr>
<td>Richard Arnott (2007)</td>
<td>Distinguished Professor, Economics</td>
<td>B.S., Massachusetts Institute of Technology; Ph.D., Yale University</td>
</tr>
<tr>
<td>Emma Aronson (2015)</td>
<td>Assistant Professor, Plant Pathology and Microbiology</td>
<td>B.S., McGill University; Ph.D., University of Pennsylvania</td>
</tr>
<tr>
<td>Alicia Arrison (1991)</td>
<td>Professor, Gender and Sexuality Studies</td>
<td>B.A., M.A., Arizona State University; Ph.D., Stanford University</td>
</tr>
<tr>
<td>Maile Arvin (2015)</td>
<td>Assistant Professor, Ethnic Studies</td>
<td>B.A., Sawthmore College; M.A., Ph.D., UC San Diego</td>
</tr>
<tr>
<td>Megan Asaka (2014)</td>
<td>Assistant Professor, History</td>
<td>B.A., Brown University; M.A., M.Phil., Ph.D., Yale University</td>
</tr>
<tr>
<td>Salman Asil (2016)</td>
<td>Assistant Professor, Electrical and Computer Engineering</td>
<td>B.S., University of Engineering &amp; Technology, Lehore, Pakistan; M.S., Ph.D., Georgia Institute of Technology</td>
</tr>
<tr>
<td>Reza Asian (2007)</td>
<td>Professor, Creative Writing</td>
<td>B.A., Santa Clara University; M.A., Harvard University; M.F.A., University of Iowa; Ph.D., UC Santa Barbara</td>
</tr>
<tr>
<td>Steven G. Axelrod (1973)</td>
<td>Distinguished Professor, English</td>
<td>B.A., M.A., Ph.D., UC Los Angeles</td>
</tr>
<tr>
<td>Cecilia Ayon (2016)</td>
<td>Associate Professor, Public Policy</td>
<td>B.A., California State University, Long Beach MSW, California State University, Long Beach Ph.D., University of Washington</td>
</tr>
<tr>
<td>Bruce Babcock (2017)</td>
<td>Professor, Public Policy</td>
<td>B.S.; M.S., UC Davis; Ph.D. UC Berkeley</td>
</tr>
<tr>
<td>Jeffrey B. Bachant (2001)</td>
<td>Associate Professor, Cell Biology and Neuroscience</td>
<td>B.S., University of South Carolina; Ph.D., University of Colorado</td>
</tr>
<tr>
<td>John C. Baez (1988)</td>
<td>Professor, Mathematics</td>
<td>B.A., Princeton University; Ph.D., UC Berkeley</td>
</tr>
</tbody>
</table>
Roya Bahreini (2012)  
Associate Professor, Environmental Sciences  
B.S., University of Maryland, College Park;  
M.S., Ph.D., California Institute of Technology

Crystal Mun-Hye Baik (2014)  
Assistant Professor, Ethnic Studies  
B.A., Williams College; M.A., Columbia University;  
M.A., University of Southern California; Ph.D., University of Southern California

Julia N. Bailey-Serres (1990)  
Distinguished Professor, Botany and Plant Sciences  
B.S., University of Utah; Ph.D., University of Edinburgh

Distinguished Professor, Art History  
B.A., University of Durham; Ph.D., University of Edinburgh, Scotland

Subramanian ‘Bal’ Balachander (2016)  
Professor, Business Administration  
B. Tech, Indian Institute of Technology, Madras, India;  
P.G.D.M., Indian Institute of Management, Calcutta, India; M.S., Ph.D., Carnegie Mellon University

Alexander Balandin (1999)  
Distinguished Professor, Electrical and Computer Engineering; M.S., Moscow Institute of Physics and Technology; M.S., Ph.D., University of Notre Dame

Taradas Bandyopadhyay (1987)  
Professor, Economics  
B.A., M.A., University of Calcutta, India; M.A., McMaster University; Ph.D., Southern Methodist University

Boris Bar (2017)  
Assistant Professor, Entomology  
B.S., M.S., University of Zurich, Switzerland  
Ph.D., ETH Zurich, Switzerland

Christopher J. Bardeen (2004)  
Professor, Chemistry  
B.S., Yale University; Ph.D., UC Berkeley

Ken Barenklau (2002)  
Associate Professor, Public Policy  
B.S., Stanford; M.S., Stanford  
Ph.D., University of Wisconsin

Alexander Barinov (2015)  
Assistant Professor, Business Administration  
B.A., Lomonosov Moscow State University;  
M.A., New Economic School; M.Sc., Ph.D., University of Rochester

Kenneth N. Barish (1998)  
Professor, Physics  
B.A., UC Santa Cruz; M.S., Ph.D., Yale University

Kelley Barsanti (2015)  
Assistant Professor, Chemical and Environmental Engineering  
B.A., University of Colorado Boulder; M.S., Ph.D., OGI School of Science & Engineering at Oregon Health & Science University

Igor Barsokov (2016)  
Assistant Professor, Physics  
M.Sc., Ruhr-Universität Bochum; Dr. rer. nat., Universität Duisburg-Essen, Standort Duisburg

Ludwig Bartels (2000)  
Professor, Chemistry  
B.S., Ph.D., Freie Universität Berlin

Matthew J. Barth (1998)  
Professor, Electrical and Computer Engineering  
M.S., Ph.D., UC Santa Barbara

Nicolas Barth (2014)  
Assistant Professor, Earth Sciences  
B.S., M.S., UC Santa Barbara  
Ph.D., University of Chicago

Michael Bates (2015)  
Assistant Professor, Economics  
B.A., University of Michigan; M.A., Ph.D., Michigan State University

George Becker (2015)  
Assistant Professor, Physics  
B.A., University of Virginia; Ph.D., California Institute of Technology

Sara K. Becker (2015)  
Assistant Professor, Anthropology  
B.A., Arizona State University; M.A., California State University Los Angeles; Ph.D., University of North Carolina, Chapel Hill

Mariam Beevi Lam (2002)  
Associate Professor, Comparative Literature and Foreign Languages  
B.A., M.A., Ph.D., UC Irvine

Lynda S. Bell (1989)  
Associate Professor, History  
B.A., Washington University;  
Ph.D., UC Los Angeles

Allison Benis White (2014)  
Assistant Professor, Creative Writing  
B.A., M.F.A., UC Irvine

Jody A. Benjamin (2015)  
Assistant Professor, History  
B.A., Oberlin College;  
M.F.A., Columbia University; Ph.D., Harvard University

Ilana Bennett (2016)  
Assistant Professor, Psychology  
B.A., University of California, Irvine;  
Ph.D., Georgetown University

Gregory J.D. Beran (2007)  
Associate Professor, Chemistry  
B.S., UC San Diego; Ph.D., UC Berkeley

Ward Beyermann (1991)  
Associate Professor, Physics  
B.A., UC Berkeley; M.S., Ph.D., UC Los Angeles

Bir Bhanu (1991)  
Distinguished Professor, Electrical and Computer Engineering, Bioengineering  
B.S., Institute of Technology, BHU; M. Engr., Birla Institute of Technology and Science;  
M.B.A., UC Irvine; S.M., E.E., Massachusetts Institute of Technology; Ph.D., University of Southern California

Laxmi Bhuyan (2001)  
Distinguished Professor, Computer Science and Engineering  
B.Sc., M.Sc., Sambalpur University, India;  
Ph.D., Wayne State University

Daniel Biggers (2015)  
Assistant Professor, Political Science  
B.A., Drew University; M.A., Ph.D., University of Maryland

David A. Biggs (2004)  
Associate Professor, History & Public Policy  
B.A., University of North Carolina; M.A., Ph.D., University of Washington

Holly Bik (2016)  
Assistant Professor, Nematology  
B.Sc., Kings College London, United Kingdom;  
Ph.D., University of Southampton, United Kingdom

Devin Binder (2010)  
Associate Professor in Residence, Biomedical Sciences  
A.B., Harvard University; M.D., Ph.D., Duke University

Benjamin Bishin (2006)  
Professor, Political Science  
A.B., University of Southern California; M.A., CSU Long Beach; M.A., Ph.D., UC Los Angeles

Janet B. Blacher (1979)  
Distinguished Professor, Education  
A.B., Brown University; Ph.D., University of North Carolina, Chapel Hill

Gregor Blaha (2011)  
Assistant Professor, Biochemistry  
Mag. Rer. Nat., University of Vienna, Austria;  
Dr. Techn., Vienna University of Technology, Austria

Harvey Blanch (2015)  
Professor, Chemical and Environmental Engineering  
B.S., University of Sydney; Ph.D., University of New South Wales

Michelle E. Bloom (1997)  
Professor, Comparative Literature and Foreign Languages  
B.A., Harvard University; M.A., Ph.D., Brown University

Katherine Borkovich (2001)  
Professor, Plant Pathology and Microbiology  
B.S., UC Davis; Ph.D., UC Los Angeles

James Borneman (2001)  
Professor, Plant Pathology and Microbiology  
B.S., M.S., Ph.D., Northern Illinois University

Shaun Bowler (1989)  
Distinguished Professor, Political Science  
B.Sc., University College of Wales;  
M.A., University of Essex; Ph.D., Washington University

David Brady (2015)  
Professor, Public Policy  
B.A., University of Minnesota; M.A., Indiana University; Ph.D., Indiana University
Heidi Brayman Hackel (2007)
Associate Professor, English
B.A., Washington University in St. Louis; M.A., Ph.D., Columbia University

Alan Breitford (2016)
Assistant Professor, Biology
B.A., Williams College; Ph.D., University of British Columbia

James P. Brennan (1996)
Professor, History
B.A., American University; M.A., Ph.D., Harvard University

Heidi Brevik-Zender (2008)
Associate Professor, Comparative Literature and Foreign Languages
B.A., UC Berkeley; Ph.D., Brown University;

John C. Briggs (1980)
Professor, English
B.A., Harvard University; M.A., Ph.D., University of Chicago

Steven G. Brint (1993)
Distinguished Professor, Sociology, Public Policy
B.A., UC Berkeley; M.A., Ph.D., Harvard University

Philip Brisk (2009)
Associate Professor, Computer Science and Engineering
B.S., M.S., Ph.D., UC Los Angeles

Marissa Brookes (2013)
Assistant Professor, Political Science
B.A., Boston University; M.A., Ph.D., Northwestern University

Maryjo N. Brounce (2016)
Assistant Professor, Earth Sciences
B.S., Pennsylvania State University; Ph.D., University of Rhode Island

Brandon Brown (2015)
Assistant Professor, Social Medicine and Population Health
B.S., UC Irvine; M.P.H., UC Los Angeles; Ph.D., Johns Hopkins University

Rogerio Budasz (2008)
Associate Professor, Music
B.A., Universidade Federal do Paraíso, Brazil; B.A., Escola de Musica e Belas Artes do Paraíso, Brazil; M.A., Universidade de Sao Paulo, Brazil; Ph.D., University of Southern California

Curt Burgess (1992)
Professor, Psychology
B.G.S., M.A., University of Nebraska, Omaha; M.A., Ph.D., University of Rochester

Derek Burrill (2002)
Associate Professor, Media and Cultural Studies
B.A., UC San Diego; M.A., San Diego State University; Ph.D., UC Davis

Amalia Cabezas (2000)
Associate Professor, Media and Cultural Studies, Gender and Sexuality Studies
B.A., Pitzer College; Ph.D., UC Berkeley

Professor, Physics
B.S., Massachusetts Institute of Technology; M.S., Ph.D., University of Hawaii

Ring T. Cardé (1996)
Professor, Entomology
B.S., Tufts University; M.S., Ph.D., Cornell University

Richard A. Cardullo (1991)
Professor, Biology
B.S., University of Michigan, Ann Arbor; M.S., University of Massachusetts, Amherst; Ph.D., Johns Hopkins University

Richard Carpiano (2017)
Professor, Public Policy and Sociology
B.A., M.A. Baylor University
MPH Case Western Reserve University
M.P.H.; Ph.D. Columbia University

Miguel Carreras (2015)
Assistant Professor, Political Science
B.A., Universite Paris-Sorbonne;
M.A., Graduate Institute of International and Development Studies; Ph.D., University of Pittsburgh

Yasemin Irepoglu Carreras (2017)
LPSOE, Political Science
B.A., Koç University (Istanbul)
M.A., University of Amsterdam
Ph.D., University of Pittsburgh

Professor, Biomedical Sciences
A.B., Bryn Mawr College;
.D., University of Pennsylvania

Maria Firmino-Castillo (2017)
Acting Assistant Professor, Dance
B.F.A., Florida International University
M.A., University of New Mexico

Professor, Music
B.A., University of Sao Paulo, Brazil; M.A., Cologne Music Academy;
Ph.D., University of Liège, Belgium

Associate Professor, Chemistry
B.S., National Taiwan University;
Ph.D., University of Maryland, College Park

Edward T. Chang (1992)
Professor, Ethnic Studies
B.A., UC Berkeley; M.A., UC Los Angeles;
Ph.D., UC Berkeley

Mei-Chu Chang (1987)
Professor, Mathematics
B.S., National Taiwan University; Ph.D., UC Berkeley

Paul Chang (2015)
Assistant Professor, Religious Studies
M.A. University of Chicago
Ph.D. University of Chicago

Mark A. Chappell (1980)
Professor, Biology
B.A., UC Santa Cruz; Ph.D., Stanford University

Vyjayanthi Chari (1991)
Professor, Mathematics
B.S., M.S., Ph.D., University of Bombay, India

Justin Chartron (2017)
Assistant Professor, Bioengineering
B.S., University of California, San Diego
Ph.D., California Institute of Technology

Christopher Chase-Dunn (2000)
Distinguished Professor, Sociology
B.A., UC Berkeley; M.A., Ph.D., Stanford University

Marcelle Chauvet (1995)
Professor, Economics
B.S., M.S., University of Brasilia, Brazil;
M.S., Ph.D., University of Pennsylvania

Xochitl Chavez (2016)
Assistant Professor, Computer Science and Engineering
B.S., Columbia University; M.A., Ph.D., Princeton University

Sihem Cheilouf (2017)
Assistant Professor, Biochemistry
B.Sc. King's College University of London, UK
Ph.D., State University of New York at Stony Brook

Meng Chen (2016)
Associate Professor, Botany and Plant Sciences
B.S., Ph.D., Iowa State University

Po-Ning Chen (2016)
Assistant Professor, Mathematics
B.S., Massachusetts Institute of Technology;
Ph.D., Harvard University

Xueimei Chen (2005)
Distinguished Professor, Botany and Plant Sciences
B.S., Beijing University;
Ph.D., Cornell University

Zizhong Chen (2012)
Associate Professor, Computer Science and Engineering
B.Sc., Beijing Normal University, P.R. China;
M.Sc., Renmin University of China; Ph.D.
University of Tennessee, Knoxville

Ann Cheney (2015)
Assistant Professor in Residence, Social Medicine and Population Health
B.A., State University of New York at Oneonta;
M.A., Ph.D., University of Connecticut

Quan 'Jason' Cheng (2001)
Professor, Chemistry
B.S., M.S., Nanjing University, China;
Ph.D., University of Florida
Cecilia S. Cheung (2013)
Assistant Professor, Psychology
B.S.S.c., Chinese University of Hong Kong; M.A., Ph.D., University of Illinois, Urbana-Champaign

Lucille Chia (1995)
Professor, History
B.A., University of Pennsylvania; M.S., Ph.D., New York University; M.A., Ph.D., Columbia University

Christine Chiarello (1996)
Professor, Psychology
B.A., M.A., State University of New York, Buffalo; Ph.D., UC Berkeley

Vrinda Chidambaram (2015)
Assistant Professor, Comparative Literature and Foreign Languages
A.B., Cornell University; Ph.D., Princeton

Assistant Professor, Cell Biology and Neuroscience
M.D., Catholic University of Korea; Ph.D., Ohio State University

Dong-Hwan Choe (2011)
Assistant Professor, Entomology
B.S., Korea University, Korea
M.S., Ph.D., UC Riverside

Evangelos Christidis (2011)
Professor, Computer Science and Engineering
B.S., National Technical University of Athens; M.S., Ph.D., UC San Diego

Marek Chrobak (1987)
Professor, Computer Science and Engineering
M.S., Warsaw University;
Ph.D., Polish Academy of Sciences, Warsaw

Eric L. Chronister (1987)
Professor, Chemistry
B.S., UC Los Angeles;
Ph.D., University of Illinois, Urbana-Champaign

Y. Peter Chung (1989)
Professor, Business Administration
B.S., Sogang University, Korea; M.B.A., CSU Los Angeles; Ph.D., Ohio State University

John W. Cioffi (2002)
Professor, Political Science
B.A., Rutgers University; J.D., Rutgers School of Law; M.A., Ph.D., UC Berkeley

Robert B. Clare (2000)
Professor, Physics
B.S., Michigan State University; Ph.D., Massachusetts Institute of Technology

Christopher Clark (2013)
Assistant Professor, Biology
B.S., Washington State University; Ph.D., UC Berkeley

Maudemarie Clark (2009)
Professor, Philosophy
B.A., Loyola University; M.A., Ph.D., University of Wisconsin - Madison

Steven E. Clark (1987)
Professor, Psychology
B.A., Illinois State University; Ph.D., Indiana University

Walter Aaron Clark (2003)
Professor, Music
B.M., University of North Carolina; M.A., UC San Diego; Ph.D., UC Los Angeles

Gerald L. Clarke Jr. (2016)
Assistant Professor, Ethnic Studies
B.A. University of Central Arkansas, M.A., M.F.A, Stephen F. Austin State University

Timothy J. Close (1990)
Professor, Botany and Plant Sciences
B.S., UC San Diego; M.S., Ph.D., UC Davis

David R. Cocker (2001)
Professor, Chemical and Environmental Engineering
B.S., UC Riverside;
Ph.D., California Institute of Technology

Michael D. Coffey (1981)
Professor, Plant Pathology and Microbiology
B.Sc., University College of North Wales; Ph.D., University of Wales

Thomas Cogswell (1999)
Professor, History
A.B., University of Georgia;
Ph.D., Washington University

Sinisa Coh (2016)
Assistant Professor, Mechanical Engineering
B.Sc., University of Zagreb/Sveucliste u Zagrebu; Ph.D. Rutgers University

Allison Hedge Coke (2016)
Distinguished Professor, Creative Writing
A.F.A.W., Institute for American Indian Arts
M.F.A.W., Vermont College/Norwich University

Loren Collingwood (2012)
Assistant Professor, Political Science
B.A., California State University, Chico; M.A., Ph.D., University of Washington

Eddie Comeaux (2012)
Associate Professor, Education
B.A., UC Berkeley; M.S., United States Sports Academy; M.A., Ph.D., UC Los Angeles

Matthew Conley (2015)
Assistant Professor, Chemistry
B.S., University of Illinois;
Ph.D., University of Chicago

Djurdjica Coss (2013)
Associate Professor, Biomedical Sciences
B.S., Novi Sad University, Serbia; Ph.D., UC Riverside

Kevin Costello (2011)
Assistant Professor, Mathematics
B.S., California Institute of Technology; Ph.D., Rutgers University

Adriana Cracian (2008)
Professor, English
B.A., University of Puget Sound;
M.A., Ph.D., UC Davis

Charmaine Craig (2013)
Assistant Professor, Creative Writing
B.A., Harvard University;
M.F.A., UC Irvine

Carl F. Cranor (1971)
Distinguished Professor, Philosophy
B.A., University of Colorado;
M.S.L., Yale University; Ph.D., UC Los Angeles

Ashon Crawley (2013)
Assistant Professor, Ethnic Studies
B.A., University of Pennsylvania;
M.A., Ph.D., Duke University

David M. Crohn (1992)
Associate Professor, Environmental Sciences
B.S., North Carolina State University;
M.S., Ph.D., Cornell University

Xinping Cui (2002)
Professor, Statistics
B.S., M.S., Nankai University, P.R. China;
M.S., Bowling Green State University;
Ph.D., UC Los Angeles

Yanou Cui (2016)
Assistant Professor, Physics
B.S., Tsinghua University, Beijing, China
Ph.D., University of Michigan, Ann Arbor, Michigan

Yongtao Cui (2016)
Assistant Professor, Physics
B.S., Peking University, Beijing, China
Ph.D., Cornell University, Ithaca, NY

Joseph Cummins (2014)
Assistant Professor, Economics
B.A., University of Arizona;
M.A., Ph.D., UC Davis

Margarita C. Currás-Collazo (1994)
Associate Professor, Cell Biology and Neurosciences
B.S., Tulane University;
Ph.D., Ohio State University, Columbus

Scott N. Currie (1992)
Associate Professor, Cell Biology and Neurosciences
B.A., UC San Diego; M.S., Northeastern University; Ph.D., UC Davis

Sean Cutter (2007)
Professor, Botany and Plant Sciences
B.A., M.S., University of Toronto;
Ph.D., Stanford University

Shane Cybart (2016)
Assistant Professor, Mechanical Engineering
B.S., University of Michigan-Dearborn; Masters, Ph.D., UC San Diego

Paul D’Anieri (2014)
Professor, Political Science, Public Policy
B.A., Michigan State; M.A., Ph.D., Cornell University

Anupama Dahanukar (2009)
Associate Professor, Molecular, Cell, and Systems Biology
B.S., Bombay University, India;
MEM, Ph.D., Duke University
Iván Eusebio Aguirre Darancou (2017)
Assistant Professor
B.A., Tecnológico de Monterrey (Mexico),
PhD, Washington University, St. Louis

Elizabeth L. Davis (2012)
Assistant Professor, Psychology
B.A., Indiana University, Bloomington; Ph.D.,
UC Irvine

Paul De Ley (2000)
Associate Professor, Nematology
B.S., University of Southern Mindanao,
Cotabato, Philippines; M.S., University of
the Philippines, Los Banos, Laguna;
Ph.D., University of Ghent, Belgium

Cati V. De Los Rios (2016)
Assistant Professor, Education
B.A., UC Berkeley;
M.T.S., Harvard University;
Ed.M.,Ph.D., Columbia University

Richard J. Debus (1988)
Professor, Biochemistry
B.S., California Institute of Technology;
Ph.D., UC San Diego

Katayoon Dehesh (2016)
Professor, Botany and Plant Sciences
B.S., Pahlavi University; Ph.D., University of
Sussex

Associate Professor, English
B.A., Barnard College; M.A., M.Phil., Ph.D.,
Columbia University

Anil B. Deolalikar (2002)
Professor, Economics
B.A., Harvard University; Diploma, Cambridge
University; Ph.D., Stanford University

Ian James Dicke (2012)
Assistant Professor, Music
B.A., San Francisco Conservatory of Music;
M.M., University of Michigan, Ann Arbor;
D.M.A., University of Texas at Austin

Jeffrey Diez (2013)
Assistant Professor, Botany and Plant Sciences
B.S., University of Pennsylvania;
M.S., University of Pennsylvania;
Ph.D., University of Georgia

Adler R. Dillman (2015)
Assistant Professor, Nematology
B.Sc., Brigham Young University;
Ph.D., California Institute of Technology

Ariel Dinar (2008)
Professor of Environmental Economis
and Policy; B.S., M.S., Ph.D. Hebrew
University of Jerusalem

Shou-Wei Ding (2001)
Professor, Plant Pathology and Microbiology
B.S., Anhui Agricultural University, China;
M.S., Fudan University, China;
Ph.D., The Australian National University

Stephanie Dingwall (2016)
Assistant Professor, Biochemistry
M.S., Ph.D. University of California, Riverside

Nicholas V. DiPatrizio (2014)
Assistant Professor, Biomedical Sciences
B.A., Temple University; Ph.D., Drexel University

John M. Divola (1988)
Distinguished Professor, Art
B.A., CSU Northridge; M.A.,
M.F.A., UC Los Angeles

Jennifer Doyle (1999)
Professor, English
B.A., Rutgers University;
Ph.D., Duke University

Mary L. Droser (1989)
Professor, Earth Sciences
B.S., University of Rochester; M.A., State University
of New York, Binghamton;
Ph.D., University of Southern California

Alejandra Dubcovsky (2016)
Assistant Professor, History
B.A., M.A., UC Berkeley; MLIS, San Jose State
University; Ph.D., UC Berkeley

Ilya Dumer (1995)
Professor, Electrical and Computer Engineering
M.Sc., Moscow Institute of Physics and
Technology; Ph.D., Institute for Problems of
Information Transmission, Russian Academy of
Sciences, Moscow

William L. Dunlop (2013)
Assistant Professor, Psychology
B.A., M.A., University of Western Ontario;
M.A., Ph.D., University of British Columbia

Vanessa Estrella-Correa (2007)
Assistant Professor, Sociology
B.S., Stanford University; M.A.,
Ph.D., UC Los Angeles

Irina Ethell (2002)
Professor, Biomedical Sciences
B.S., Ph.D., Dnipropetrovsk
National University, Ukraine

Professor, Botany and Plant Sciences
Pre-diploma, Johannes Gutenberg Universität;
Diploma, Albertus Magnus Universität;
Ph.D., Max Planck Institut für
Zuechtungsforcschung, Germany

Charles Evered (2006)
Professor, Theatre, Film and Digital Production
B.A., Rutgers University; M.F.A., Yale University

Exequiel Ezcurra (2008)
Professor, Botany and Plant Sciences
B.S., University of Buenos Aires, Argentina;
M.S., Ph.D., University College of
North Wales, Bangor

Michalis Faloutsos (2015)
Professor, Computer Science and Engineering
B.S., National Technical University of Athens;
M.S., Ph.D., University of Toronto

John A. Ellison (1992)
Professor, Physics
B.S., University of Southampton;
Ph.D., Imperial College of Science and
Technology, England

Norman C. Elstrannd (1979)
Distinguished Professor, Botany and Plant Sciences
B.S., University of Illinois, Urbana-Champaign;
Ph.D., University of Texas, Austin

Josh Emmons (2014)
Associate Professor, Creative Writing
B.A., Oberlin College; M.F.A., University of Iowa

Johannes Endres (2015)
Associate Professor, Art History, Comparative
Literature and Languages
M.A., Ph.D., University of Trier; Dr. phil. habil.,
University of Leipzig

William P. Erchul (2016)
Professor, Education
B.A., University of Wisconsin-Madison;
Ph.D., University of Texas at Austin

Steve Erickson (2014)
Professor, Creative Writing
B.A., M.A., UC Los Angeles

Kevin Estering (2003)
Professor, Public Policy,
Political Science
B.A., University of Virginia;
M.S., Ph.D., University of Chicago

Mary L. Droser (1989)
Professor, Earth Sciences
B.S., University of Rochester; M.A., State University
of New York, Binghamton;
Ph.D., University of Southern California

Alejandra Dubcovsky (2016)
Assistant Professor, History
B.A., M.A., UC Berkeley; MLIS, San Jose State
University; Ph.D., UC Berkeley

Ilya Dumer (1995)
Professor, Electrical and Computer Engineering
M.Sc., Moscow Institute of Physics and
Technology; Ph.D., Institute for Problems of
Information Transmission, Russian Academy of
Sciences, Moscow

William L. Dunlop (2013)
Assistant Professor, Psychology
B.A., M.A., University of Western Ontario;
M.A., Ph.D., University of British Columbia

Vanessa Estrada-Correa (2007)
Assistant Professor, Sociology
B.S., Stanford University; M.A.,
Ph.D., UC Los Angeles

Irina Ethell (2002)
Professor, Biomedical Sciences
B.S., Ph.D., Dnipropetrovsk
National University, Ukraine

Professor, Botany and Plant Sciences
Pre-diploma, Johannes Gutenberg Universität;
Diploma, Albertus Magnus Universität;
Ph.D., Max Planck Institut für
Zuechtungsforcschung, Germany

Charles Evered (2006)
Professor, Theatre, Film and Digital Production
B.A., Rutgers University; M.F.A., Yale University

Exequiel Ezcurra (2008)
Professor, Botany and Plant Sciences
B.S., University of Buenos Aires, Argentina;
M.S., Ph.D., University College of
North Wales, Bangor

Michalis Faloutsos (2015)
Professor, Computer Science and Engineering
B.S., National Technical University of Athens;
M.S., Ph.D., University of Toronto

Li Fan (2009)
Associate Professor, Biochemistry
Ph.D., Michigan State University
Jay A. Farrell (1993)
Associate Dean, Academic Personnel,
Bourns College of Engineering
Professor, Electrical and Computer
Engineering; B.S., Iowa State University;
M.S., Ph.D., University of Notre Dame

Derick Fay (2008)
Associate Professor, Anthropology
B.A., Amherst College; M.A., Boston University;
M.Th., University of Edinburgh;
Ph.D., Boston University

Brian A. Federici (1974)
Distinguished Professor of Graduate Division,
Entomology
B.S., Rutgers University;
M.S., Ph.D., University of Florida

Pingyun Feng (2000)
Professor, Chemistry
B.S., Taiyuan Institute of Technology, China;
M.S., Rochester Institute of Technology;
Ph.D., UC Santa Barbara

Luca Ferrero (2016)
Professor, Philosophy
Laurea, University of Florence, Italy;
A.M., Ph.D., Harvard

Todd Fiacco (2008)
Associate Professor, Cell Biology
and Neuroscience
B.S., Dickinson College; M.S.,
Ph.D., Boston University School of Medicine

John M. Fischer (1988)
Distinguished Professor, Philosophy
B.A., M.A., Stanford University; M.A.,
Ph.D., Cornell University

James M. Flegal (2008)
Associate Professor, Statistics
B.S., Northwestern University;
Ph.D., University of Minnesota

Boniface Fokwa (2015)
Assistant Professor, Chemistry
B.S., M.S., University of Yaoundé I;
Ph.D., Dresden University of Technology,
Germany

Byron Ford (2015)
Professor, Biomedical Sciences
B.S., Gambling State University, Louisiana;
Ph.D., Meharry Medical College, Tennessee

Heather Ford (2016)
Assistant Professor, Earth Sciences
B.S., University of Michigan; M.Sc.,
Ph.D., Brown University

Katie Ford (2014)
Professor, Creative Writing
B.A., Whitman College;
M.Div., Harvard University;
M.F.A., University of Iowa

Alessandro Fornazzari (2004)
Associate Professor, Hispanic Studies
B.A., Trent University; M.A., Universidad de Chile; Ph.D., Duke University

John Franchak (2014)
Assistant Professor, Psychology
B.A., University of Virginia; M.A.,
Ph.D., New York University

Elisa Franco (2011)
Assistant Professor, Mechanical Engineering
Laurea, Ph.D., University of Trieste, Italy;
Ph.D., California Institute of Technology

Janet Franklin (2017)
Distinguished Professor, Botany
and Plant Sciences
B.A., M.A., Ph.D. University of California, Santa Barbara;

Kevin Freedman (2017)
Assistant Professor, Bioengineering
B.S., M.S., Ph.D., Drexel University

Howard S. Friedman (1976)
Distinguished Professor, Psychology
B.A., Yale University;
Ph.D., Harvard University

David C. Funder (1989)
Distinguished Professor, Psychology
B.A., UC Berkeley; Ph.D., Stanford University

Gareth Fanning (2007)
Associate Professor, Earth Sciences
B.A., Fitzwilliam College, University of Cambridge;
M.S., University of Durham, UK;
Ph.D., Hertford College, University of Oxford

Nathaniel Gabor (2013)
Assistant Professor, Physics
B.S., Pennsylvania State University;
Ph.D., Cornell University

Emma Gachomo (2016)
Assistant Professor, Plant Pathology and Microbiology
B.S., M.S., University of Nairobi, Kenya;
Ph.D., University of Bonn, Germany

Christine Ward Gailey (1999)
Professor, Anthropology
B.A., M.A., University of Michigan;
Ph.D., New School for Social Research
(New School University)

Donatella Galella (2015)
Assistant Professor, Theatre, Film
and Digital Production
B.A., Amherst College; M. Phil.,
Ph.D., City University of New York

Daniel R. Galle (1990)
Professor, Biochemistry
B.S., University of Michigan, Ann Arbor;
Ph.D., UC Davis

Jianying 'Jay' Gan (2001)
Professor, Environmental Sciences
B.S., M.S., Ph.D., Zhejiang Agricultural University, China

Wee Liang Gan (2006)
Associate Professor, Mathematics
B.S., Cambridge University;
Ph.D., University of Chicago

John M. Ganim (1974)
Distinguished Professor, English
B.A., Rutgers University; M.A.,
Ph.D., Indiana University

Long Gao (2008)
Associate Professor, Business Administration
B.S., M.S., Tsinghua University, China;
Ph.D., Pennsylvania State University

Juanita Garcia (2017)
Assistant Professor, Sociology
B.A., Sam Houston University; M.A. Texas A&M
University; Ph.D, Texas A&M University

Martin García-Castro (2014)
Associate Professor, Biomedical Sciences
B.S., M.S., Universidad Nacional Autónoma de México, Mexico;
Ph.D., University of Cambridge, UK

Theodore Garland, Jr. (2001)
Professor, Biology
B.S., M.S., University of Nevada, Las Vegas;
Ph.D., UC Irvine

J. William Gary (1991)
Professor, Physics
B.S., Brown University;
Ph.D., UC Berkeley

Associate Professor, Biology
B.A., University of Virginia, Charlottesville;
M.Phil., Ph.D., Yale University

Mary Gauvain (1992)
Professor, Psychology
B.A., UC Irvine; M.A., Stanford University;
Ph.D., University of Utah

Xin Ge (2011)
Assistant Professor, Chemical and Environmental Engineering
B.E., M.S., Tsinghua University;
Ph.D., McMaster University

Joseph Genereux (2015)
Assistant Professor, Chemistry
B.S., UC Irvine; Ph.D., California Institute of Technology

Cathleen Geraghty (2012)
Assistant Teaching Professor, Education
B.A., California State University,
San Bernardino; M.Ed.;Ph.D., University of California, Riverside

Alec Gerry (2002)
Professor, Entomology
B.S., UC Berkeley; Ph.D., UC Riverside

Abhijit Ghosh (2013)
Assistant Professor, Earth Sciences
B.S., M.S., University of Calcutta, India;
Ph.D., University of Washington

Kasthab Ghosh (2011)
Assistant Professor, Bioengineering
B.Tech., National Institute of Technology;
Ph.D., State University of New York at Stony Brook
Subir Ghosh (1980)
Professor, Statistics
B.S., Presidency College, University of Calcutta, India; M.S., University of Calcutta, India; Ph.D., Colorado State University, Fort Collins

Gerhard Gierz (1982)
Professor, Mathematics
B.S., M.S., Ph.D., Technische Hochschule Darmstadt

Sarjeet S. Gill (1983)
Professor, Cell Biology and Neuroscience
B.S., McGill University, Canada; Ph.D., UC Berkeley

Juan Pablo Giraldo (2015)
Assistant Professor, Botany and Plant Sciences
B.S., Universidad de los Andes; Ph.D., Harvard University

Thomas Girke (2007)
Professor, Botany and Plant Sciences
Diploma, Ph.D., University of Hamburg

Farah Godrej (2006)
Associate Professor, Political Science
B.A., Clark University; M.A., University of Chicago; Ph.D., Georgetown University

Professor, History
B.A., M.A., Ph.D., UC Los Angeles

Associate Professor, Botany and Plant Sciences
B.S., M.S., University of Agricultural Sciences, Bangalore, India; Ph.D., Tata Institute of Fundamental Research, Mumbai, India

Alfonso Gonzales (2016)
Associate Professor, Ethnic Studies
B.A., UC Los Angeles; M.A. Stanford University; Ph.D. UC Los Angeles

Jose Gonzalez (2016)
Assistant Professor, Mathematics
B.S., M.S., National University of Colombia; Ph.D., University of Michigan

Gloria Gonzalez-Rivera (1991)
Professor, Economics
Lic., Universidad Complutense, Spain; M.A., Ph.D., UC San Diego

Elodie Goodman (2012)
Associate Professor, Business Administration
M.S., Ecole Centrale Paris; Ph.D., Massachusetts Institute of Technology

Piotr S. Górecki (1989)
Professor, History
A.B., University of Illinois, Urbana-Champaign; M.A., J.D., Stanford University; Ph.D., University of Chicago

Peter Graham (2001)
Professor, Philosophy
B.A., UCLA; Philosophy, M.A. University of Arizona; Philosophy; Ph.D., Stanford University

Robert C. Graham (1986)
Professor, Environmental Sciences
B.S., UC Davis; M.S., Utah State University; Ph.D., North Carolina State University, Raleigh

Charles Denver Graninger (2012)
Associate Professor, History
B.A., New College of Florida; M.A., University of Colorado; Ph.D., Cornell University

Andrew B. Gray (2015)
Assistant Professor, Environmental Sciences
B.S., University of Chicago; Ph.D., UC Davis

P. Alex Greaney (2015)
Assistant Professor, Mechanical Engineering
M.Eng., University of Oxford; Ph.D., UC Berkeley

Paul E. Green (1997)
Associate Professor, Ethnic Studies
B.A. Dillard University; M.Ed., University of New Orleans; Ph.D., University of Virginia,

Jacob Greenstein (2004)
Associate Professor, Mathematics
M.S., State Technical Institute, Russia; Ph.D., Weizmann Institute, Israel

Jana Grittersova (2009)
Assistant Professor, Political Science
B.S., University of Economics; M.A., University of Kent at Canterbury; Ph.D., University of Economics; Ph.D., Cornell University

William Grover (2012)
Assistant Professor, Bioengineering
B.S., University of Tennessee; Ph.D., UC Berkeley

Wei Feng (2014)
Assistant Professor, Cell Biology and Neurosciences
M.D., Beijing Medical University; M.S., Peking University; Ph.D. University of Rochester

Alfonso Gonzales, (2016)
Associate Professor, Ethnic Studies
B.A., UC Los Angeles; M.A. Stanford University; Ph.D. UC Los Angeles

Jose Gonzalez (2016)
Assistant Professor, Mathematics
B.S., M.S., National University of Colombia; Ph.D., University of Michigan

Zhang-dan Guan (2000)
Associate Professor, Mathematics
B.S., Xiamen University, China; M.S., Institute of Mathematics, Academia Sinica, China; Ph.D., UC Berkeley

Cassandra M. Guarino (2015)
Professor, Education, Public Policy
B.A., UC Berkeley; A.M., A.M., Ph.D., Stanford University

Timothy Gubler (2015)
Assistant Professor, Business Administration
B.A., Brigham Young University; M.S., Ph.D., Washington University, St. Louis

Catherine Gudis (2005)
Associate Professor, History
B.A., Smith College; M.A., Ph.D., Yale University

Katja Guenther (2008)
Associate Professor, Gender and Sexuality Studies
B.A., Smith College; M.A., University of California, Davis; Ph.D., University of Minnesota, Twin Cities

Kimberly Guerrero (2017)
Assistant Professor, Theatre, Film, and Digital Production
B.A., UC Los Angeles; M.F.A., UC Riverside

Weihsin Gui (2009)
Associate Professor, English
B.A., Wesleyan University; M.A., Ph.D., Brown University

Jang-Ting Guo (1993)
Professor, Economics
B.A., National Taiwan University; M.A., Ph.D., UC Los Angeles

Juchen Guo (2012)
Assistant Professor, Chemical and Environmental Engineering
B.S., Zhejiang University; Ph.D., University of Maryland, College Park

Rajiv Gupta (2007)
Professor, Computer Science and Engineering
B.Tech., Indian Institute of Technology; M.S., Ph.D., University of Pittsburgh

Elaine D. Haber (2008)
Associate Professor, Electrical and Computer Engineering
B.S., Massachusetts Institute of Technology; M.S., Massachusetts Institute of Technology; Ph.D., UC Santa Barbara

Steven W. Hackel (2007)
Professor, History
B.A., Stanford University; M.A., Ph.D., Cornell University

Susan Hackwood (1990)
Professor, Electrical and Computer Engineering
B.Sc., Ph.D., DeMontfort University

Sherine Hafez (2007)
Associate Professor, Gender and Sexuality Studies
B.A., M.A., American University in Cairo; Ph.D., UC Davis

George E. Haggerty (1981)
Distinguished Professor, English
B.A., College of the Holy Cross; M.A.; Ph.D., UC Berkeley

Rong Hai (2015)
Assistant Professor, Plant Pathology and Microbiology
B.S., M.S., Jinan University; Ph.D., UC Berkeley

Jerayr ‘John’ Haleblian (2014)
Professor, Business Administration
B.S., San Jose State University; M.A.; Ph.D., University of Southern California

Frederick Hamann III (2016)
Professor, Physics
B.S., University of Wisconsin; Ph.D., Stony Brook University

Kimberly A. Hammond (1995)
Professor, Biology
B.A., Colorado State University; M.A., State University of New York at Buffalo; Ph.D., Colorado State University
Gail G. Hanson (2002)
Professor, Physics
B.A., Cambridge University; Ph.D., Massachusetts Institute of Technology

W. Hill Harman (2013)
Assistant Professor, Chemistry
B.S., University of Virginia; Ph.D., UC Berkeley

Adam Harmer (2014)
Assistant Professor, Philosophy
B.A., M.A., McMaster University; Ph.D., University of Toronto

Keith Harris (2006)
Associate Professor, Media and Cultural Studies, English
B.A., Hampton University; M.A., M.S., UC Berkeley; Ph.D., New York University

Michael P. Haselhuhn (2012)
Associate Professor, Business Administration
B.A., Northwestern University; M.S., Ph.D., UC Berkeley

Alexander B. Haskell (2007)
Associate Professor, History
B.A., Princeton University; M.A., Ph.D. The Johns Hopkins University

Caryl Y. Hayashi (2001)
Professor, Biology
B.S., M.S., Ph.D., Yale University

Randolph C. Head (1992)
Professor, History
A.B., Harvard College; M.A., Ph.D., University of Virginia

Steven M. Helfand (1995)
Associate Professor, Economics
B.A., M.S., Ph.D., UC Berkeley

Jean Helwege (2015)
Professor, Business Administration
B.A., University of Chicago; M.A., Ph.D., UC Los Angeles

Boerge Hemmerling (2017)
Assistant Professor, Physics
B.S., Ruprecht-Karls Universität, Heidelberg, Germany.
Ph.D., Gottfried Wilhelm Leibniz Universität, Hannover, Germany

John M. Heraty (1995)
Professor, Entomology
B.Sc., M.Sc., University of Guelph, Canada; Ph.D., Texas A & M University

Michelle Hermann Raheja (2001)
Associate Professor, English
B.A., M.A., Ph.D., University of Chicago

Robert Hernandez (2012)
Assistant Professor, English
B.S./B.A., University of Colorado at Boulder; M.A., UC Los Angeles; Ph.D., University of Maryland

Marta Hernández-Salván (2007)
Associate Professor, Hispanic Studies
B.A., Universidad Complutense de Madrid; M.A., Universidad Complutense de Madrid; Ph.D., Duke University

David K. Herzberger (2005)
Professor, Hispanic Studies
B.A., Pennsylvania State University; M.A., Ph.D., University of Illinois, Urbana

Peter W. Hickmott (1999)
Associate Professor, Psychology
B.A., Cornell University; M.S., M.P.H., Ph.D., Yale University

Timothy Higham (2011)
Associate Professor, Biology
B.Sc., University of Calgary; M.S., University of Cincinnati; Ph.D., UC Davis

Russ Hille (2007)
Professor, Biochemistry
B.S., Texas Tech University; Ph.D., Rice University

Rickerby Hinds (2003)
Professor, Theatre, Film and Digital Production
B.A., UC Riverside; M.F.A., UC Los Angeles

Sarojini Hirshleifer (2016)
Assistant Professor, Economics
B.A., UC Berkeley; M.A., Ph.D., UC San Diego

Tamara Ho (2006)
Associate Professor, Gender and Sexuality Studies
B.A., Pomona College; M.A., Ph.D., UC Los Angeles

Hyun Shana Hong (2014)
Assistant Professor, Business Administration
B.S., Seoul National University, Korea; M.S., Stanford University; Ph.D., University of Southern California

Richard J. Hooley (2008)
Associate Professor, Chemistry
B.A., M.S., Emmanuel College, Cambridge University; Ph.D., Princeton University

Francesca Hopkins (2016)
Assistant Professor, Environmental Sciences
B.A., UC Berkeley; M.S., Ph.D., UC Irvine

Nalo Hopkinson (2011)
Professor, Creative Writing
B.A., York University, Canada; M.A., Seton Hill University

Ansel Hsiao (2015)
Assistant Professor, Plant Pathology and Microbiology
B.A., B.A., Ph.D., University of Pennsylvania

Xiaoping Hu (2016)
Professor, Bioengineering
B.S., University of Science and Technology of China; M.S., Ph.D., University of Chicago

Yingbo Hua (2001)
Professor, Electrical and Computer Engineering
B.E., Southeast University, Nanjing, China; M.S., Ph.D., Syracuse University

Emily Hue (2017)
Assistant Professor, Ethnic Studies
B.A. Vassar College; Ph.D., New York University

Kelly Huffman (2005)
Associate Professor, Psychology
B.A., CU Long Beach; M.A., Ph.D., UC Davis

Brent L. Hughes (2016)
Associate Professor, Psychology
B.S., University of Michigan, Ann Arbor; Ph.D., University of Texas at Austin

Jennifer S. Hughes (2012)
Associate Professor, History
B.A., UC Santa Cruz; M.A., Harvard Divinity School; Ph.D., Graduate Theological Union

Nigel C. Hughes (1997)
Professor, Earth Sciences
B.S., University of Durham, United Kingdom; Ph.D., University of Bristol, United Kingdom

Indridi Indridason (2008)
Associate Professor, Political Science
B.A., University of Iceland; M.A., Ph.D., University of Rochester

Marsha M. Ing (2009)
Associate Professor, Education
B.A., University of Hawaii; M.A., Ph.D., UC Los Angeles

Professor, Art
B.F.A., University of Wisconsin; M.F.A., California Institute of the Arts

Erith Jaffe-Berg (2006)
Professor, Theatre, Film and Digital Production
B.A., UC Berkeley; M.A., Ph.D., University of Toronto

Agnieszka Jaworska (2008)
Associate Professor, Philosophy
B.S.E., Princeton University; Ph.D., Harvard University

Una M. Jayakumar (2016)
Associate Professor, Education
B.A., M.A., Ph.D., UC Los Angeles

Associate Professor, Creative Writing
B.A., UC Riverside; M.F.A., UC Irvine

Darrel Jenerette (2008)
Professor, Botany and Plant Sciences
B.S., Virginia Polytechnic Institute and State University; Ph.D., Arizona State University;
John Jennings (2016)
Professor, Media and Cultural Studies
B.A.; M.A. Art Education, University of Illinois at Urbana-Champaign; M.F.A., Jackson State University

Kelly Y. Jeong (2008)
Associate Professor, Comparative Literature and Foreign Languages
B.A., UC Irvine; M.A., Ph.D., UC Los Angeles

Anthony Jerry (2016)
Assistant Professor, Anthropology
B.A., M.A., San Diego State University; Ph.D., University of Illinois at Urbana-Champaign

Professor, Statistics
B.S., Austin Peay State University; M.S., Ph.D., Iowa State University

Zhenyu Jia (2016)
Assistant Professor, Botany and Plant Sciences
B.S., Wuhan University, China; M.S., Ph.D., UC Riverside

De-en Jiang (2014)
Associate Professor, Chemistry
B.S., Peking University; Ph.D., UC Los Angeles

Tao Jiang (1999)
Professor, Computer Science and Engineering
B.Sc., University of Science and Technology, China; Ph.D., University of Minnesota

Yawan Jiao (2013)
Associate Professor, Business Administration
B.S., Renmin University of China, China; M.S., University of Western Ontario, Canada; Ph.D., Boston College

Hailing Jin (2004)
Professor, Plant Pathology and Microbiology
B.S., Wuhan University; Ph.D., National Laboratory of Plant Molecular Genetics, Shanghai Inst. of Plant Physiol.

Austin H. Johnson (2015)
Assistant Professor, Education
B.A., University of Arizona; M.A., Ph.D., University of Connecticut

Imani Kai Johnson (2014)
Assistant Professor, Dance
B.A., UC Berkeley; M.A., New York University; M.A., Ph.D., University of Southern California

Howard S. Judelson (1994)
Professor, Plant Pathology and Microbiology
B.S., Cornell University; Ph.D., University of Wisconsin

Ryan Julian (2005)
Professor, Chemistry
B.S., University of Utah; Ph.D., California Institute of Technology

Heejung Jung (2006)
Associate Professor, Mechanical Engineering
B.S., M.S., Seoul National University, Seoul, Korea; Ph.D., University of Minnesota

Joseph Kahne (2016)
Professor, Education
B.A., Wesleyan University; M.A., Ph.D., Stanford University

Ivalina Kalcheva (2014)
Assistant Professor, Business Administration
B.S., University of Economics, Varna, Bulgaria; M.B.A., Saginaw Valley State University; Ph.D., University of Utah

Isgouhi Kaloshian (1997)
Professor, Nematology
B.S., M.S., American University of Beirut; Ph.D., UC Riverside

Anthonia Kalu (2015)
Professor, Comparative Literature and Foreign Languages, Gender and Sexuality Studies
B.A., M.A., Ph.D., University of Wisconsin-Madison

Ted Karginov (2013)
Assistant Professor, Cell Biology and Neuroscience
B.S., University of Virginia; Ph.D., University of Colorado, Boulder

Konstantinos Karydis (2017)
Assistant Professor, Electrical and Computer Engineering
B.S., M.S., National Technical University of Athens; Ph.D., University of Delaware

Zak Kassas (2014)
Assistant Professor, Electrical and Computer Engineering
B.E., Lebanese American University; M.S., Ohio State University; M.S.E., Ph.D., The University of Texas at Austin

Marcus Kaul (2017)
Associate Professor, Biomedical Sciences
B.Sc., Johann-Wolfgang von Goethe-University, Germany; Ph.D., Johannes Gutenberg-University, Germany

Anusha Kedhar (2017)
Assistant Professor, Dance
B.A., UC Berkeley; Ph.D., UC Riverside

Pierre Keller (1990)
Associate Professor, Philosophy
B.A., McGill University, Canada; M.A., University of Heidelberg, Germany; Ph.D., Columbia University

James Kelliher (2008)
Associate Professor, Mathematics
B.S., University of Maryland; M.S., George Mason University; Ph.D., University of Texas at Austin

Eamonn Keogh (2001)
Professor, Computer Science and Engineering
B.S., CSU San Marcos; M.S., Ph.D., UC Irvine

Tabassum ‘Rahi’ Khan (2009)
Associate Professor, Media and Cultural Studies
B.A., Bangalore University; M.A., A.J. Kidwai Mass Communications Research Center, India; M.A., Syracuse University; Ph.D., Ohio University

Urmees Khan (2011)
Assistant Professor, Economics
B.A., Lady Shri Ram College; M.A., Delhi School of Economics; M.A., University of Texas, Austin; M.S., University of York; Ph.D., University of Texas, Austin

Glory Kim (2017)
Assistant Professor, Media and Cultural Studies
B.A.; M.A. York University, M.A. Ph.D.,University of Rochester

Hyoseung Kim (2016)
Assistant Professor, Electrical and Computer Engineering
B.S., M.S., Yonsei University; Ph.D., Carnegie Mellon University

Associate Professor, Media and Cultural Studies
B.A., UC Los Angeles; M.A., Ph.D., UC Berkeley

Associate Professor, Comparative Literature and Foreign Languages
B.A., UC Santa Cruz; M.A., Ph.D., Cornell University

Matthew King (2014)
Assistant Professor, Religious Studies
B.A., M.A., Ph.D., University of Toronto

Katherine A. Kinney (1989)
Associate Professor, English
B.A., University of Washington; M.A., Ph.D., University of Pennsylvania

David Kisailus (2007)
Professor, Chemical and Environmental Engineering
B.S., Drexel Universit; M.S.,University of Florida, Gainesville; Ph.D., University of California, Santa Barbara

Keith C. Knapp (1980)
Professor, Environmental Sciences
B.S., Iowa State University; Ph.D., Johns Hopkins University

Daniel Koenig (2016)
Assistant Professor, Botany and Plant Sciences
B.S., UC San Diego; Ph.D., UC Davis

Jeanette Kohl (2008)
Associate Professor, Art History
M.A., Ph.D., University of Trier

Rita Kohli (2014)
Assistant Professor, Education
B.A., UC Santa Barbara; M.A., New York University; Ph.D., UC Los Angeles

Alexander Korotkov (2000)
Professor, Electrical and Computer Engineering
M.S., Ph.D., Moscow State University

Edward Kozus (2006)
Associate Professor, Psychology
B.A., Jagiellonian University, Krakow, Poland; M.S., Ph.D., University of Georgia
Liz Koz (2007)
Associate Professor, Art History
B.A., Stanford University; M.A., Ph.D., Columbia University

Augustine J. Kposowa (1995)
Professor, Sociology
B.A., St. Paul's College, Liberia; M.A., University of Cincinnati; Ph.D., Ohio State University

Thomas Kramer (2015)
Associate Professor, Business Administration
B.B.A., Baruch College, CUNY; M.B.A., Ph.D., Stanford University

Anthea Kraut (2002)
Associate Professor, Dance
B.A., Carleton College; Ph.D., Northwestern University

Stuart Krieger (2006)
Professor, Theatre, Film and Digital Production
B.A., State University of New York College at Brockport

Srikanth Krishnamurthy (2001)
Professor, Computer Science and Engineering
B.E., M.Sc., Birla Institute of Technology and Science, India; M.A.Sc., Concordia University, Canada; Ph.D., UC San Diego

Judith F. Kroll (2016)
Distinguished Professor, Psychology
A.B., New York University, University Heights; Ph.D., Brandeis University

Rebecca Kugel (1991)
Associate Professor, History
B.A., University of Iowa; M.A., Ph.D., UC Los Angeles

Sandeep Kumar (2012)
Assistant Professor, Mechanical Engineering
B.T., Regional Engineering College, Kurukshetra, India; M.S., Indian Institute of Technology, Ph.D., Pennsylvania State University

Esra Küürüm (2016)
Assistant Professor, Statistics
B.S., Middle East Technical University; Ph.D, The Pennsylvania State University-University Park

Timothy Labor (2002)
Associate Professor, Media and Cultural Studies, Music
B.A., Queen's University, Canada; M.A., Ph.D., UC San Diego

Roger Lake (2000)
Professor, Electrical and Computer Engineering
B.S., M.S., Ph.D., Purdue University

Laila Lalami (2007)
Professor, Creative Writing
B.A., Université Mohammed; M.A., University College London, University of London; Ph.D., University of Southern California

Maria Covadonga Lamar-Prieto (2012)
Assistant Professor, Hispanic Studies
B.A., M.A., Ph.D., Universidad de Oviedo; Ph.D., UC Los Angeles

Sara Lapan (2016)
Assistant Professor, Mathematics
B.A., University of Chicago; M.S., Ph.D., University of Michigan

Michel L. Lapidus (1990)
Distinguished Professor, Mathematics
M.S., Ph.D., University Pierre et Marie Curie, France

Luis Lara Malvacías (2016)
Assistant Professor, Dance
M.F.A., Transart Institute, New York and Donau University Krems, Austria

Loralei Larios (2017)
Assistant Professor, Botany and Plant Sciences
B.S., California State University, Fullerton; Ph.D. University of California, Berkeley

Professor, Chemistry
B.S., South Dakota State University, Brookings; M.S., Purdue University; Ph.D., UC Riverside

Catharine H. Larsen (2008)
Associate Professor, Chemistry
B.S., UC Irvine; Ph.D., California Institute of Technology

Paul B. Larsen (2000)
Professor, Biochemistry
B.S., Calvin College; Ph.D., Purdue University

Brandon Lattu (2008)
Associate Professor, Art
B.F.A., Corcoran School of Art; M.F.A., UC Los Angeles

John C. Laursen (1991)
Professor, Political Science
A.B., J.D., Harvard University; M.A., Ph.D., Johns Hopkins University

Vincent Lavallo (2011)
Associate Professor, Chemistry
B.S., Ph.D., UC Riverside

Susan Laxton (2009)
Associate Professor, Art History
B.S., Drexel University; M.A., Ph.D., Columbia University

Aleca LeBlanc (2014)
Assistant Professor, Art History
B.A., UC Santa Barbara; M.A., Columbia University; Ph.D., University of Southern California

Karine G. Le Roch (2006)
Professor, Cell Biology and Neuroscience
B.A., Paris University; M.S., Oxford University; Ph.D., Paris VI University

Chioun Lee (2018)
Assistant Professor Sociology
B.A. Konkuk University; M.A. Seoul National University; Ph.D. Rutgers University

Dongwon Lee (2013)
Assistant Professor, Economics
B.A., Chungnam National University, Korea; M.S., South Dakota State University; M.A., Ph.D., University of Washington

Sang-Hee Lee (2001)
Associate Professor, Anthropology
B.A., Seoul National University; M.A., Ph.D., University of Michigan

Tae-Hwy Lee (1995)
Professor, Economics
B.A., Seoul National University; Ph.D., UC San Diego

Bronwyn A. Leebaw (2002)
Associate Professor, Political Science
B.A., Pomona College; M.A., Ph.D., UC Berkeley

Philipp Lehman (2017)
Assistant Professor, History
M.PhiL, University of Cambridge, Cambridge, UK; A.B., Princeton University, Princeton, NJ; Ph.D., Harvard University, Cambridge, MA

Antoine Lentacker (2017)
Assistant Professor, History
BA, Philosophy; BA, Sociology; MA, Philosophy; MA, History, Université Paris I Panthéon-Sorbonne; PhD in History, with distinction, Yale University

Wesley Y. Leonard, 2016
Assistant Professor, Ethnic Studies
B.A., Miami University (Ohio), M.A., Ph.D., UC Berkeley

Mohsen Lesani (2017)
Assistant Professor, Computer Science and Engineering
B.S. University of Tehran, M.S. Sharif University of Technology, Ph.D. University of California, Los Angeles

John S. Levin (2006)
Professor, Education
B.A., University of British Columbia, Vancouver; M.A., York University, Toronto; Ed.D., University of British Columbia, Vancouver

Associate Professor, History
B.A., Université Libre de Bruxelles, Brussels; M.S., London School of Economics; Ph.D., UC Los Angeles

Jacques Lezra (2016)
Professor, Hispanic Studies
B.A., M.A., Ph.D., Yale University

Bai-Lian 'Larry' Li (2001)
Professor, Botany and Plant Sciences
B.Sc., Hubei Agricultural University, China; D.Sc., Wuhan University, China

Chen Li (2016)
Assistant Professor, Mechanical Engineering
Ph.D., California Institute of Technology
Jun Li (2006)
Associate Professor, Statistics
B.S., Peking University; M.S., Hong Kong University of Science and Technology; Ph.D., Rutgers University, New Brunswick

Kevin Li (2015)
Assistant Professor, Business Administration
B.E., Peking University; M.S., M.B.A., New York University; Ph.D., UC Berkeley

Ye Li (2012)
Assistant Professor, Business Administration
B.S., California Institute of Technology M.B.A., Ph.D., University of Chicago

Ping Liang (1991)
Associate Professor, Electrical and Computer Engineering
B.Sc., Jiaotong University; M.Sc., Ph.D., University of Pittsburgh

Jiayu Liao (2006)
Associate Professor, Bioengineering
B.S., Peking University; Ph.D., UC Los Angeles

Steven Liao (2016)
Assistant Professor, Political Science
B.A., National Chengchi University (Taiwan); Ph.D., University of Virginia

Professor, Business Administration
B.S., National Chengchi University, Taiwan; M.S., Illinois State University; Ph.D., University of North Carolina

Ying-Hsuan Lin (2016)
Assistant Professor, Environmental Sciences
B.S., M.S., National Taiwan University; Ph.D., University of North Carolina

Bruce G. Link (2015)
Distinguished Professor, Sociology, Public Policy
B.A., Earlham College; M.S., Ph.D., Columbia University

Eugene Perry Link (2008)
Professor, Comparative Literature and Foreign Languages
B.A. Harvard College; M.A., Ph.D., Harvard University

Amy Litt (2014)
Associate Professor, Botany and Plant Sciences
B.A., Brown University; M.Phil., Ph.D., Yale University

Benjamin Liu (2008)
Associate Professor, Hispanic Studies
B.A., UC Berkeley; M.A., Ph.D., Harvard University

Haibo Liu (2015)
Assistant Professor, Business Administration
B.E., National University, Singapore; M.TD., National University, Singapore and Eindhoven University of Technology (TU/e), Netherlands; Ph.D., INSEAD

Haizhou Liu (2012)
Assistant Professor, Chemical and Environmental Engineering
B.S., Sichuan University, China; M.S., Ph.D., University of Washington

Huinan Liu (2011)
Associate Professor, Bioengineering
B.S., M.S., University of Science and Technology, Beijing; M.S., Purdue University; Ph.D., Brown University

Professor, Electrical and Computer Engineering
B.S., Ph.D., Nanjing University; Ph.D., UC Los Angeles

Ming Liu (2013)
Assistant Professor, Electrical and Computer Engineering
B.S., M.S., Tsinghua University; Ph.D. UC Berkeley

Xuan Liu (1995)
Professor, Biochemistry
M.D., Beijing Medical University; Ph.D., West Virginia University

Brian D. Lloyd (1993)
Associate Professor, History
B.A., West Virginia University; M.A., Ph.D., University of Michigan

David Lloyd (2013)
Distinguished Professor, English
B.A., M.A., Ph.D., Cambridge University

David Lo (2006)
Distinguished Professor, Biomedical Sciences
B.A., Haverford College, Haverford, PA; M.D., Ph.D., University of Pennsylvania, Philadelphia

Stefano Lonardi (2001)
Professor, Computer Science and Engineering
Laurea, Universita di Pisa; Dottorato di Ricerca, Universita di Padova; Ph.D., Purdue University

Professor, Art
B.F.A., Philadelphia College of Art; M.F.A., Yale University

Professor, Physics
B.S., Clemson University, South Carolina; Ph.D., University of Pennsylvania

Gordon Love (2007)
Professor, Earth Sciences
B.S., Ph.D., University of Strathclyde, UK

Ronald O. Loveridge (1965)
Associate Professor, Political Science
B.A., Pacific University; M.A., Ph.D., Stanford University

Amanda Lucia (2011)
Associate Professor, Religious Studies
B.A., Indiana University; M.A., Ph.D., University of Chicago

Joshua Lui (2015)
Assistant Professor, Physics
B.S., M.Phil., Hong Kong University of Science and Technology; Ph.D., Columbia University

Adam J. Lukaszewski (1989)
Professor, Botany and Plant Sciences
B.Sc., M.Sc., Agricultural University, Warsaw; Ph.D., Polish Academy of Sciences, Poznan

Tom Lutz (2006)
Professor, Creative Writing
B.A., University of Massachusetts, Amherst; M.A., Ph.D., Stanford

Paul Lyons (2011)
Professor, Clinical Family Medicine
B.A., Oberlin College; M.D., Ohio State University

Timothy W. Lyons (2005)
Professor, Earth Sciences
B.A., Colorado School of Mines; M.S., University of Arizona; Ph.D., Yale University

René T.A. Lysoff (1996)
Associate Professor, Music
B.A., University of Wisconsin-Madison; M.A., University of Hawaii; Ph.D., University of Michigan

Christian Lytle (1992)
Associate Professor, Biomedical Sciences
B.A., M.A., UC Santa Barbara; Ph.D., Duke University

Sonja Lyubomirsky (1994)
Professor, Psychology
A.B., Harvard University; Ph.D., Stanford University

Shujie Ma (2011)
Assistant Professor, Statistics
B.S., Xiian Jiaotong University; Ph.D., Michigan State University

Wenbo Ma (2006)
Professor, Plant Pathology and Microbiology
B.S., Beijing Normal University; Ph.D., University of Waterloo, Waterloo, Canada

Wenxiu Ma (2015)
Associate Professor, Statistics
B.S., Xiian Jiaotong University; Ph.D., Stanford University, China

Anthony Macias (2002)
Associate Professor, Ethnic Studies
B.A., UC Berkeley; M.A., Ph.D., University of Michigan

Boris Maciejovsky (2013)
Associate Professor, Business Administration
M.S., Dr., University of Vienna; Ph.D., Massachusetts Institute of Technology

Coleen Macnamara (2006)
Associate Professor, Philosophy
B.A., Georgetown University; M.B.A., University of Pennsylvania; Ph.D., Georgetown University

Professor, Biology
B.S., Ph.D., University of Alberta

Amr Magdy (2017)
Assistant Professor, Computer Science and Engineering
B.S. Alexandria University, M.S. University of Minnesota and Alexandria University, Ph.D. University of Minnesota

Gerald Maguire (2014)
Professor, Clinical Psychiatry
B.S., Hon., UC Davis; M.D., St. Louis University
Matthew Mahutga (2008)  
Associate Professor, Sociology  
B.A., Metropolitan State College of Denver;  
M.A., Ph.D., UC Irvine

Hendrik M.J. Maier (2003)  
Professor, Comparative Literature and Foreign Languages  
Ph.D., University of Leiden

Luis Lara Malvacías (2016)  
Assistant Professor, Dance  
M.F.A., Transart Institute, New York and Donau University Krems, Austria

Lorenzo Mangolini (2010)  
Associate Professor, Mechanical Engineering  
Laurea, Polytechnic University of Milan, Italy;  
M.S.; Ph.D., University of Minnesota, Institute of Technology

Patricia Manosalva (2015)  
Assistant Professor, Plant Pathology and Microbiology  
B.S., Ricardo Palma University, Lima, Peru;  
M.S., Cayetano Heredia University, Lima, Peru;  
Ph.D., Kansas State University

Michael J. Marsella (1997)  
Associate Professor, Chemistry  
B.S., University of Rhode Island;  
Ph.D., University of Pennsylvania

Lyne Marsh (2017)  
Assistant Professor, Art  
B.F.A., Concordia University  
M.F.A., University of London

David Martin (2014)  
Assistant Professor, Chemistry  
B.S., University of British Columbia;  
Ph.D., UC Irvine

Ernest Martinez (2000)  
Professor, Biochemistry  
M.S., Ph.D., University of Lausanne, Switzerland

Monica Martinez (2015)  
Assistant Professor, Mechanical Engineering  
B.S., Universidad Nacional Autónoma de México;  
M.S., Ph.D., California Institute of Technology

Manuela Martins-Green (1993)  
Professor, Cell Biology and Neuroscience  
B.S., University of Lisbon;  
M.S., UC Riverside; Ph.D., UC Davis

Alexandra Maryanski (1988)  
Professor, Sociology  
B.S., M.A., UC Riverside;  
M.A., Ph.D., UC Irvine

Dmitri Maslov (1995)  
Professor, Biology  
M.S., Ph.D., Moscow State University

Suveen Mathaudhu (2014)  
Assistant Professor, Mechanical Engineering  
B.S.E., Walla Walla University; Ph.D., Texas A&M University

Kerry Mauck (2016)  
Assistant Professor, Entomology  
B.S., The College of New Jersey;  
Ph.D., Penn State University

Declan McCole (2013)  
Assistant Professor, Biomedical Sciences  
B.Sc., Hon., Ph.D., University College Dublin, Ireland

Quinn McFrederick (2014)  
Assistant Professor, Entomology  
B.A., UC Berkeley; M.A., San Francisco State University;  
Ph.D., University of Virginia

Molly McCarr (2001)  
Associate Professor, History  
B.A., Cornell University; M.A.;  
Ph.D., New York University

Michael A. McKibben (1984)  
Associate Professor, Earth Sciences  
B.S., M.S., UC Riverside;  
Ph.D., Pennsylvania State University

Professor, Social Medicine and Population Health  
B.A., M.A., Ph.D., UC Irvine

Natasha McPherson (2016)  
Assistant Professor, History  
B.A., CSU Fullerton; M.A.;  
Ph.D., Emory University

John N. Medearis (2001)  
Professor, Political Science  
A.B., Harvard College; M.A.;  
Ph.D., UC Los Angeles

Sara Mednick (2011)  
Associate Professor, Psychology  
B.A., Bard College; B.A., Charles University;  
Ph.D., Harvard University

Bella Merlín (2014)  
Professor, Theatre, Film and Digital Production  
B.A., University of Birmingham, United Kingdom; Diploma, State Institute of Cinematography, Moscow

Jennifer Merola (2015)  
Professor, Political Science  
B.A., Boston College; Ph.D., Duke University

Kalina J. Michalska (2016)  
Assistant Professor, Psychology  
B.A., Boston University; Ph.D., The University of Chicago

Georg B. Michels (1994)  
Professor, History  
B.A., Universitaet Goettingen; M.A.;  
UC Los Angeles; A.M., Ph.D., Harvard University

Jocelyn G. Millar (1988)  
Distinguished Professor, Entomology  
B.S., Ph.D., Simon Fraser University, Canada

Allen P. Mills (2001)  
Professor, Physics  
B.A., Princeton University;  
M.A., Ph.D., Brandeis University

Yunhee Min (2013)  
Associate Professor, Art  
B.A., Art Center College of Art and Design;  
M.A., Harvard University

Mark Minch (2016)  
Assistant Professor, English  
B.A., California State University, Chico;  
M.A., Ph.D., UC Berkeley

Richard A. Minnich (1980)  
Professor, Earth Sciences  
B.A., M.A., UC Riverside;  
Ph.D., UC Los Angeles

Alfredo M. Mirandé (1974)  
Professor, Ethnic Studies Sociology  
B.A., Illinois State University; M.A.;  
Ph.D., University of Nebraska; J.D., Stanford University

Professor, Business Administration  
B.S., Regional Engineering College, India;  
M.S., Ph.D., University of Texas, Austin

Bahram Mobasher (2007)  
Professor, Physics  
B.Sc., Physics, Pars College, Tehran;  
M.Sc., Ph.D., Observational Cosmology, University of Durham, U.K.; M.Sc., Optoelectronics, University of London; Postgraduate Diploma, Microwave Engineering, University of London

Theodore Mock (2008)  
Professor, Business Administration  
B.S., M.B.A., The Ohio State University;  
Ph.D., University of California, Berkeley

Umar Mohideen (1994)  
Professor, Physics  
M.S., Pennsylvania State University;  
Ph.D., Columbia University

Hamed Mohsenian Mohsenian-Rad (2012)  
Associate Professor, Electrical and Computer Engineering  
B.S., Amirkabir University of Technology, Iran; M.S., Sharif University of Technology, Iran; Ph.D., University of British Columbia, Canada

Mart L. Molle (1994)  
Professor, Computer Science and Engineering  
B.Sc., Queen's University at Kingston, Canada;  
M.Sc., Ph.D., UC Los Angeles

Joshua Morgan (2017)  
Assistant Professor, Bioengineering  
B.S., M.S., Ph.D., University of California, Davis

Dimitrios Morikis (2001)  
Professor, Bioengineering  
B.S., Aristotle University of Thessaloniki, Greece; M.S., Ph.D., Northeastern University, Boston

Professor, Chemistry  
B.A., Harvard University; Ph.D., California Institute of Technology

Patricia A. Morton (1994)  
Associate Professor, Art History  
B.A., Yale University; M.Arch., Columbia University; Ph.D., Princeton University
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Degree Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yolanda Moses (2004)</td>
<td>Professor, Anthropology</td>
<td>B.A., CSU San Bernardino; M.A., Ph.D., UC Riverside</td>
</tr>
<tr>
<td>Fred Moten (2013)</td>
<td>Professor, English</td>
<td>B.A., Harvard University; Ph.D., UC Berkeley</td>
</tr>
<tr>
<td>Anastasios I. Mourikis (2008)</td>
<td>Associate Professor, Electrical and Computer Engineering</td>
<td>Dipl. Eng., University of Patras; Ph.D., University of Minnesota</td>
</tr>
<tr>
<td>Leonard J. Mueller (1998)</td>
<td>Professor, Chemistry</td>
<td>B.S., University of Rochester; Ph.D., California Institute of Technology</td>
</tr>
<tr>
<td>Ashok K. Mulchandani (1991)</td>
<td>Distinguished Professor, Chemical and Environmental Engineering</td>
<td>B.Tech., Nagpur University; M.Tech., Indian Institute of Technology; Ph.D., McGill University, Canada</td>
</tr>
<tr>
<td>Bradley A. Mullens (1982)</td>
<td>Professor, Entomology</td>
<td>B.S., M.S., University of Tennessee; Ph.D., Cornell University</td>
</tr>
<tr>
<td>ozef Müller (2011)</td>
<td>Assistant Professor, Philosophy</td>
<td>Bc., Mgr., Mgr., Comenius University, Slovakia; Ph.D., Princeton University</td>
</tr>
<tr>
<td>Michael Mulligan (2016)</td>
<td>Assistant Professor, Physics</td>
<td>B.S., University of Illinois, Urbana-Champaign; Ph.D., Stanford University</td>
</tr>
<tr>
<td>Jernej Murn (2017)</td>
<td>Assistant Professor, Biochemistry</td>
<td>B.Sc., University of Ljubljana, Slovenia; Ph.D., University of Ljubljana, Slovenia</td>
</tr>
<tr>
<td>Carolyn B. Murray (1980)</td>
<td>Professor, Psychology</td>
<td>B.A., Wayne State University; M.A., Ph.D., University of Michigan, Ann Arbor</td>
</tr>
<tr>
<td>Nosang Myung (2003)</td>
<td>Professor, Chemical and Environmental Engineering</td>
<td>B.S., M.S., Ph.D., UC Los Angeles</td>
</tr>
<tr>
<td>Paul Nabyt (2017)</td>
<td>Assistant Professor, Botany and Plant Sciences</td>
<td>B.S., University of Nebraska; M.S., University of Nebraska; Ph.D., University of Illinois, Urbana</td>
</tr>
<tr>
<td>Dawn Nagel (2016)</td>
<td>Assistant Professor, Botany and Plant Sciences</td>
<td>B.S., Ph.D., University of Georgia</td>
</tr>
<tr>
<td>Hyejin Nah (2016)</td>
<td>Assistant Professor, Anthropology</td>
<td>B.A., Seoul National University; M.A., University de Chile; M.A., New York University; Ph.D., New York University</td>
</tr>
<tr>
<td>Meera Nair (2012)</td>
<td>Assistant Professor, Biomedical Sciences</td>
<td>B.Sc., Hon., Imperial College London, United Kingdom; Ph.D., University of Edinburgh, United Kingdom</td>
</tr>
<tr>
<td>Jennifer Nájera (2006)</td>
<td>Assistant Professor, Ethnic Studies</td>
<td>A.B., A.M., Stanford University; M.A., Ph.D., University of Texas, Austin</td>
</tr>
<tr>
<td>Walid Najjar (2000)</td>
<td>Professor, Computer Science and Engineering</td>
<td>B.E., American University of Beirut; M.S., Ph.D., University of Southern California</td>
</tr>
<tr>
<td>Jin Nam (2011)</td>
<td>Assistant Professor, Bioengineering</td>
<td>B.S., Yonsei University; M.S.; Ph.D., The Ohio State University</td>
</tr>
<tr>
<td>Margaret A. Nash (2002)</td>
<td>Professor, Education</td>
<td>B.Ph., Miami University; M.A., Ph.D., University of Wisconsin</td>
</tr>
<tr>
<td>Misaki N. Natsuaki (2009)</td>
<td>Associate Professor, Psychology</td>
<td>B.A., M.S., International Christian University, Tokyo; Ph.D., UC Davis</td>
</tr>
<tr>
<td>Armando Navarro (1992)</td>
<td>Professor, Ethnic Studies</td>
<td>B.A., Claremont Menós College; Ph.D., UC Riverside</td>
</tr>
<tr>
<td>David Nelson (2016)</td>
<td>Professor, Botany and Plant Sciences</td>
<td>B.A., Rice University; Ph.D., University of Wisconsin</td>
</tr>
<tr>
<td>Michael Nelson (2004)</td>
<td>Associate Professor, Philosophy</td>
<td>B.A., Reed College; Ph.D., Princeton University</td>
</tr>
<tr>
<td>Sally Allen Ness (1990)</td>
<td>Professor, Anthropology</td>
<td>B.A., University of Idaho, Moscow; C.M.A., Laban Institute of Movement Studies; Ph.D., University of Washington</td>
</tr>
<tr>
<td>Kristoffer Neville (2007)</td>
<td>Associate Professor, Art History</td>
<td>B.A., Washington and Lee University; M.A., Ph.D., Princeton University</td>
</tr>
<tr>
<td>Benjamin J. Newman (2016)</td>
<td>Associate Professor Public Policy, Political Science</td>
<td>B.A. Sonoma State; M.A., Ph.D. Stony Brook University</td>
</tr>
<tr>
<td>James Ng (2005)</td>
<td>Associate Professor, Plant Pathology and Microbiology</td>
<td>B.Sc., National University of Singapore; Ph.D., Purdue University</td>
</tr>
<tr>
<td>Worku Nida (2016)</td>
<td>Assistant Professor, Anthropology</td>
<td>B.A., University of Addis Ababa; M.A., University of Addis Ababa Ph.D., UCLA</td>
</tr>
<tr>
<td>Nicole zur Nieden (2008)</td>
<td>Associate Professor, Cell Biology and Neuroscience</td>
<td>B.S., M.S., Ruhr University Bochum; Ph.D., University of Essen</td>
</tr>
<tr>
<td>Tanya Nieri (2008)</td>
<td>Associate Professor, Sociology</td>
<td>B.A., Columbia University; M.A., Ph.D., Arizona State University</td>
</tr>
<tr>
<td>Hiroki Nishimura (2013)</td>
<td>Assistant Professor, Economics</td>
<td>B.A., Kyoto University; Ph.D., New York University</td>
</tr>
<tr>
<td>Karen Noblett (2014)</td>
<td>Professor Clinical Obstetrics &amp; Gynecology</td>
<td>B.A., California State University, Fresno; M.D., UC Irvine</td>
</tr>
<tr>
<td>Tara Nordgren (2017)</td>
<td>Assistant Professor, Biomedical Sciences</td>
<td>B.S., George Mason University, Virginia; Ph.D., University of Nebraska</td>
</tr>
<tr>
<td>Eugene A. Nothnagel (1983)</td>
<td>Professor, Botany and Plant Sciences</td>
<td>B.A., University of Minnesota; M.A., Southern Illinois University; M.S., Ph.D., Cornell University</td>
</tr>
<tr>
<td>Andreja Novakovic (2014)</td>
<td>Assistant Professor, Philosophy</td>
<td>B.A., Bryn Mawr College; M.A., Ph.D., Columbia University</td>
</tr>
<tr>
<td>Constance I. Nugent (2001)</td>
<td>Associate Professor, Cell Biology and Neuroscience</td>
<td>B.S., University of Wisconsin-Madison; Ph.D., University of Colorado</td>
</tr>
<tr>
<td>Vorris Nunley (2004)</td>
<td>Associate Professor, English</td>
<td>B.A., CSU Dominguez Hills; Ph.D., Pennsylvania State University</td>
</tr>
<tr>
<td>Leonard P. Nunney (1980)</td>
<td>Professor, Biology</td>
<td>B.Sc., University of Sussex, England; Ph.D., University of Nottingham, England</td>
</tr>
<tr>
<td>Sean O’Leary (2016)</td>
<td>Assistant Professor, Biochemistry</td>
<td>M.S., Ph.D Cornell University, Ithaca, New York</td>
</tr>
<tr>
<td>David D. Oglesby (2000)</td>
<td>Professor, Earth Sciences</td>
<td>B.A., Carleton College; M.A., Ph.D., UC Santa Barbara</td>
</tr>
<tr>
<td>Adem Orsdemir (2014)</td>
<td>Assistant Professor, Business Administration</td>
<td>B.S., Bilkent University; M.S., Ph.D., University of North Carolina at Chapel Hill</td>
</tr>
<tr>
<td>Victor Ortego-Martí (2012)</td>
<td>Assistant Professor, Economics</td>
<td>B.S., Universitat de Barcelona; B.S., M.Res., London School of Economics</td>
</tr>
</tbody>
</table>
Sharon Oselin (2014)
Associate Professor, Sociology
B.A., Michigan State; M.A., Ph.D., UC Irvine

Susan Osman (2007)
Professor, Anthropology
B.A., UC Berkeley; D.E.A., University de Paris VII; M.A., Ph.D., UC Berkeley

Daniel Y. Ozer (1991)
Professor, Psychology
B.A., M.A., College of William and Mary; Ph.D., UC Berkeley

Cengiz Ozkan (2001)
Professor, Mechanical Engineering
Ph.D., Stanford University

Mihri Ozkan (2001)
Professor, Electrical and Computer Engineering
B.S., Middle East Technical University, Ankara; M.S., University of Illinois, Urbana-Champaign; M.S., Stanford University; Ph.D., UC San Diego

Taisha Paggett (2014)
Assistant Professor, Dance
B.A., UC Santa Cruz; M.F.A., UC Los Angeles

Timothy D. Paine (1986)
Distinguished Professor, Entomology
B.A., B.S., Ph.D., UC Davis

Gregory Paldary (2007)
Associate Professor, Education
B.S., University of Michigan; M.A., M.A., Ph.D., UC Santa Barbara

Evangelos Paplexakis (2017)
Assistant Professor, Computer Science and Engineering
B.S., M.S. Technical University of Crete, Ph.D. Carnegie Mellon University

B. Hyle Park (2009)
Associate Professor, Bioengineering
B.S., Physics, California Institute of Technology; M.S., Ph.D., UC Irvine

J.P. Park (2013)
Associate Professor, Art History
B.A., Seoul National University
M.A., Ph.D., University of Michigan, Ann Arbor

Leigh Patel (2017)
Professor, Education
B.J., University of Nebraska-Lincoln; M.Ed., University of San Diego; Ph.D., University of Nevada, Las Vegas

Keun-Pyo Park (2008)
Associate Professor, Theatre, Film and Digital Production
B.A., Dong Guk University, Seoul, Korea; M.F.A., University of Texas at Austin

Soojin Park (2016)
Assistant Professor, Education
B.A., M.A., Seoul National University of Education;
Ph.D., University of Wisconsin-Madison

Fabio Pasqualetti (2013)
Assistant Professor, Mechanical Engineering
Laurea, Laurea Magistrale, University of Pisa; Ph.D., UC Santa Barbara

Robert W. Patch (1988)
Professor, History
B.A., University of Illinois, Urbana-Champaign; Ph.D., Princeton University

Michael Pazzani (2012)
Professor, Computer Science and Engineering
B.S., M.S., University of Connecticut; Ph.D., UC Los Angeles

Francisco Pedraza (2016)
Assistant Professor Public Policy, Political Science
B.S., Boise State university
M.A., University of Iowa
Ph.D., University of Washington

Maurizio Pellecchia (2015)
Professor, Biomedical Sciences
M.S., Ph.D., University of Naples, Italy

Milagros Pena (2015)
Professor
B.A. Iowa College
M.Div. Union Theological Seminary
M.A. SUNY, Stony Brook
Ph.D. SUNY, Stony Brook

Associate Professor, Ethnic Studies
B.A., UC San Diego; M.A., Ph.D., UC Riverside

Thomas M. Perrin (1983)
Professor, Entomology
B.S., Oklahoma State University; M.S., Texas Tech University; Ph.D., University of Nebraska

John Jefferson Perry (2014)
Assistant Professor, Biochemistry
B.Sc., Imperial College of Science, Technology and Medicine, UK; Ph.D., University of Cambridge, UK

Megan Peters (2017)
Assistant Professor, Bioengineering
B.A., Brown University
M.A., Ph.D., University of California, Los Angeles

Celeste Pinegar (2016)
Assistant Professor, Education
B.A., California State University, Fresno
M.A., Ph.D., University of California, Santa Barbara

David S. Pion-Berlin (1991)
Professor, Political Science
B.A., Colgate University;
M.A., Ph.D., University of Denver

Michael Pirrung (2004)
Distinguished Professor, Chemistry
B.A., University of Texas, Austin;
Ph.D., UC Berkeley

Lauren Ponisio (2017)
Assistant Professor, Entomology
B.S., M.S., Stanford University
Ph.D., UC Berkeley

Yat Sun Poon (1991)
Professor, Mathematics
B.S., Chinese University, Hong Kong;
Ph.D., Oxford University, England

Professor, Mechanical Engineering
B.Sc., University of Belgrade, Serbia;
Ph.D., Arizona State University

Leonid Przybida (2000)
Professor, Physics
M.S., F.E. Dzerzhinski Military Academy, Moscow; M.S., Institute of Physics and Technology, Moscow; Ph.D., Stanford University

Elizabeth Przybylski (2015)
Assistant Professor, Music
B.A., Bard College; M.A., Ph.D., Northwestern University

Jessica Purcell (2015)
Assistant Professor, Entomology
B.A., Williams College; Ph.D., University of British Columbia, Canada

Associate Professor, Sociology
B.A., University of Michigan; M.A., UC Irvine;
Ph.D., University of Michigan

Zhuyun Qian (2014)
Assistant Professor, Computer Science and Engineering
B.S., Shanghai Jiao Tong University;
M.S., Ph.D., University of Michigan

Nicole Rafferty (2017)
Assistant Professor, Biology
B.S. University of Washington
Ph.D., University of Wisconsin-Madison

Alexander Raikhel
Professor, Entomology
M.S., Ph.D., St. Petersburg University, Russia

Raquel Rall (2016)
Assistant Professor, Education
B.A., Stanford University, Ph.D. University of Southern California

S. Karthick Ramakrishnan (2005)
Professor, Political Science, Public Policy
B.A., Brown University, Providence, RI;
Ph.D., Princeton University

Ziv Ran (1986)
Professor, Mathematics
B.S., Tel Aviv University, Israel;
Ph.D., UC Berkeley

Erin W. Rankin (2013)
Assistant Professor, Entomology
B.S., Georgetown University;
Ph.D., UC San Diego

Roger L. Ransom (1968)
Professor Emeritus, History
B.A., Reed College;
Ph.D., University of Washington

Professor, Plant Pathology and Microbiology
B.S., Agricultural College, India;
M.S., Indian Agricultural Research Institute;
Ph.D., University of Adelaide, Australia
Masaru P. Rao (2008)  
Associate Professor, Mechanical Engineering  
B.S., University of Florida;  
Ph.D., UC Santa Barbara

Lisa Raphals (1999)  
Professor, Comparative Literature and Foreign Languages  
B.A., Clark University; M.A., Boston College;  
Ph.D., University of Chicago

Emily Rapp Black (2016)  
Assistant Professor, Creative Writing  
B.A., Saint Olaf College  
M.T.S., Harvard University  
M.F.A., University of Texas, Michener

Carolyn G. Rasmussen (2014)  
Assistant Professor, Botany and Plant Sciences  
B.A., University of Chicago; Ph.D., UC Berkeley

Louis J. Ratliff, Jr. (1963)  
Professor Emeritus, Mathematics  
B.A., M.S., Ph.D., University of Iowa

Marlo Raveendran (2013)  
Assistant Professor, Business Administration  
B.S., London School of Economics & Political Science;  
M.S., London School of Economics & Political Science and ESADE, Barcelona; Ph.D., London Business School

Chinya Ravishankar (1999)  
Professor, Computer Science and Engineering  
B.Tech., Indian Institute of Technology, Bombay;  
M.S., Ph.D., University of Wisconsin-Madison

Anandasankar Ray (2007)  
Associate Professor, Molecular, Cell, and Systems Biology  
B.Sc., Calcutta University, India;  
M.S., Jawaharlal Nehru University, India;  
Ph.D., Yale University

Khaleel Razak (2007)  
Associate Professor, Psychology  
B.E., Anna University, Madras, India;  
M.A., Ph.D., University of Wisconsin

Associate Professor, Education  
B.A., Westmont College, Santa Barbara;  
Ph.D., UC Santa Barbara

Andrews Reath (1994)  
Professor, Philosophy  
B.A., Princeton University;  
Ph.D., Harvard University

Erich Reck (1995)  
Professor, Philosophy  
B.A., University of Tübingen, Germany;  
M.S., University of Bonn, Germany;  
M.A., Ph.D., University of Chicago

Richard A. Redak (1990)  
Professor, Entomology  
B.S., M.S., University of New Mexico;  
Ph.D., Colorado State University

Naveen Reddy (2011)  
Associate Professor, Physics  
B.A., B.S., University of Texas, Austin;  
Ph.D., California Institute of Technology

Ellen Reese (2000)  
Professor, Sociology  
B.A., Reed College; M.A.,  
Ph.D., UC Los Angeles

Helen M. Regan (2007)  
Professor, Biology  
B.S., La Trobe University, Bundoora, Australia;  
M.S., Ph.D., University of New England, Maine

Shaolei Ren (2015)  
Assistant Professor, Electrical and Computer Engineering  
B.E., Tsinghua University; M.Phil., Hong Kong University of Science and Technology;  
Ph.D., UC Los Angeles

Wei Ren (2011)  
Professor, Electrical and Computer Engineering  
B.S., HoHai University; M.S., Tongji University;  
Ph.D., Brigham Young University

Sergio Rey (2017)  
Professor, Public Policy  
B.S., Stockton State College  
M.A., Ph.D., UC Santa Barbara

Victoria Reyes (2016)  
Assistant Professor, Sociology  
B.A., M.A., Ph.D., Princeton University

Chandra A. Reynolds-Gebelin (2000)  
Professor, Psychology  
B.A., UC Irvine  
M.A., Ph.D., University of Southern California

Jose L. Reynoso (2014)  
Assistant Professor, Dance  
B.A., M.A., CU Los Angeles;  
M.F.A., Ph.D., UC Los Angeles

David N. Reznick (1984)  
Distinguished Professor, Biology  
B.A., Washington University;  
Ph.D., University of Pennsylvania

Martin Riccomagno (2014)  
Assistant Professor, Cell Biology and Neuroscience  
B.S., M.S., Ph.D., University of Buenos Aires

Silas Richelson (2017)  
Assistant Professor, Computer Science and Engineering  
B.A., Harvard University;  
Ph.D. University of California, Los Angeles

Rebekah Richert (2005)  
Associate Professor, Psychology  
B.A., Calvin College  
M.A., Ph.D., University of Virginia

Andrew Ridgwell (2015)  
Professor, Earth Sciences  
B.A., Clare College, University of Cambridge, UK; M.Sc., University of Nottingham, UK;  
Ph.D., University of East Anglia, UK

Melinda Ritchie (2016)  
Assistant Professor, Political Science  
B.A., Smith College; Ph.D., University of Illinois, Urbana-Champaign

Associate Professor, Music  
B.A., University of Minnesota, Twin Cities  
M.A., Ph.D., UC Los Angeles

Shemra Rizzo (2015)  
Assistant Professor, Statistics  
B.S., Tecnologico de Monterrey, Mexico  
M.S., University of North Carolina at Chapel Hill; Ph.D., UC Los Angeles

Megan L. Robbins (2013)  
Assistant Professor, Psychology  
B.A., University of Texas, Austin  
Ph.D., University of Arizona

Philip A. Roberts (1981)  
Professor, Nematology  
B.S., Hon., University of Leeds, United Kingdom;  
Ph.D., University of Birmingham, United Kingdom;

Judith Rodenbeck (2000)  
Associate Professor, Media and Cultural Studies  
B.A., Yale University; B.A., Massachusetts College of Art;  
M.A., M.Phil., Ph.D., Columbia University

Professor, Bioengineering  
B.S., University of Dayton, Ohio  
M.S., University of Pittsburgh  
D.S., Washington University, St. Louis

Dylan Rodríguez (2002)  
Professor, Media and Cultural Studies  
B.A., Cornell University  
M.A., Ph.D., UC Berkeley

Louie F. Rodríguez (2016)  
Associate Professor, Education  
B.A., CSU San Bernardino; Ed.M., Ed.M.,  
Ed.D., Harvard University

Richard Rodriguez (2016)  
Associate Professor, Media and Cultural Studies, English  
B.A., UC Berkeley; Ph.D., UC Santa Cruz

Derek A. Roff (2001)  
Professor, Biology  
B.Sc., University of Australia;  
Ph.D., University of British Columbia, Canada

Mikeal L. Roose (1982)  
Professor, Botany and Plant Sciences  
B.A., Reed College; Ph.D., UC Davis

Caroline Roper (2009)  
Associate Professor, Plant Pathology and Microbiology  
B.S., University of South Carolina  
Ph.D., UC Davis

David A. Rosenbaum (2016)  
Distinguished Professor, Psychology  
B.A., Swarthmore College  
Ph.D., Stanford University
Lawrence D. Rosenblum (1989)
Professor, Psychology
B.A., State University of New York, Binghamton; Ph.D., University of Connecticut

Distinguished Professor, Psychology
B.A., Ph.D., UC Los Angeles

Amit Roy Chowdhury (2004)
Professor, Electrical and Computer Engineering
B.E., Jadavpur University; M.E., Indian Institute of Science; Ph.D. University of Maryland, College Park

Conrad Rudolph (1991)
Distinguished Professor, Art History
B.A., M.A., Ph.D., UC Los Angeles

David E. Rush (1971)
Professor, Mathematics
B.S., Southwest Missouri State University; M.S., Western Washington State College; Ph.D., Louisiana State University

Robin Russin (2002)
Professor, Theatre, Film and Digital Production
B.A., Harvard College; B.A., M.A., Oxford University; M.F.A., Rhode Island School of Design; M.F.A., UC Los Angeles

Michael K. Rust (1975)
Distinguished Professor of Graduate Division, Entomology
A.B., Hiram College; M.A., Ph.D., University of Kansas

Leonora Saavedra (2004)
Associate Professor, Music
Performance Study, Conservatorio Nacional de Música, Mexico City; Performance Study, Hochschule für Musik, Cologne, Germany; Maitrise, Universite de Paris IV; Ph.D., University of Pittsburgh

Joel L. Sachs (2007)
Associate Professor, Biology
B.A., University of Iowa; M.S., University of North Dakota; Ph.D., University of Texas, Austin

Jeffrey Sacks (2007)
Associate Professor, Comparative Literature and Foreign Languages
B.A., University of Michigan, Ann Arbor; M.A., University of Texas, Austin; Ph.D., Columbia University

Peter M. Sadler (1976)
Professor, Earth Sciences
B.Sc., Ph.D., University of Bristol, England

Laura Sales (2015)
Assistant Professor, Physics
M.S., Ph.D., Facultad de Matemática, Astronomía y Física, UNC

Wendy G. Saltzman (2005)
Professor, Biology
B.A., UC San Diego; Ph.D., UC Davis

Michele R. Salzman (1995)
Professor, History
B.A., Brooklyn College, City University of New York; M.A., Ph.D., Bryn Mawr College

Louis Santiago (2006)
Professor, Botany and Plant Sciences
B.A., UC Berkeley; M.S., University of Hawaii; Ph.D., University of Florida

Jade S. Sasser (2014)
Assistant Professor, Gender and Sexuality Studies
B.A., Pomona College, Claremont; M.P.H., Boston University; M.A., Ph.D., UC Berkeley

Neal L. Schiller (1979)
Professor, Biomedical Sciences
B.S., Boston College; Ph.D., University of Massachusetts, Amherst

Associate Professor, Media and Cultural Studies
M.A., Goethe Universität, Frankfurt; Ph.D., Duke University

Daniel Schlenk (2000)
Professor, Environmental Sciences
B.S., University of Louisiana, Monroe; M.S., Ph.D., Oregon State University

Craig Schroeder (2017)
Assistant Professor, Computer Science and Engineering
B.S., M.S., Drexel University; Ph.D. Stanford University

Kirill Schtengel (2005)
Professor, Physics
B.S., St. Petersburg Technical University; Ph.D., UC Los Angeles

Distinguished Professor, Bioengineering
B.S., M.S., Pennsylvania State University; Ph.D., University of Wisconsin

Reinhard Schultz (1996)
Professor, Mathematics
B.S., M.S., Ph.D., University of Chicago

Kurt Schwabe (1999)
Professor, Environmental Economics and Policy
B.A., Manchester College; M.S., Duke university; Ph.D., North Carolina State University

Christina Schwenkel (2006)
Associate Professor, Anthropology
B.A., SUNY College at Buffalo; M.A., Ph.D., UC Irvine

Eric Schmitzegerl (1997)
Professor, Philosophy
B.A., Stanford University; Ph.D., UC Berkeley

Anna Maria Sarita See (2013)
Associate Professor, Media and Cultural Studies
B.A., UC Berkeley; M.A., Ph.D., Columbia University

Aaron Seitz (2008)
Professor, Psychology
B.A., Reed College; Ph.D., Boston University

Richard K. Seto (1990)
Professor, Physics
B.S., Yale University; M.S., Ph.D., Columbia University

Jacqueline Shea Murphy (1998)
Associate Professor, Dance
B.A., Barnard College; B.A., Columbia University; M.A., Johns Hopkins University; Ph.D., UC Berkeley

Professor, Computer Science and Engineering
B.S., Stanford University; S.M., Ph.D., Massachusetts Institute of Technology

Jing Shi (2005)
Professor, Physics
M.S., Ph.D., University of Illinois

Ruoyao Shi (2017)
Assistant Professor, Economics
B.S., B.B.A., M.A., Peking University; M.A., Ph.D., UCLA

Setsu Shigematsu (2008)
Associate Professor, Media and Cultural Studies
B.A., McGill University; M.A., Ph.D., Cornell University

Tamar Shinar (2011)
Assistant Professor, Computer Science and Engineering
B.S., University of Illinois at Urbana-Champaign; Ph.D., Stanford University

Brian Siana (2011)
Associate Professor, Physics
B.S., Cornell University; Ph.D., UC San Diego

James D. Sickman (2007)
Professor, Environmental Sciences
B.A., M.A., Ph.D., UC Santa Barbara

Professor, Business Administration
M.B.A., Ph.D., UC Los Angeles

Dana Simmons (2004)
Associate Professor, History
B.A., Princeton University; M.A., Ph.D., University of Chicago

Professor, Environmental Sciences
M.S., Czech Technical University; Ph.D., Czech Academy of Sciences

Pashaura Singh (2005)
Professor, Religious Studies
M.A., Punjabi University; M.A., University of Calgary, Ph.D., University of Toronto

Frances M. Sladek (1992)
Professor, Cell Biology and Neuroscience
B.A., Princeton University; M.Sc., Ph.D., Yale University

Carolyn M. Sloane (2016)
Assistant Professor, Economics
B.A., Vanderbilt University; M.B.A., Ph.D., University of Chicago

Jane Smiley (2014)
Professor, Creative Writing
B.A., Vassar College; M.F.A., Ph.D., University of Iowa
Andrea Smith (2008)
Associate Professor, Ethnic Studies
B.A., Harvard University
M.Div., Union Theological University
Ph.D., UC Santa Cruz

Joel Smith (2013)
Associate Professor, Dance
B.A., UC Davis; M.F.A., UC Riverside

Richard Smith (2008)
Professor, Business Administration
B.B.A., Southern Methodist University, Dallas;
M.B.A., Washington University, St. Louis
M.A., Ph.D., UC Los Angeles

Thomas M. Smith (2014)
Professor, Education
B.S., UC Los Angeles; M.A., Columbia
University; M.A., Catholic University of
America; Ph.D., Pennsylvania State University

Stephen Hong Sohn (2014)
Associate Professor, English
B.A., University of Southern California
M.A., Ph.D., UC Santa Barbara

Michael Solis (2016)
Assistant Professor, Education
B.A., University of Arizona; M.Ed.
Northern University; Ph.D., University of Texas at Austin

Chengyu Song (2017)
Assistant Professor, Computer Science and Engineering
B.S., M.S. Peking University, Ph.D. Georgia
Institute of Technology

Jikui Song (2012)
Associate Professor, Biochemistry
B.S., University of Science and Technology of
China; M.S., Chinese Academy of Sciences,
Beijing, China; M.S., Ph.D., University of Wisconsin-Madison, Wisconsin

Ashish Sood (2015)
Assistant Professor, Business Administration
B.E., Delhi College of Engineering
M.B.A., Nanyang Technological University, Singapore; Ph.D.; University of Southern California

Christina Soto van der Plas (2016)
Assistant Professor, Hispanic Studies
B.A., Universidad Iberoamericana
M.A., Ph.D., Cornell University

Marko Spasojevic (2016)
Assistant Professor, Biology
B.S., University of Washington, Seattle
Ph.D., UC Irvine

Annika Speer (2017)
Professor of Teaching, Theatre, Film, and Digital Production
B.F.A., University of Colorado, Boulder
M.A., UC Santa Barbara
Ph.D., UC Santa Barbara

Professor, Biochemistry
B.A., UC San Diego; Ph.D., University of Texas, Houston

Mark S. Springer (1991)
Professor, Biology
B.S., California State Polytechnic University,
Pomona; M.S., Ph.D., UC Riverside

Patricia S. Springer (1997)
Professor, Botany and Plant Sciences
B.S., University of Minnesota, St. Paul
Ph.D., Purdue University

Thomas Stahovich (2003)
Professor, Mechanical Engineering
B.S., UC Berkeley; M.S., Ph.D., Massachusetts
Institute of Technology

Jason Stajich (2009)
Professor, Plant Pathology and Microbiology
B.S., Ph.D., Duke University;

B. Glenn Stanley (1989)
Professor, Cell Biology and Neuroscience, Psychology
B.S., University of Florida
Ph.D., Princeton University

Jan A. Stanley (2015)
Assistant Professor, Gender and Sexuality Studies
B.A., Ph.D., UC Santa Cruz

Travis Stanton (2013)
Associate Professor, Anthropology
B.A., University of Binghamton
M.A., Ph.D., Southern Methodist University

Emma Stapely (2014)
Assistant Professor, English
B.A., Northwestern University
M.Phil., Trinity College, University of Cambridge; Ph.D., University of Pennsylvania

Katherine K.M. Stavropoulos (2016)
Assistant Professor, Education
B.A., Trinity College; M.A., Ph.D.,
UC San Diego

Jan E. Stets (2002)
Professor, Sociology
B.A., University of Dayton; M.A., Ph.D.,
Indiana University

Richard Stouthamer (2001)
Professor, Entomology
B.S., M.S., Agricultural Institute of Wageningen,
The Netherlands; Ph.D., UC Riverside

Susan C. Straight (1994)
Professor, Creative Writing
B.A., University of Southern California
M.F.A., University of Massachusetts, Amherst

Albert R. Straika (1967)
Professor Emeritus, Mathematics
B.A., Wilkes College; M.A., Ph.D., Pennsylvania
State University

Wendy Weiqun Su (2009)
Associate Professor, Media and Cultural Studies
B.A., M.A., Peking University; M.A., Ph.D.,
University of Minnesota

Andrew Subica (2015)
Assistant Professor, Psychiatry and Social Medicine and Population Health
B.A., Pomona College
M.A., Ph.D., University of Hawaii, Manoa

Erika Suderburg (1989)
Professor, Media and Cultural Studies
B.F.A., Minneapolis College of Art and Design;
M.F.A., UC San Diego

Jan Greer Sullivan (2014)
Professor, Psychiatry, Social Medicine and Population Health
B.A., College of William and Mary, Virginia;
M.D., University of Mississippi; M.S.P.H.,
UC Los Angeles

David A. Swanson (2007)
Professor, Sociology
B.S., Western Washington State College
M.A., Ph.D., University of Hawaii

H. Lee Swanson (1991)
Distinguished Professor, Education
B.A., Westmont College
M.A., CSU Los Angeles; Ph.D., University of New Mexico

Kate Sweeney (2008)
Associate Professor, Psychology
B.A., Furman University
M.S., Ph.D., University of Florida

Christopher Y. Switzer (1990)
Professor, Chemistry
B.S., Fort Lewis College
Ph.D., Johns Hopkins University

Thomas Sy (2007)
Associate Professor, Psychology
B.A., UC Riverside; M.A., Ph.D., University of Michigan

Chikako Takeshita (2004)
Associate Professor, Gender and Sexuality Studies
B.A., Keio University, Tokyo; M.B.A., European
Institute of Public Administration, Fountain-
bleu, France; M.S., Ph.D., Virginia Polytechnic
Institute and State University, Blacksburg

Prudence Talbot (1977)
Professor, Cell Biology and Neuroscience
B.A., Wilson College; M.A., Wellesley College;
Ph.D., University of Houston

Sheldon Tan (2002)
Professor, Electrical and Computer Engineering
B.S., M.S., Fudan University
Ph.D., University of Iowa

Flip Tanedo (2016)
Assistant Professor, Physics
B.S., Stanford University; M.A., Cambridge
University; M.S., Durham University
M.Sc., Ph.D., Cornell University

Ming Lee Tang (2012)
Assistant Professor, Chemistry
B.S., Brandeis University
Ph.D., Stanford University

Karl A. Taube (1989)
Professor, Anthropology
B.A., UC Berkeley; M.A., M.Phil., Ph.D.,
Yale University
Seema K. Tiwari-Woodruff (2014)
Associate Professor, Biomedical Sciences
B.S., Biology Government Science College, Jabalpur, India; M.S., Ph.D., Southern Illinois University, Carbondale, IL

James Tobias (2002)
Associate Professor, English
B.A., UC Berkeley; M.F.A., New York University; Ph.D., University of Southern California

Harry W.K. Tom (1992)
Professor, Physics
A.B., Harvard; M.S., Oxford University
Ph.D., UC Berkeley

Linda J. Tomko (1989)
Associate Professor, Dance
B.A., Miami University
M.A., Ph.D., UC Los Angeles

Kiril Tomoff (2001)
Professor, History
B.A., University of Arizona
M.A., Ph.D., University of Chicago

Clifford E. Trafter (1991)
Distinguished Professor, History
B.A., M.A., Northern Arizona University
Ph.D., Oklahoma State University

John T. Trumble (1980)
Distinguished Professor, Entomology
B.S., University of Delaware
M.S., Ph.D., Virginia Polytechnic Institute and State University

Shan-Wen Tsai (2005)
Associate Professor, Physics
B.Sc., University of Sao Paulo
M.Sc., Ph.D., Brown University

Vassilis Tsotras (1997)
Professor, Computer Science and Engineering
B.Sc., National Technical University of Athens; M.Phil., M.Sc., Ph.D., Columbia University

Kenichiro Tsukamoto (2016)
Assistant Professor, Anthropology
B.A., National School of Anthropology
B.A., Konan University; M.A., University of Arizona; Ph.D., University of Arizona

Hideaki Tsutsui (2011)
Assistant Professor, Mechanical Engineering
B.S., University of Tokyo; M.S., UC San Diego; Ph.D., UC Los Angeles

Ertem Tuncel (2003)
Professor, Electrical and Computer Engineering
B.S., Middle East Technical University; M.S., Bilkent University; Ph.D., UC Santa Barbara

Sandra Kirtland Turner (2015)
Assistant Professor, Earth Sciences
B.S., Georgetown University; M.S., Ph.D., Scripps Institution of Oceanography, UC San Diego

Carole-Anne Tyler (1989)
Associate Professor, English
B.A., Williams College; M.A.
Ph.D., Brown University

Aman Ullah (1989)
Distinguished Professor, Economics
B.S., M.S., Lucknow University, India
Ph.D., Delhi University

Kambiz Vafai (2000)
Distinguished Professor, Mechanical Engineering
B.S., University of Minnesota
M.S., Ph.D., UC Berkeley

Frank N. Vahid (1994)
Professor, Computer Science and Engineering
B.S., University of Illinois, Urbana-Champaign;
M.S., Ph.D., UC Irvine

Jaimie M. Van Norman (2014)
Assistant Professor, Botany and Plant Sciences
B.A., Westminster College; Ph.D., University of Utah

Michael L. Vanderwood (2001)
Associate Professor, Education
B.S., Iowa State University; M.A., Ph.D.
University of Minnesota, Minneapolis

Joao Vargas (2017)
Professor, Anthropology
B.A., State University of Campinas
M.A., State University of Campinas
M.A., UC San Diego
Ph.D., UC San Diego

Professor, Physics
B.S., Osmania University
Ph.D., University of Minnesota

Akula Venkatram (1993)
Professor, Mechanical Engineering
B.S., Indian Institute of Technology
M.S., Brigham Young University
Ph.D., Purdue University

Ajay Verghese (2015)
Assistant Professor, Political Science
B.A., Boston College; Ph.D., The George Washington University

Stefano Vidussi (2005)
Professor, Mathematics
B.S., Universita Di Trieste, Italy
Ph.D., SISSA, Trieste, Italy

Sherryl Vint (2012)
Professor, English and Media and Cultural Studies
B.A., Brandon University
M.A., Ph.D., University of Alberta

David C. Volz (2015)
Assistant Professor, Environmental Sciences
B.S., M.S., University of Southern Carolina;
Ph.D., Duke University

Valentine Vullev (2006)
Professor, Bioengineering
B.S., Keene State College, Keene, NH
Ph.D., Boston University

Erin W. Rankin (2013)
Assistant Professor, Entomology
B.S., Georgetown University
Ph.D., UC San Diego

Ameae M. Walker (1979)
Professor, Biomedical Sciences
B.Sc., Hon., Ph.D., University of Liverpool, England

Sharon Walker (2005)
Professor, Chemical and Environmental Engineering
B.S., University of Southern California
M.S., Ph.D., Yale University

Marguerite R. Waller (1990)
Professor, Gender and Sexuality Studies, Comparative Literature and Foreign Languages
B.A., Cornell University
M.Phil., Ph.D., Yale University

Linda L. Walling (1984)
Professor, Botany and Plant Sciences
B.A., Middlebury College; Ph.D., University of Rochester

William E. Walton (1995)
Professor, Entomology
B.S., University of Rhode Island
M.S., Ph.D., University of Maryland

Albert Wang (2007)
Professor, Electrical and Computer Engineering
B.E., Tsinghua University, Beijing; M.S., Chinese Academy of Sciences, China; Ph.D., State University of New York, Buffalo

Fuson Wang (2016)
Assistant Professor, English
B.A., B.S., Stanford University
M.A., Ph.D., UC Los Angeles

Qingfang Wang (2015)
Associate Professor, Public Policy
B.S., Tianjin University of Finance and Economics; M.S., Central University of Finance and Economics; Ph.D. University of Georgia

Yinsheng Wang (2001)
Professor, Chemistry
B.S., Shandong University, China
M.S., Dalian Institute of Chemical Physics, China; Ph.D., Washington University, St. Louis

Yunzeng Wang (2008)
Professor, Business Administration
B.S., Shandong Polytechnic University, China;
M.Sc., Harbin Institute of Technology, China;
M.A.Sc., University of Waterloo, Canada; Ph.D., University of Pennsylvania

Associate Professor, Gender and Sexuality Studies
B.A., M.A., Ph.D., UC Santa Barbara

Georgina C. Warnke (1991)
Distinguished Professor, Political Science
B.A., Reed College; M.A., Ph.D., Boston University

Deva A. Weber (1991)
Associate Professor, History
B.A., M.A., Ph.D., UC Los Angeles

Jason Weems (2008)
Associate Professor, Art History
B.A., University of Iowa
M.A., Ph.D. Stanford University;
Assistant Professor Public Policy
B.S., Zhengzhou University
M.S., Peking University
M.S., Ph.D.; Arizona State University

Peng Wei (2016)
Assistant Professor, Physics
B.S., University of Science & Technology of China, Hefei, China.
Ph.D., University of California, Riverside

Nicholas Weller (2016)
Assistant Professor, Political Science
B.A., Rice University; Ph.D., UC San Diego

Susan R. Wessler (2009)
Distinguished Professor, Botany and Plant Sciences
B.S., The State University of New York
Ph.D., Cornell University

Howard K. Wettstein (1989)
Professor, Philosophy
B.A., Yeshiva College
M.A., Ph.D., City University of New York

Ian Wheeldon (2011)
Associate Professor, Chemical and Environmental Engineering
B.A.Sc., Queen’s University; MA.Sc., Royal Military College of Canada; Ph.D., Columbia University

Allison Benis White (2014)
Assistant Professor, Creative Writing
B.A., M.F.A., UC Irvine

N’Ija Whiston (2017)
Assistant Professor, Dance
B.A., Oberlin College
M.F.A, School of the Art Institute of Chicago

Keith F. Widaman (2014)
Distinguished Professor; Education
B.A., Whittier College; M.A., Ph.D., The Ohio State University

Melissa M. Wilcox (2016)
Professor, Religious Studies
B.S., Stanford University; M.A., Claremont Graduate School; Ph.D., U.C Santa Barbara

Frederick H. Wilhelm, Jr. (1996)
Professor, Mathematics
B.A., University of Pennsylvania; Ph.D., University of Maryland, College Park

Raymond L. Williams (1997)
Professor, Hispanic Studies
B.A., Washington State University
M.A., Ph.D., University of Kansas

Deborah S. Willis (1988)
Associate Professor, English
B.A., M.A., Ph.D., UC Berkeley

### Jon Willits (2015)
Assistant Professor, Psychology
B.S., University of Nebraska Omaha; M.S., UC Riverside; Ph.D., University of Wisconsin Madison

### John S. Wills (1999)
Associate Professor, Education,
B.A. UC Santa Barbara; M.A., Ph.D., UC San Diego

### Emma H. Wilson (2008)
Associate Professor, Biomedical Sciences
B.Sc., Hon. University of Dundee, Dundee, UK; Ph.D., University of Strathclyde, Glasgow, UK

### Gillian Wilson (2007)
Professor, Physics
B.Sc., Physics, University of Glasgow, U.K.; Ph.D., University of Durham, United Kingdom

### Richard Wilson (2015)
Assistant Professor, Mechanical Engineering
B.S., B.S., M.S., Utah State University; Ph.D., University of Illinois, Urbana

### Stephen J. Wimpenny (1989)
Professor, Physics
B.Sc., Ph.D., Sheffield University, England

### Andrew Winer (2003)
Associate Professor, Creative Writing
B.A., UC Los Angeles; M.F.A., UC Irvine

### Bryan Wong (2014)
Assistant Professor, Chemical and Environmental Engineering
B.S., Rice University; Ph.D., Massachusetts Institute of Technology

### Bun Wong (1994)
Professor, Mathematics
B.A., UC Berkeley; Ph.D., Princeton University

### Daniel Wong (2015)
Assistant Professor, Electrical and Computer Engineering
B.S., M.S., Ph.D., University of Southern California

### Deborah A. Wong (1996)
Professor, Music
B.A., University of Pennsylvania; M.A., Ph.D., University of Michigan

### Elaine Wong (2012)
Associate Professor, Business Administration
B.A., M.S., Ph.D., UC Berkeley

### Hollis Woodard (2015)
Assistant Professor, Entomology
B.A., University of North Carolina at Wilmington; Ph.D., University of Illinois at Urbana-Champaign

### Mark A. Wrathall (2007)
Professor, Philosophy
B.A., Brigham Young University, Provo, UT; M.A., Boston College; J.D., Harvard University; Ph.D., UC Berkeley

### Jianzhong Wu (2001)
Professor, Chemical and Environmental Engineering
B. Eng., B.S., M.S., Tsinghua University
Ph.D., UC Berkeley

### Loosheng Wu (1994)
Professor, Environmental Sciences
B.S., Zhejiang Agricultural University
M.S., Oregon State University; Ph.D., University of Minnesota

### Rachel Wu (2015)
Assistant Professor, Psychology
B.S., Carnegie Mellon University; M.Sc., The Anna Freud Centre, University College London
Ph.D., Birkbeck, University of London

### Yenna Wu (1992)
Professor, Comparative Literature and Foreign Languages
B.A., National Taiwan University; M.A., UC Los Angeles; Ph.D., Harvard University

### Jose Wudka (1990)
Professor, Physics
B.S., Universidad Nacional Autónoma de México; Ph.D., Massachusetts Institute of Technology

### Charles Wyman (2005)
Distinguished Professor, Chemical and Environmental Engineering
B.S., University of Massachusetts, Amherst; M.B.A., University of Denver; Ph.D., Princeton University

### Yang Xie (2016)
Assistant Professor, Economics
B.S., Tsinghua University
M.S., Ph.D., UC Berkeley

### Yulong Xing (2015)
Assistant Professor, Mathematics
B.S., University of Science and Technology; Ph.D., Brown University

### Feng Xu (2000)
Professor, Mathematics
B.S., M.S., Beijing University, China
Ph.D., UC Berkeley

### Guanshui Xu (1998)
Professor, Mechanical Engineering
B.S., University of Science and Technology, China; M.S., Ph.D., Brown University

### Shizhong Xu (1995)
Professor, Botany and Plant Sciences
B.S., Shenyang Agricultural University, P.R. China; M.A., Northeast Agricultural University, P.R. China; Ph.D., Purdue University

### Min Xue (2016)
Assistant Professor, Chemistry
B.S., Nanjing University
Ph.D., UC Los Angeles

### Traise Yamamoto (1994)
Associate Professor, English
B.A., San Jose State University; M.F.A., M.A., Ph.D., University of Washington
Naoki Yamanaka (2014)
Assistant Professor, Entomology
B.S., Ph.D., University of Tokyo

Sachiko Haga-Yamanaka (2016)
Assistant Professor, Molecular, Cell and Systems Biology
B.S., M.A., Tokyo University of Science, Tokyo, Japan; Ph.D., University of Tokyo

Ruoxue Yan (2013)
Assistant Professor, Chemical and Environmental Engineering
B.S., M.S., Tsinghua University
Ph.D., UC Berkeley

Hongdian Yang (2016)
Assistant Professor, Cell Biology and Neuroscience; B.S. Nanjing University
Ph.D. University of Maryland, College Park

Zhenbiao Yang (1999)
Professor, Botany and Plant Sciences
B.S., South China College of Tropical Crops, China; M.S., Iowa State University
Ph.D., Virginia Polytechnic Institute and State University

Jory A. Yarmoff (1989)
Professor, Physics
B.S., State University of New York, Stony Brook; Ph.D., UC Los Angeles

Marylynn V. Yates (1987)
Professor, Environmental Sciences
B.S., University of Wisconsin; M.S., New Mexico Institute of Mining and Technology; Ph.D., University of Arizona

Melanie Yazzie (2017)
Assistant Professor, Gender & Sexuality Studies
B.A, Grinnell College
M.A. Yale University
Ph.D. University of New Mexico

Yang Ye (1991)
Associate Professor, Comparative Literature and Foreign Languages
B.A., Fudan University
M.A., Ph.D., Harvard University

Heng Yin (2017)
Associate Professor, Computer Science and Engineering
B.S., M.S. Husazhong University of Science and Technology, Ph.D. College of William and Mary

Yadong Yin (2006)
Professor, Chemistry
B.S., M.S., University of Science and Technology, China; Ph.D., University of Washington

Samantha C. Ying (2015)
Assistant Professor, Environmental Sciences
B.S., UC Santa Barbara; Ph.D., Stanford University

Neal Young (2004)
Professor, Computer Science and Engineering
B.A., Cornell University; Ph.D., Princeton University

Haibo Yu (2003)
Professor, Theatre, Film and Digital Production

Sika Zheng (2014)
Assistant Professor, Biomedical Sciences
B.S., Tsinghua University, Beijing, China
Ph.D., Johns Hopkins University School of Medicine, Baltimore, MD

Y. Charles Zhang (2014)
Assistant Professor, Business Administration
B.S., Fudan University, China
M.S., University College London, United Kingdom; Ph.D., University of Michigan

Zhiwei Zhang, Ph.D.
Professor, Statistics
B.S., Beijing Medical University
M.S., Chinese Academy of Medical Sciences
Ph.D., University of Pittsburgh

Qi Zhu (2011)
Associate Professor, Electrical and Computer Engineering
B.E., Tsinghua University; Ph.D., UC Berkeley

Rami Zwick (2009)
Professor, Business Administration
B.A., Hebrew University of Jerusalem
M.A., University of Haifa, Israel
Ph.D., University of North Carolina, Chapel Hill
Regents and Officers

The Board of Regents

Ex Officio Regents
Governor of California ................. Jerry Brown
Lieutenant Governor of California .... Gavin Newsom
Speaker of the Assembly ............... Anthony Rendon
State Superintendent of Public Instruction .... Tom Torlakson
President, Alumni Associations of UC .......... Cynthia So Schroeder
President, University of California ...... Harvey Brody
President of the University .......... Janet Napolitano

Appointed Regents
Maria R. Anguiano (Appointed 2017) Richard Blum (2026)
William De La Peña (2018) Gareth Elliot (2025)
Howard “Peter” Gruber (Appointed 2017)
George Keffer (2021) Sherry L. Lansing (2022)
Monica Lozano (2022) Hadi Makarechian (2020)
Eloy Ortiz Oakley (2024) Lark Park (Appointed 2017)
Norman J. Pattiz (2026) John A. Pérez (2024)
Bonnie Reiss (2020) Richard Sherman (2025)
Marcela Ramirez (Student Regent, 2017)

Regents Designate
Albert Lemus ................................ Francis Mancia
Paul Monge ........................................

Faculty Representatives to the Board
James Chalfant ......................... Shane White
LaWana Richmond ..................... Jason Valdry

Principal Officers of the Regents
General Counsel for Legal Affairs ........ Charles F. Robinson
Secretary and Chief of Staff .......... Anne Shaw
Chief Investment Officer ........ Jagdeep Singh Bachher
Sr. Vice President and Chief Compliance and
Audit Officer .................. Alex Bustamante

Officers of the University
President of the University .......... Janet Napolitano
Provost and Executive Vice President, Academic Affairs .... Aimée Dorr
Executive Vice President, Chief Financial Officer .... Nathan Brostrom
Executive Vice President, Chief Operating Officer .......... Rachel Nava
Executive Vice President, UC Health ........ John D. Stobo
Interim Sr. Vice President,
Chief Compliance & Audit Officer ....... John Lohse
Sr. Vice President, Government Relations .......... Nelson Peacock
Sr Vice President, Innovation & Entrepreneurship .... Christine Guibran
Vice President, Agriculture & Natural Resources .... Glenda Humiston
Vice President, Office of the National Laboratories .......... Kim Budil
Vice President, Legal Affairs ....... Charles F. Robinson
Interim Sr Vice President, Public Affairs .... Claire Holmes
Vice President, Research and Graduate Studies ........ Arthur Ellis
Vice President, Student Affairs .......... Robin H. Holmes-Sullivan

University Chancellors
Berkeley ........................................ Carol T. Christ
Davis ........................................... Gary S. May
Irvine ........................................ Howard Gillman
Los Angeles .................................... Gene D. Block
Merced ........................................ Dorothy Leland
Riverside ...................................... Kim A. Wilcox
San Diego ..................................... Pradeep K. Khosla
San Francisco ................................ Sam Hawgood
Santa Barbara ................................ Henry T. Yang
Santa Cruz ................................... George Blumenthal

UC Riverside Officers
Chancellor ......... Kim A. Wilcox
Interim Provost and Executive Vice Chancellor .......... Cynthia K. Larive
Associate Chancellor .................... Christine Victorino
Vice Chancellor, Business and Administrative
Services ...................... Ron Coley
Vice Chancellor, Health Affairs and
Dean, School of Medicine .......... Deborah Deas
Vice Chancellor, Planning and Budget ............ Vacant
Vice Chancellor, Research
and Economic Development .......... Michael J. Pazzani
Vice Chancellor, Student Affairs .......... James W. Sandoval
Vice Chancellor, University Advancement .......... Peter A. Hayashida
University Librarian ................. Steven Mandeville-Gamble
Vice Provost, Academic Personnel .......... Ameae Walker
Vice Provost, Administrative Resolution ........ John Anderson
Vice Provost, International Affairs .......... Kelechi Kalu
Vice Provost, Undergraduate Education .......... Richard A. Cardullo
Campus Architect ............... Jeffrey Holmes
Associate Vice Chancellor,
Capital Asset Strategies .......... Jeff Kaplan
Associate Vice Chancellor,
Chief Compliance Officer .......... Elizabeth Boyd
Associate Vice Chancellor,
Campus Information Systems .......... Danna Gianforte
Associate Vice Chancellor, Development .......... Hieu Nguyen
Associate Vice Chancellor, Diversity and Inclusion .......... Mariam Lam
Associate Vice Chancellor, Finance and
Business Operations .......... Georrianne Carlson
Associate Vice Chancellor, Student Affairs and
Enrollment Services ............ LaRae Lundgren
Associate Vice Chancellor, University
Advancement ............... Jan Wildman
Associate Vice Chancellor, Business & Financial
Services ................ Bobbi McCracken
Associate Vice Chancellor, Human Resources .......... Jadie Lee
Associate Vice Chancellor, Research and
Economic Development .......... Charles Greer, Jr.
Associate Vice Chancellor, Financial
Planning and Analysis .......... Matthew Hull
Assistant Vice Chancellor, Alumni
and Constituent Relations .......... Jorge Enrique Ancona
Assistant Vice Chancellor, Capital Planning .......... John White
Assistant Vice Chancellor, Central Development .......... Marie Schultz
Assistant Vice Chancellor, Constituent Development .......... Jeffrey Kaatz
Assistant Vice Chancellor, Governmental and
Community Relations .......... Elizabeth Romero
Assistant Vice Chancellor, Auxiliary Services .......... Andy Plumley
University Communications .......... Vacant
Assistant Vice Provost, Academic Personnel .......... Katina Napper
Assistant Vice Provost, Undergraduate Education .......... Thomas Dickson
Chief Campus Counsel ............. David Bergquist
Director of Athletics,
Intercollegiate Athletics .......... Tamicia N. Smith Jones

UC Riverside Deans
College of Humanities, Arts, and Social Sciences
Dean ..................... Milagros Peña, Ph.D.
Associate Dean, Arts and Humanities .......... Peter Graham, Ph.D.
Associate Dean, Social Sciences .......... Sang-Hee Lee, Ph.D.
Associate Dean, Student Academic Affairs .......... Alicia Arrizon
Assistant Dean and Chief Financial and
Administrative Officer .......... Cindy Williams, B.S.
College of Natural and Agricultural Sciences
Dean ........................................... Kathryn Uhric, Ph.D.
Divisional Dean, Agricultural &
Natural Resources ........................... Michael Anderson, Ph.D.
Divisional Dean, Life Sciences ............ Frances Sladek, Ph.D.
Divisional Dean, Student Academic Affairs . Michael McKibben, Ph.D.
Divisional Dean, Physical and
Mathematical Sciences ....................... Umar Mohideen, Ph.D.
Executive Assistant Dean of Administration
and Chief Financial Officer ............... Jennifer Vogel Farias, M.B.A.
Graduate Division
Dean ........................................... Shaun Bowler, Ph.D.
Associate Dean, Graduate Academic Affairs . Ertem Tuncel, Ph.D.
Associate Dean, Recruitment and Outreach . Connie Nugent, Ph.D.
Graduate School of Education
Dean ........................................... Thomas M. Smith, Ph.D.
Associate Dean ................................ Keith F. Widaman, Ph.D.
Associate Dean, Undergraduate Education . Louie Rodriguez, Ed.D.
Assistant Dean, and Chief Financial
and Administrative Officer ............. Sally Tavison, M.A.
Assistant Dean and Director of Teacher Education ...................... JerMara Devis-Welch, Ph.D.
Graduate Advisors .................................. Eddie Comeaux, Ph.D.
........................................... Keith Widaman, Ph.D.
Marian and Rosemary Bourns College of Engineering
Interim Dean ............................... Sharon Walker, Ph.D.
 Associate Dean, Academic Affairs ........ Jay Farrell, Ph.D.
 Associate Dean, Research and Graduate Studies ........ Chinya Ravishankar, Ph.D.
 Associate Dean, Student Academic Affairs . Marko Prinevac, Ph.D.
 Assistant Dean, Finance and Administration ........ D. Patrick Hartney, M.B.A.
 Assistant Dean, Strategic and International Initiatives . Jun Wang, M.B.A
School of Business Administration and
A. Gary Anderson Graduate School of Management
Dean ........................................... Yunzeng Wang, Ph.D.
 Associate Dean, Graduate Programs .......... Barry Mishra, Ph.D.
 Associate Dean and Department Chair . Jerayr ‘John’ Halebian, Ph.D.
 Associate Dean, Undergraduate Business Programs .................... Elaine Wong, Ph.D.
 Assistant Dean, Undergraduate Business Programs .................. Kazi Mamun, M.A.
 Executive Assistant Dean and Chief Financial
and Administrative Officer ............... Laurie Gustafson, M.B.A.
School of Medicine
Dean ........................................... Deborah Deas, M.D., M.P.H.
Senior Associate Dean, Clinical Affairs .... Michael N. Nduati, M.D.
Senior Associate Dean, Medical Education .... Paul Lyons, M.D.
Senior Associate Dean, Research ............ David Lo, M.D., Ph.D.
Senior Associate Dean, Student Affairs ... Neal L. Schiller, Ph.D.
Associate Dean, Academic Affairs ......... Iryna Ethell, Ph.D.
Associate Dean, Assessment and Evaluation .... Kendrick Davis, Ph.D.
Associate Dean, Chief Financial & Admin Officer .... Louise Borda, M.B.A.
Associate Dean, Clinical Medical Education . Andrew Alexander, M.D.
Associate Dean, Graduate Medical Education . Gerald A. Maguire, M.D.
Associate Dean, Population Health ......... Greer Sullivan, M.D.
Associate Dean, Pre-Clerkship Curriculum .... Christian Lytle, Ph.D.
Associate Dean, Student Affairs ............. Emma Simmons, M.D.
Chair, Division of Biomedical Sciences .... Monica J. Carson, Ph.D.
Chair, Division of Clinical Sciences ......... Ramdas Pai, M.D.
Graduate Program Director .................. Emma Wilson, Ph.D.
School of Public Policy
Dean ........................................... Anil B. Deolalikar, Ph.D.
Associate Dean ......................... Karthick Ramakrishnan, Ph.D.
Assistant Dean and Chief Financial & Administrative Officer ........ Veronica Ruiz, M.P.A.
Graduate Advisors ............................ Cecilia Ayon, Ph.D.
........................................... Ariel Dinar, Ph.D.
University Extension
Interim Dean ............................... Sarah Sharp-Aten, M.A.
Associate Dean for Academic Affairs ........ Sue Teele, Ph.D.
Associate Dean for International Programs ....... Bronwyn Jenkins-Deas, M.Ed.
Assistant Dean, Student and Instructional Support Services ................................. Sarah Sharp-Aten, M.A.
UC Riverside Officers Emeriti
Chancellor Emeritus ........................ Raymond L. Orbach, Ph.D.
Vice Chancellor Emeritus, Faculty Relations and Academic Support ............. John B. Vickery, Ph.D.
Vice Chancellor Emeritus, University Advancement .................. James Erickson, Ed.D.
Dean Emerita, Graduate Division ........ Anne Kernan, Ph.D.
Dean Emeritus, College of Natural and Agricultural Sciences ................ Seymour D. Van Gundy, Ph.D.
Dean Emeritus, Graduate School of Education ....................... Irving H. Balow, Ph.D.
Dean Emeritus, Graduate School of Education ............... Irving G. Hendrick, Ph.D.
Dean Emeritus, University Extension, Riverside ............... James R. Hartley, Ed.D.
Registrar Emeritus ........................ Robert B. Herschler, M.A.
Other UC Riverside Administrators
Executive Director, Academic Senate ........ Cherysa Cortez
Executive Director, Associated Students of UCR ... Laurie Sinclair, B.A.
Executive Director, Construction
& Project Management ..................... John Casey, M.A.
Executive Director, Enterprise Risk Management ........ Albert Vasquez, Ed.D.
Director, Audit and Advisory Services ........ Greg Moore, C.P.A.
Director, Office of Title IX ..................... Brooke Chang, J.D.
Assistant Dean, Strategic Initiatives ............... Kathy Barton, B.A.
Director, Community Relations ................ Jeff Kraus, B.S.
Director, Early Academic Development Programs ................ Frances Calvin
Director, Federal Relations .................... Kaitlin Chell, M.S.
Director, Financial Aid ......................... José Aguilar, M.B.A.
Interim Director, Employee & Labor Relations ........ Alex Najera, M.P.A.
Executive Director, UCR Foundation
and Donor Relations ......................... Pat Kohlmeier
Executive Director, Marketing
and Creative Services ....................... Margene Mastin-Schepps, M.A.
Director, Media Relations ................. J.D. Warren
Registrar .............................. Bracken Janette Mailey, M.S.
Director, Risk Management ............... Christopher Richmond, J.D.
Director, Student Affairs Marketing
and Communications ....................... Patricia Daly, M.B.A.
Director, Student Business Services ........ Asirra Suguitan
Director, Administration, Summer Sessions .......... Leonard Taylor, M.F.A.
Director, Undergraduate Admissions ...... Emily Engelschall, B.A.
Chief Campus Officers
Provost, 1949–56 ........................ Gordon S. Watkins
Provost, 1956–58; Chancellor, 1958–64 .......... Herman Spieth
Chancellor, 1964–1979 ................... Ivan Hinderaker
Chancellor, 1979–1984 .............. Tomás Rivera
Chancellor, 1992–2002 ................. Raymond L. Orbach
Acting Chancellor, 2002 ................... David H. Warren
Chancellor, 2002–2007 ........................ France A. Córdova
Chancellor, 2008–2012 ................. Timothy P. White
Acting Chancellor, 2012–2013 ............... Jane C. Conoley
Chancellor, 2013–2018 ................. Kim A. Wilcox
<table>
<thead>
<tr>
<th>Building Name</th>
<th>Grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen-Inverness Residence Hall</td>
<td>G3</td>
</tr>
<tr>
<td>Administration (Hinderaker Hall)</td>
<td>D5-6</td>
</tr>
<tr>
<td>Agricultural Operations</td>
<td>C8</td>
</tr>
<tr>
<td>Alumni &amp; Visitors Center</td>
<td>D4</td>
</tr>
<tr>
<td>Anderson Hall (SoBA, AGSM) 1 &amp; 2</td>
<td>G7-8</td>
</tr>
<tr>
<td>Arts Building</td>
<td>D5</td>
</tr>
<tr>
<td>Arts 113-Studio Theatre</td>
<td>D5</td>
</tr>
<tr>
<td>Arts 166-Performance Lab</td>
<td>D5</td>
</tr>
<tr>
<td>Athletics &amp; Dance Building</td>
<td>E5</td>
</tr>
<tr>
<td>Bannockburn Village</td>
<td>D3-4</td>
</tr>
<tr>
<td>Barn Group/University Club</td>
<td>E6</td>
</tr>
<tr>
<td>Batchelor Hall</td>
<td>G6</td>
</tr>
<tr>
<td>Bell Tower</td>
<td>F6</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>G6</td>
</tr>
<tr>
<td>Biomedical Teaching Complex</td>
<td>G6</td>
</tr>
<tr>
<td>Bookstore (Campus Store)</td>
<td>F5</td>
</tr>
<tr>
<td>Botanic Gardens</td>
<td>I, J6-8</td>
</tr>
<tr>
<td>Bourns Hall (Engineering)</td>
<td>F5</td>
</tr>
<tr>
<td>Boyce Hall</td>
<td>G5-6</td>
</tr>
<tr>
<td>Boyden Laboratories</td>
<td>G7</td>
</tr>
<tr>
<td>Campus Surge</td>
<td>E4-5</td>
</tr>
<tr>
<td>Campus Tours (Student Services Building)</td>
<td>E5</td>
</tr>
<tr>
<td>Canyon Crest Family Student Housing</td>
<td>E,F,G1-2</td>
</tr>
<tr>
<td>Capital Programs</td>
<td>A4</td>
</tr>
<tr>
<td>Career Center (Bookstore)</td>
<td>F5</td>
</tr>
<tr>
<td>Chapman Hall</td>
<td>F,G7</td>
</tr>
<tr>
<td>CHASS Interdisciplinary North and South</td>
<td>E5</td>
</tr>
<tr>
<td>Chemical Sciences</td>
<td>H5</td>
</tr>
<tr>
<td>Child Development Center</td>
<td>G1-2</td>
</tr>
<tr>
<td>College Building North and College Building South (CNAS)</td>
<td>F8</td>
</tr>
<tr>
<td>Computing and Communications</td>
<td>H7</td>
</tr>
<tr>
<td>Corporation Yard</td>
<td>G,H2</td>
</tr>
<tr>
<td>Costa Hall</td>
<td>E5</td>
</tr>
<tr>
<td>Cottage</td>
<td>E6</td>
</tr>
<tr>
<td>East I &amp; Q (Insectary)</td>
<td>G7</td>
</tr>
<tr>
<td>Entomology</td>
<td>G7</td>
</tr>
<tr>
<td>Entomology Museum</td>
<td>G7</td>
</tr>
<tr>
<td>Environmental Health and Safety</td>
<td>F8</td>
</tr>
<tr>
<td>Falkirk Apts</td>
<td>D2</td>
</tr>
<tr>
<td>Fawcett Laboratory</td>
<td>G7</td>
</tr>
<tr>
<td>Flagpole</td>
<td>D5</td>
</tr>
<tr>
<td>Fleet Services Dept</td>
<td>H2</td>
</tr>
<tr>
<td>fMRI</td>
<td>F7</td>
</tr>
<tr>
<td>Geology Building</td>
<td>F,G5</td>
</tr>
<tr>
<td>Glen Mor Apartments</td>
<td>B3-4</td>
</tr>
<tr>
<td>Genomics</td>
<td>F,G6</td>
</tr>
<tr>
<td>Greenhouses</td>
<td>H6</td>
</tr>
<tr>
<td>Headhouse (Greenhouses)</td>
<td>G7</td>
</tr>
<tr>
<td>Health Services (Veitch Student Center)</td>
<td>G4</td>
</tr>
<tr>
<td>Herbarium</td>
<td>G,H7</td>
</tr>
<tr>
<td>Highlander Union Bldg/Plaza (HUB)</td>
<td>E5</td>
</tr>
<tr>
<td>Hinderaker Hall (Administration)</td>
<td>D5-6</td>
</tr>
<tr>
<td>Housing Administration</td>
<td>D3</td>
</tr>
<tr>
<td>HUB (Highlander Union Building)</td>
<td>E5</td>
</tr>
<tr>
<td>Humanities</td>
<td>E7</td>
</tr>
<tr>
<td>Humanities 400/University Theatre</td>
<td>E6</td>
</tr>
<tr>
<td>Humanities &amp; Social Sciences Building</td>
<td>D6</td>
</tr>
<tr>
<td>Humanities 1500</td>
<td>E6</td>
</tr>
<tr>
<td>Human Resources</td>
<td>B5</td>
</tr>
<tr>
<td>International Village Housing</td>
<td>B6</td>
</tr>
<tr>
<td>Keen Hall</td>
<td>G6</td>
</tr>
<tr>
<td>KUCR Radio</td>
<td>G2</td>
</tr>
<tr>
<td>Library, Orbach</td>
<td>G5</td>
</tr>
<tr>
<td>Library, Rivera</td>
<td>F6</td>
</tr>
<tr>
<td>Life Sciences Building</td>
<td>F6</td>
</tr>
<tr>
<td>Life Sciences 1500</td>
<td>F6</td>
</tr>
<tr>
<td>Loathian Residence Hall</td>
<td>H4</td>
</tr>
<tr>
<td>Mail Room</td>
<td>H2</td>
</tr>
<tr>
<td>Materials Science &amp; Engineering</td>
<td>F4</td>
</tr>
<tr>
<td>Oban Apts</td>
<td>D3</td>
</tr>
<tr>
<td>Olmsted Hall</td>
<td>F7</td>
</tr>
<tr>
<td>Orbach Library (Science Library)</td>
<td>G5</td>
</tr>
<tr>
<td>Parking Services</td>
<td>H2</td>
</tr>
<tr>
<td>Pentland Hills Residence Hall</td>
<td>H3-4</td>
</tr>
<tr>
<td>Physical Plant Office</td>
<td>H2</td>
</tr>
<tr>
<td>Physics Building</td>
<td>G5</td>
</tr>
<tr>
<td>Physics 2000</td>
<td>G5</td>
</tr>
<tr>
<td>Pierce Hall</td>
<td>F5</td>
</tr>
<tr>
<td>Plaza Apts (The Plaza)</td>
<td>C3</td>
</tr>
<tr>
<td>Police Facility</td>
<td>E3</td>
</tr>
<tr>
<td>Printing and Reprographics</td>
<td>F5</td>
</tr>
<tr>
<td>Psychology Building</td>
<td>F7</td>
</tr>
<tr>
<td>Purchasing Dept</td>
<td>H2</td>
</tr>
<tr>
<td>Rivera Library</td>
<td>F6</td>
</tr>
<tr>
<td>School of Medicine Education Building (SoM)</td>
<td>G5</td>
</tr>
<tr>
<td>School of Medicine Research Building</td>
<td>G7</td>
</tr>
<tr>
<td>Schools First Credit Union</td>
<td>A3</td>
</tr>
<tr>
<td>Science Laboratories 1</td>
<td>G5</td>
</tr>
<tr>
<td>Spieth Hall</td>
<td>F6</td>
</tr>
<tr>
<td>Sproul Hall (GSOE)</td>
<td>E6</td>
</tr>
<tr>
<td>Stonehaven Apts</td>
<td>D1</td>
</tr>
<tr>
<td>Student Recreation Center</td>
<td>F3</td>
</tr>
<tr>
<td>Student Services</td>
<td>E5</td>
</tr>
<tr>
<td>The Barn</td>
<td>E6</td>
</tr>
<tr>
<td>UCR Baseball Complex</td>
<td>C1-2</td>
</tr>
<tr>
<td>UCR Community Garden</td>
<td>C6-7</td>
</tr>
<tr>
<td>UCR Extension Center</td>
<td>B5</td>
</tr>
<tr>
<td>University Laboratory Building</td>
<td>G6</td>
</tr>
<tr>
<td>University Lecture Hall</td>
<td>F4</td>
</tr>
<tr>
<td>University Office Building</td>
<td>G6</td>
</tr>
<tr>
<td>University Theatre</td>
<td>E6</td>
</tr>
<tr>
<td>University Village</td>
<td>A4</td>
</tr>
<tr>
<td>University Village Theater</td>
<td>B4</td>
</tr>
<tr>
<td>USDA Salinity Laboratory</td>
<td>H,15</td>
</tr>
<tr>
<td>Watkins Hall</td>
<td>E6</td>
</tr>
<tr>
<td>Watkins 1000</td>
<td>E6</td>
</tr>
<tr>
<td>Webber Hall</td>
<td>G5-6</td>
</tr>
<tr>
<td>Winston Chung Hall (BCOE)</td>
<td>G5</td>
</tr>
</tbody>
</table>

**Colleges and Schools**

- Bourns College of Engineering (BCOE)......... G5
- College of Humanities, Arts & Social Sciences (CHASS). E5
- College of Natural & Agricultural Sciences (CNAS)....... F8
- Graduate School of Education (GSOE)....... E6
- School of Business Administration (SoBA)....... G6
- School of Medicine (SoM)..................... G5
- The Anderson Graduate School of Management (AGSM)/F8

**Top UCR Destinations**

- Alumni & Visitors Center....................... D4
- Athletics & Dance Bldg......................... E5
- Bookstore (Campus Store)...................... F5
- Campus Tours (Student Services)............... E5
- Career/Counseling/Health Services (Health Services)........... G4
- Dining Services (Bannockburn Village)........ D3-4
- Highlander One-Stop Shop (Student Services)........ E5
- Housing Administration........................ D3
- HUB (Highlander Union Bldg).................. E5
- Orbach Library................................ G5
- Rivera Library................................ F6
- Student Recreation Center.................... F3
- University Theatre............................. E6
# Two-Year Academic Calendar

**University of California, Riverside**

<table>
<thead>
<tr>
<th>Quarter begins</th>
<th>Instruction begins</th>
<th>Veterans Day</th>
<th>Thanksgiving</th>
<th>Instruction ends</th>
<th>Finals begin</th>
<th>Finals end/Quarter ends</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FALL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017–2018</td>
<td>Mon Sept 25</td>
<td>Thu Sept 28</td>
<td>Fri Nov 10</td>
<td>Fri Dec 8</td>
<td>Sat Dec 9</td>
<td>Fri Dec 15</td>
</tr>
<tr>
<td>2018-19</td>
<td>Mon Sept 24</td>
<td>Thu Sept 27</td>
<td>Fri Nov 12</td>
<td>Fri Dec 7</td>
<td>Sat Dec 8</td>
<td>Fri Dec 14</td>
</tr>
<tr>
<td><strong>WINTER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarter begins</td>
<td>Wed Jan 3</td>
<td>Mon Jan 8</td>
<td>Mon Jan 15</td>
<td>Mon Jan 15</td>
<td>Sat Mar 17</td>
<td>Fri Mar 23</td>
</tr>
<tr>
<td>Instruction begins</td>
<td>Mon Jan 8</td>
<td>Mon Jan 7</td>
<td>Mon Jan 21</td>
<td>Mon Feb 19</td>
<td>Sat Mar 16</td>
<td>Fri Mar 22</td>
</tr>
<tr>
<td>Martin Luther King, Jr. Day</td>
<td>Mon Jan 15</td>
<td>Mon Jan 7</td>
<td>Mon Jan 21</td>
<td>Mon Feb 19</td>
<td>Sat Mar 16</td>
<td>Fri Mar 22</td>
</tr>
<tr>
<td>Presidents Day</td>
<td>Mon Feb 19</td>
<td>Mon Feb 18</td>
<td>Fri Mar 15</td>
<td>Fri Mar 15</td>
<td>Sat Mar 16</td>
<td>Fri Mar 22</td>
</tr>
<tr>
<td>Instruction ends</td>
<td>Fri Mar 16</td>
<td>Fri Mar 22</td>
<td>Fri Mar 22</td>
<td>Fri Mar 15</td>
<td>Sat Mar 16</td>
<td>Fri Mar 22</td>
</tr>
<tr>
<td>Finals begin</td>
<td>Sat Mar 17</td>
<td>Sat Mar 16</td>
<td>Sat Mar 16</td>
<td>Sat Mar 16</td>
<td>Sat Mar 16</td>
<td>Fri Mar 22</td>
</tr>
<tr>
<td>Finals end/Quarter ends</td>
<td>Fri Mar 23</td>
<td>Fri Mar 23</td>
<td>Fri Mar 22</td>
<td>Fri Mar 22</td>
<td>Fri Mar 23</td>
<td>Fri Mar 22</td>
</tr>
<tr>
<td><strong>SPRING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cesar Chavez Holiday</td>
<td>Fri Mar 30</td>
<td>Fri Mar 29</td>
<td>Fri Mar 29</td>
<td>Fri Mar 29</td>
<td>Fri Mar 29</td>
<td>Fri Mar 29</td>
</tr>
<tr>
<td>Instruction begins</td>
<td>Mon Apr 2</td>
<td>Mon Apr 1</td>
<td>Mon Apr 1</td>
<td>Mon Apr 1</td>
<td>Mon Apr 1</td>
<td>Mon Apr 1</td>
</tr>
<tr>
<td>Memorial Day</td>
<td>Mon May 28</td>
<td>Mon May 27</td>
<td>Mon May 27</td>
<td>Mon May 27</td>
<td>Mon May 27</td>
<td>Mon May 27</td>
</tr>
<tr>
<td>Instruction ends</td>
<td>Fri Jun 8</td>
<td>Fri Jun 7</td>
<td>Fri Jun 7</td>
<td>Fri Jun 7</td>
<td>Fri Jun 7</td>
<td>Fri Jun 7</td>
</tr>
<tr>
<td>Finals begin</td>
<td>Sat Jun 9</td>
<td>Sat Jun 8</td>
<td>Sat Jun 8</td>
<td>Sat Jun 8</td>
<td>Sat Jun 8</td>
<td>Sat Jun 8</td>
</tr>
<tr>
<td>Finals end/Quarter ends</td>
<td>Fri Jun 15</td>
<td>Fri Jun 14</td>
<td>Fri Jun 14</td>
<td>Fri Jun 14</td>
<td>Fri Jun 14</td>
<td>Fri Jun 14</td>
</tr>
<tr>
<td>Commencement</td>
<td>Fri-Mon Jun 15-18</td>
<td>Fri-Mon Jun 14-17</td>
<td>Fri-Mon Jun 15-17</td>
<td>Fri-Mon Jun 14-17</td>
<td>Fri-Mon Jun 14-17</td>
<td>Fri-Mon Jun 14-17</td>
</tr>
</tbody>
</table>
Directory

Campus Operator ........................................... (951) 827-1012
Dial 0 from campus telephones. Campus numbers not listed below
are available in the campus directory, in the local telephone directory,
or from the campus operator.

Emergency Assistance

Off campus ................................................... 911
On-Campus telephones ........................................ 9-911

A comprehensive, A-Z List of campus and community services, resources, departments, programs
colleges, schools can be found online at: ................................. http://www.ucr.edu/alpha.html

Alumni and Constituent Relations ........................................ 827-2586
Alumni and Constituent Relations ........................................ 827-2586
advancement.ucr.edu/alumni_relations.html
Associated Students of UCR ........................................ 827-3621
Associated Students of UCR ........................................ 827-3621
asucr.ucr.edu
Campus Store (Bookstore) ........................................ 827-2665
campuscampusstore.com
Campus Tours .................................................. 827-8687
Campus Tours .................................................. 827-8687
visit.ucr.edu
Career Center .................................................. 827-3631
careers.ucr.edu

Colleges and Schools

College of Humanities, Arts, and Social Sciences ................. 827-3683
class.ucr.edu
College of Natural and Agricultural Sciences ..................... 827-6555
cnas.ucr.edu
Graduate Division .............................................. 827-4302
Graduate School of Education
Teacher education .............................................. 827-5225
teachereducation.ucr.edu
Graduate program ............................................... 827-6362
studenthealth.ucr.edu
School of Medicine ............................................ 827-4568
education.ucr.edu
The Marlan and Rosemary Bourns College of Engineering ........ 827-5190
exercise.ucr.edu
The School of Business Administration and
The A. Gary Anderson Graduate School of Management ........... 827-6200
agsm.ucr.edu

Counseling Center .............................................. 827-5531
counseling.ucr.edu
Equal Employment & Affirmative Action .............................. 827-5588
affirmativeaction.ucr.edu
Financial Aid Office ............................................ 827-3878
finaid.ucr.edu
Office of Graduate Admission ...................................... 827-4302
graduate.ucr.edu
Student Health Services .......................................... 827-3031
studenthealth.ucr.edu
Housing Information ............................................. 827-6350
housing.ucr.edu
International Student Resource Center ............................... 827-4113
internationalcenter.ucr.edu
Academic Resource Center .......................................... 827-3721
arc.ucr.edu
Study Skills Programs, Tutorial Assistance, and Support Services

LGBT Resource Center ............................................. 827-2267
out.ucr.edu
Library Information — Tomás Rivera ................................. 827-3220
library.ucr.edu
Library Information — Raymond L. Orbach Science Library ....... 827-3701
library.ucr.edu
Office of the Ombuds .............................................. 827-3213
ombuds.ucr.edu
Office of the Registrar ............................................. 827-7284
registrar.ucr.edu
Student Disability Resource Center .................................. 827-3861
ssdrc.ucr.edu
Student Life ........................................................ 827-7344
studentlife.ucr.edu, rside.ucr.edu,
tartansoul.ucr.edu

Student Recreation Center .......................................... 827-5738
recreation.ucr.edu
Summer Sessions .................................................. 827-3044
summer.ucr.edu
Transportation and Parking Services .................................. 827-8277
parking.ucr.edu

Undergraduate Admissions

Information for Prospective Students and Application Evaluation ........ 827-3411
admissions.ucr.edu
Undergraduate Education ........................................... 827-7750
ue.ucr.edu
The Well .......................................................... 827-9355
well.ucr.edu
Women's Resource Center .......................................... 827-3337
wrc.ucr.edu