University of California, Santa Cruz

General Catalog
2004–06
About the Catalog

This catalog contains the basic information about UC Santa Cruz. A complete list of academic programs and concentrations, both undergraduate and graduate, appears on pages 8–9.

The next part of the catalog, pages 10–102, is divided into sections describing various aspects of the campus: undergraduate admission and financial information, the undergraduate academic program (including advising and support services), graduate education (including information on graduate student admission, expenses, and financial support), research programs and facilities, and the ten residential colleges and student life.

The academic programs and courses offered at UCSC are described in detail on pages 103–384. The listings are alphabetical, with appropriate cross-references.

The Santa Cruz teaching staff and their academic qualifications, the University of California administration, and the Santa Cruz campus administrative staff appear on pages 385–418.

The catalog constitutes the campus’s document of record. While every effort is made to ensure the correctness and timeliness of information contained in this catalog, changes are likely to occur after publication. On an ongoing basis, the university is examining ways to bring the greatest possible efficiency to the delivery of its programs and curricula. This process may result in changes in services, teaching and administrative staff, and curricula and courses that could not be reflected in this catalog, which was prepared well in advance of the 2004–06 academic years.

Updates to catalog information are available in the quarterly Schedule of Classes, which is on the World Wide Web at reg.ucsc.edu/soc.

More detailed information on particular subjects is available from appropriate campus units. (A list of key phone numbers appears on the inside back cover.) Most office hours are Monday through Friday, 8 A.M. to noon and 1 to 5 P.M. during the academic year; most offices close from noon to 1 P.M. and on weekends and holidays.

Campus information:
University of California, Santa Cruz
1156 High Street
Santa Cruz, CA 95064-1077
(831) 459-0111 (directory assistance)
Web: www.ucsc.edu

Contents

5 Welcome
6 Introducing UCSC
6 The University of California
6 The Santa Cruz Campus
8 Fields of Study
10 Academic Calendar
11 UNDERGRADUATE ADMISSION AND FINANCIAL INFORMATION
13 Admission
13 Admission Procedures
14 Preparing for University Work
15 Admission as a Freshman
16 Admission as a Transfer Student
17 Admission of International Students
17 Readmission
17 Admission to Special Categories
18 Nondiscrimination/Affirmative Action
19 Expenses and Financial Resources
19 Expenses
21 Financial Aid
22 Veteran Services
23 UNDERGRADUATE ACADEMIC PROGRAM
25 Planning Your Academic Program
25 Graduation Requirements
27 University Requirements
27 Advanced Placement and International Baccalaureate
27 Credits for Transfer Students
30 General Education Requirements
33 College Requirements
33 Major and Minor Requirements
35 Evaluating Academic Performance
35 Evaluations
35 Grades
36 Academic Standing/Minimum Progress
36 Repeating Courses
36 Comprehensive Exam/Senior Thesis
36 Academic Integrity
36 Honors
37 Transcripts
37 Privacy of Records
37 Advising: Course Selection to Careers
38 Career Center
39 Educational Opportunity Programs (EOP)
39 MARC/MBRS Programs
39 Academic Excellence Program (ACE)
39 Services for Transfer and Re-Entry Students (STARS)
40 Part-Time Program
40 Disability Resource Center (DRC)
40 ROTC and Military Affairs
40 Office of International Education
40 Education Abroad Program
40 International Scholar and Student Services
41 Fulbright Grants

UC Santa Cruz (USPS 650940) / Volume 42, Number 1 / August 2004

UC Santa Cruz (USPS 650940) is a series of administrative publications published in August, September, November, and March by University Relations at UC Santa Cruz.

Periodicals postage paid at Santa Cruz, CA 95060. Postmaster: Send address changes to the University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064-1077.

Price $6.00 (on campus from the Bay Tree Bookstore), $12.50 shipped. Checks, payable to UC Regents, should be sent to the Catalog Order Department, Bay Tree Bookstore, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064-1077, (831) 459-4544. Web site: slugstore.ucsc.edu

Alternate formats of this document—such as large-print, audiotope, braille, or electronic—can be provided. Please call (831) 459-4446 for referral.
41 Field and Exchange Programs
41 UCDC Program
41 UC Center in Sacramento
41 Intercampus Visitor Program
41 Domestic Exchange/Field Programs
45 Summer Programs
44 UCSC Extension
44 Intersegmental Cross-Enrollment
45 GRADUATE STUDIES
47 Graduate Education at UCSC
47 Degrees and Programs/Descriptions
47 Administration
47 Evaluation of Performance
47 Graduate Opportunity/Diversity Programs
48 Intercampus Exchange Program
48 Student Life
48 Application and Admission
51 Fees and Expenses/Financial Support
53 RESOURCES FOR LEARNING AND RESEARCH
55 University Library
55 Center for Teaching Excellence
56 Computing Facilities and Services
56 Information Technology Services
57 Research Programs and Facilities
57 Arboreum
58 Arts Computing Labs
57 Bakan Engineering
59 Carlyle
59 CASFS (Agroecology)
60 CBSE (Biomolecular Sci./Eng.)
60 Cultural Studies
60 CGIRS (Global, Int., Reg. Studies)
60 CILS (Informal Learning & Schools)
61 CITRIS and FIT (Information Tech.)
61 CJTC (Justice, Tolerance, Community)
61 Center for RNA
62 CREDE (Education, Diversity, Excel.)
62 CLRC (Chicanos/Latino Research)
62 Dickens
62 EPC (Educational Partnerships)
63 FRA/Performance/Visual Studies
63 FRA/Performance Practice/Context in Arts
63 FRA/Shakespeare's
64 GIS Lab
64 IAFR (Feminist Research)
64 IHR (Humanities Research)
65 QB3 (Biomedical Research)
65 IGPP (Geophysics/Planetary Physics)
65 IMS and SCPRG (Marine Sci./Birds)
66 Linguistics
67 MIREST (Education, Science, Tech.)
67 NRS (Natural Reserve)
68 NTC (New Teachers)
68 Phys./Bio. Sciences Division
70 Ray FASC (Satyajit Ray)
70 SCCIE (International Economics)
70 SCIPP (Particle Physics)
71 Social Sciences Media Lab
71 STEPS (Interdisciplinary)
71 UARC (NASA)
72 UCO/Lick and CfAO (Adaptive Optics)
73 CAMPUS LIFE
75 The Colleges
75 Cowell College
77 Stevenson College
79 Crown College
81 Merrill College
83 Porter College
84 Kresge College
86 Oakes College
87 College Eight
89 College Nine
91 College Ten
94 Student Life
94 Santa Cruz Community
94 Housing
95 Student-Run Cooperatives
96 Transportation and Parking Services
96 Student Health Services
97 Counseling and Psychological Services
97 Rape Prevention Education Program
97 Resource Centers
98 Phys. Education, Recreation, Sports, Wellness
99 Student Union/Student Activities
101 Campus Cultural Programs
102 Bay Tree Bookstore
102 Child Care and Youth Programs
102 UCSC Alumni Association
103 PROGRAMS AND COURSES
105 American Studies
109 Anthropology
119 Arabic
119 Art
124 Arts
125 Astronomy and Astrophysics
128 Biochemistry and Molecular Biology
130 Biological Sciences
133 Biology
134 Ecology and Evolution
134 Health Sciences
135 Marine Biology
135 Molecular, Célle, and Developmental
136 Neuroscience and Behavior
136 Plant Sciences
145 Chemistry and Biochemistry
152 Chinese
152 Chinese
153 Classical Studies
154 College Eight
154 College Nine
155 College Ten
156 Communication and Rhetoric
156 Community Studies
161 Cowell College
162 Crown College
163 Digital Arts and New Media
163 Digital Arts and New Media
164 Earth Sciences
173 East Asian Studies
174 Economics
174 Economics
184 Education
190 Engineering
193 Applied Mathematics and Statistics
195 Biomedical Engineering
199 Computer Engineering
208 Computer Science
217 Dual-Degree Engineering
217 Electrical Engineering
223 Information Systems Management
226 Environmental Sciences and Policy
226 Environmental Studies
235 Environmental Toxicology
238 Ethnic Studies
238 Film and Digital Media
244 French
245 German
246 German Studies
247 Greek
247 Hebrew
248 Hindi
248 Historical Studies
248 History
258 History of Art and Visual Culture
265 History of Consciousness
270 Humanities
270 Italian
271 Italian Studies
271 Japanese
272 Jewish Studies
273 Journalism
273 Kresge College
274 Language Program
275 Language Studies
276 Latin
276 Latin American and Latino Studies
283 Legal Studies
287 Linguistics
290 Literature
303 Marine Sciences
303 Mathematics
309 Merrill College
310 Music
319 Oakes College
320 Ocean Sciences
324 Philosophy
329 Physical and Biological Sciences
330 Physical Education
332 Physics
338 Politics
346 Porter College
347 Portuguese
348 Psychology
357 Religious Studies
358 Russian
358 Russian Studies
358 Russian Studies
358 Russian Studies
358 Science Communication
359 Social Sciences
359 Sociology
367 South and Southeast Asian Studies
367 Spanish and Spanish for Spanish Speakers
369 Stevenson College
370 Theater Arts
376 Women’s Studies
380 Writing Program
385 TEACHING STAFF
413 UNIVERSITY ADMINISTRATION
419 APPENDIXES
425 INDEX
432 Campus Map
Key Campus Phone Numbers and Mailing Address (inside back cover)
Welcome

Welcome to UC Santa Cruz, a community of distinguished faculty, staff, students, and alumni. In only 40 years, this campus has earned an international reputation for its outstanding scholarship and commitment to excellence in undergraduate and graduate education. By joining our campus, you choose to be among some of the most capable and talented scholars in California and the United States, who will become leaders of the new millennium. I have no doubt that through your experience and learning at UCSC, your life will change for the better, and you will prepare to change the lives of others in a positive way.

This catalog will help you to experience the best of UCSC by providing information about academic programs, plus resources for learning and research, student life, and engaging in the wider campus community.

Here at UCSC, you will have the opportunity to take classes from and work with outstanding faculty, whose scholarship and academic achievements have earned national and international acclaim. Many are leading innovators of their discipline and have been recognized by numerous awards and honors, such as membership in prestigious professional organizations, including the National Academy of Sciences and the American Academy of Arts and Sciences, the American Psychological Association, and many others. They are also dedicated teachers, who will provide guidance in your studies in classrooms, research laboratories, performance halls, and at field sites. Our graduate and undergraduate students alike are involved in discovering new knowledge through close cooperation with their professors.

At UC Santa Cruz, we are committed to the affirmation and appreciation of diversity of every sort. You will study, work, and live with people who reflect a rich array of experiences, different perspectives, exciting ideas, and new ways to address challenges, and who welcome the advantages of a multicultural society. UCSC’s college system was designed to both accommodate individual needs and foster various dialogues within the campus community. The campus itself, integrated in the groves of redwood trees and offering stunning views of the Monterey Bay National Marine Sanctuary, is an inspirational setting in which to pursue a world-class education.

A measure of the quality of UC Santa Cruz’s education is the accomplishments of its graduates. Our alumni have achieved distinction in every field, profession, scholarly discipline, and artistic expression. They are the people who make a difference and bring about changes in our society. As a member of the UCSC community, you will also benefit from the inspiration, guidance, and assistance of our accomplished alumni.

Congratulations on your admission to UC Santa Cruz. I hope to meet many of you personally, and I look forward to congratulating you again on the occasion of your commencement.

MARTIN M. CHEMERS
Acting Chancellor
August 2004
Introducing UCSC

The University of California

The University of California was chartered as a land-grant college in 1868. From this rural beginning, the university has developed into one of the world’s most distinguished universities, acclaimed for its research, scholarship, and dedication to undergraduate and graduate education. There are 10 University of California campuses located regionally throughout the state: Berkeley, Davis, Irvine, Los Angeles, Merced (scheduled to open to graduate students in 2004), Riverside, San Diego, San Francisco, Santa Barbara, and Santa Cruz. In addition, there are some 150 associated research institutes, laboratories, agricultural field stations, and extension centers serving California and the nation. The university is the primary state-funded academic agency for research. Its library collection, with 32 million volumes, is among the best in the country.

The University of California faculty, nearly 8,400 in number, is distinctive in its 27 Nobel Laureates and 324 members of the National Academy of Sciences—more than any other college or university system. Faculty membership in the American Academy of Arts and Sciences totals 484.

There are about 160,000 undergraduates culled from the top 12.5 percent of the state’s high school graduates and nearly 42,000 graduate students. The 1.2 million living alumni enrich the nation with public service and leadership.

The Santa Cruz Campus

Since its inception in 1965, the University of California, Santa Cruz, has been dedicated to excellence in undergraduate education, graduate studies, and research. UCSC students can take advantage of innovative academic planning combined with the research resources and scholarship strengths of the University of California system. At UC Santa Cruz, a program of general education is enhanced with opportunities for academic specialization.

Among the faculty and emeriti drawn to UC Santa Cruz by the opportunity for innovative teaching and scholarship are 10 members of the National Academy of Sciences, 19 members of the American Academy of Arts and Sciences, and two members of the National Academy of Sciences’ Institute of Medicine. Numerous faculty have been awarded Guggenheim Fellowships, and several have been awarded national awards for distinguished teaching. Furthermore, one faculty member, two bachelor’s degree recipients, and two Ph.D. recipients have been named MacArthur Fellows, and since 1972, when UC Santa Cruz began participating in the program, over 100 Fulbright scholarships have been awarded to UC Santa Cruz students and alumni. Four UC Santa Cruz alumni have been awarded Pulitzer Prizes.

The planned enrollment of the campus for 2004–06 is about 15,000 students, of whom some 1,500 will be graduate students. UCSC seeks and welcomes students, faculty, and staff of diverse ethnic and cultural experiences. UCSC plans to increase both its enrollment and resources and to diversify its educational and research opportunities over the next few years. New facilities are being built to meet current and future needs. College Ten opened fall 2002, and College Nine opened in fall 2000. Other projects under construction include a Physical Sciences Building and an Engineering Building, both scheduled to open in 2004. New student apartments at Cowell, Stevenson, and Porter Colleges are also scheduled for completion in 2004.

The residential college is an important part of the Santa Cruz experience. The ten colleges divide the university into smaller communities that serve as a social and intellectual gathering place for 750 to 1,550 students and 20 to 90 faculty fellows from a variety of academic disciplines. Every undergraduate student affiliates with a particular college while participating in a campuswide academic program. All academic majors are open to students from all colleges.

Each college has a distinctive quality derived from its core course and extracurricular programs, its faculty and their academic disciplines, and its architectural style. Detailed descriptions of the ten colleges begin on page 75.

Undergraduate education. The campus offers about 60 major programs within the arts, engineering, humanities, physical and biological sciences, and social sciences—as well as interdisciplinary-major programs. A complete list of academic programs and concentrations appears on pages 8–9, and detailed descriptions begin on page 105.

The major programs are administered by departments. In most cases, departments are composed of faculty in the same field, but the interdisciplinary programs draw on faculty from several fields. In addition to established major programs, individual majors are available.

At Santa Cruz, academic performance in each course is recorded by a performance evaluation. In addition, letter grades are assigned in all credit courses. (See pages 35–37.)

Undergraduate education at Santa Cruz is focused on the individual student. UCSC’s college core courses give first-year students a small-seminar experience; intensive work in writing, discussion, and critical reasoning; as well as an orientation to academic life. To fulfill UCSC’s rigorous comprehensive requirement, every senior must pass a comprehensive examination or complete an equivalent body of work.

Annually, about 500 Santa Cruz students broaden their academic careers through the UC Education Abroad Program (EAP), which allows students to incorporate full-time study abroad as UC credit toward their major. The EAP provides a vital international connection for academic preparation in an increasingly interdependent world (see pages 40–41).

The UCSC campus strongly encourages undergraduate students to take advantage of the many opportunities for public service such as those provided through the campus’s field programs, colleges, and Career Center. Individual studies, apprentice teaching, field studies, and internships are important parts of the undergraduate curriculum. Over 1,400 students participate in the campus’s field programs each year (see pages 41–43).

Furthermore, individual research is encouraged, and hundreds of research papers coauthored by Santa Cruz undergraduates and their professors have been published in journals.

Based on a survey of students who graduated in 1995, 1996, and 1997, 13 percent of UCSC graduates continued their education in advanced-degree programs within about six months following graduation. Seventy-seven percent of the UCSC students applying to graduate school were accepted into a program. Popular career choices included education and teaching, psychology, law, business, management and administration, computer science, financial services, health sciences, and advertising. UCSC’s Office of Planning and Budget estimates that over 50 percent of graduates eventually attend graduate or professional school. UCSC ranked 15th among more than 60 elite Association of American Universities member schools in the ratio of bachelor’s degree recipients who went on to receive doctorates in the years 1991–95.

Graduate education. The UCSC campus offers 32 graduate programs, including recently established programs in bioinformatics, digital arts/new media, education, music, and social documentation. Within the graduate programs, there are a range of options for concentrated study in a specialized field. Graduate study at Santa Cruz emphasizes close interaction between faculty and students, independent student research, supervised teaching experience,
and interdisciplinary work. Further graduate
information begins on page 47.

A number of major university research units are based or have a branch at the Santa Cruz campus: UC Observatories/Lick Observatory, the Institute of Marine Sciences, the Santa Cruz Institute for Particle Physics, the Institute of Geophysics and Planetary Physics, the Institute for Quantitative Biomedical Research (QB3), and the Center for Information Technology Research in the Interest of Society (CITRIS). The campus supports other organized research endeavors ranging from Dickens studies to Chicano/Latino research to agroecology. Programs stem from existing academic strengths and the unique assets afforded the campus by its location in the Monterey Bay region (see page 55).

The central Santa Cruz campus occupies 2,000 acres on the west side of the city of Santa Cruz, on Monterey Bay, about 75 miles south of San Francisco and 35 miles southwest of San Jose. Expansive meadows at the campus entrance gradually slope up to a redwood forest that covers most of the site. Each residential college is within easy access of the campus’s central core, which includes an extensive library, science laboratories, lecture halls, art studios, theater arts and music centers, a student union, and athletic facilities. Although the campus is spread out over many acres of hilly terrain, its programs are accessible to people with mobility impairments (see page 40).

The city of Santa Cruz is a well-known recreational area and center for the arts. Mild weather, miles of beaches, and many cultural opportunities combine to make Santa Cruz an enjoyable place to study and live.

Accreditations and affiliations. The University of California, Santa Cruz, is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC), 985 Atlantic Avenue, Suite 100, Alameda, CA 94501, (510) 748-9001. The institution is a member of the Association of American Colleges and is listed in the official publications of the U.S. Department of Education. Listed below are other professional and academic organizations in which UC Santa Cruz holds membership, or which approve the quality of its educational programs, or both. Persons interested in reviewing the accreditation documents should contact the Office of the Campus Provost and Executive Vice Chancellor, McHenry Library, (831) 459-3885.

• Accreditation Board for Engineering and Technology (Computer Engineering)
• American Association of Collegiate Registrars and Admissions Officers
• American Chemical Society Committee on Professional Training (Chemistry)
• American Council of Learned Societies
• American Council on Education
• American Geological Institute (Earth Sciences)
• American Psychological Association (Counseling and Psychological Services)
• California Healthcare Institute
• California State Commission on Teacher Credentialing (Education)
• Council of Graduate Schools in the U.S.
• Institute for International Education
• Institute of Electrical and Electronics Engineers (Computer Engineering)
• NAFSA: Association of International Educators
• National Association for the Education of Young Children (Children’s Center)
• National Council of University Research Administrators
• Phi Beta Kappa Honor Society
• Sigma Xi (scientific research society).
# Fields of Study

Programs and concentrations. Page numbers refer to the detailed discussion of each program, including its courses, later in the catalog.

| American literature | see Literature |
| American studies (pp. 105–109) | |
| Anthropology (pp. 109–119) | • • • |
| Archaeology | c |
| Cultural anthropology | c |
| Physical anthropology | c |
| Applied physics (pp. 333) | • |
| Arabic language (p. 119) | |
| Art (pp. 119–124) | • |
| Art history: see History of art and visual culture |
| Asian studies: see East Asian studies; South and Southeast Asian studies |
| Astronomy and astrophysics (pp. 125–128) | • |
| Astrophysics (p. 126; see also Physics) |
| Bilingual-multicultural education: see Education |
| Biochemistry and molecular biology (pp. 128–130) | • |
| Bioinformatics (pp. 195–199) | • • • |
| Biology (pp. 130–145) | • • • |
| Ecology and evolution | • |
| Ecology and evolutionary biology | • |
| Health sciences | • |
| Marine biology | • |
| Molecular, cell, and developmental biology | • • |
| Neuroscience and behavior | • • |
| Plant sciences | • |
| Business management economics1 (p. 177) | • |
| Chemistry and biochemistry (pp. 145–152) | • • • |
| Biochemistry | c |
| Environmental chemistry | c |
| Chinese language (pp. 152–153) | |
| Classical studies (pp. 153–154) (see also Literature) | • |
| Communication and rhetoric (p. 156; suspended) | • |
| Community studies (pp. 156–161) | • |
| Computer engineering2 (pp. 199–208) | • • • |
| Computer science (pp. 208–217) | • • • |
| Creative writing: see Literature |
| Dance: see Theater arts |
| Digital arts and new media2 (pp. 163–164) | • |
| Drama: see Theater arts |
| Dramatic literature: see Theater arts |
| Earth sciences (pp. 164–173) | • • • |
| Environmental geology | c |
| Geochimistry | c |
| Geology | c |
| Geophysics | c |
| Ocean sciences | c |
| Planetary sciences | c |
| East Asian studies (pp. 173–174) | |
| Ecology and evolution (p. 134) | • |
| Ecology and evolutionary biology (p. 133) | • • |
| Economics4 (pp. 174–184) (see also Business management economics; Global economics) | • • |
| Applied economics and finance | • |
| International economics | • |

## Education

<table>
<thead>
<tr>
<th>Undergrad. Education</th>
<th>Graduate Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A.</td>
<td>B.S.</td>
</tr>
<tr>
<td>Education1 (pp. 184–190)</td>
<td>•</td>
</tr>
<tr>
<td>Bilingual-multicultural education</td>
<td>c</td>
</tr>
<tr>
<td>Multiple subjects credential (elementary)</td>
<td>c</td>
</tr>
<tr>
<td>Single subjects credential (secondary)</td>
<td>c</td>
</tr>
<tr>
<td>Electrical engineering (pp. 217–223)</td>
<td>•</td>
</tr>
<tr>
<td>Engineering (freshmen only: dual-degree program offered in conjunction with UC Berkeley, p. 217) (see also Computer engineering; Electrical engineering)</td>
<td></td>
</tr>
<tr>
<td>English literature: see Literature</td>
<td></td>
</tr>
<tr>
<td>Environmental studies (pp. 226–235)</td>
<td>•</td>
</tr>
<tr>
<td>Environmental toxicology (pp. 235–237)</td>
<td>• •</td>
</tr>
<tr>
<td>Ethnic studies (options, p. 238)</td>
<td></td>
</tr>
<tr>
<td>Film and digital media (pp. 238–244)</td>
<td>•</td>
</tr>
<tr>
<td>Production</td>
<td>c</td>
</tr>
<tr>
<td>French language (pp. 244–245)</td>
<td></td>
</tr>
<tr>
<td>French literature: see Literature</td>
<td></td>
</tr>
<tr>
<td>Geology: see Earth sciences</td>
<td></td>
</tr>
<tr>
<td>German language (pp. 245–246)</td>
<td></td>
</tr>
<tr>
<td>German literature: see Literature</td>
<td></td>
</tr>
<tr>
<td>German studies (pp. 246–247)</td>
<td>•</td>
</tr>
<tr>
<td>Global economics1 (pp. 177–178)</td>
<td>•</td>
</tr>
<tr>
<td>Greek language: see Greek (p. 247) and Literature (p. 292)</td>
<td></td>
</tr>
<tr>
<td>Greek literature: see Literature</td>
<td></td>
</tr>
<tr>
<td>Health sciences (pp. 134–135)</td>
<td>•</td>
</tr>
<tr>
<td>Hebrew language (p. 247)</td>
<td></td>
</tr>
<tr>
<td>Hindi language (p. 248)</td>
<td>•</td>
</tr>
<tr>
<td>History5 (pp. 248–258)</td>
<td>• • •</td>
</tr>
<tr>
<td>Asian/Islamic/world history</td>
<td>c</td>
</tr>
<tr>
<td>Colonialism, nationalism, and race</td>
<td>c</td>
</tr>
<tr>
<td>Culture, society, and power in the early modern world</td>
<td>c</td>
</tr>
<tr>
<td>European history</td>
<td>c</td>
</tr>
<tr>
<td>History of gender</td>
<td>c</td>
</tr>
<tr>
<td>History of the Americas and Africa</td>
<td>c</td>
</tr>
<tr>
<td>Society and culture</td>
<td>c</td>
</tr>
<tr>
<td>History of art and visual culture (pp. 258–265)</td>
<td>• •</td>
</tr>
<tr>
<td>Religion and visual culture</td>
<td>c</td>
</tr>
<tr>
<td>History of consciousness (pp. 265–270)</td>
<td>•</td>
</tr>
<tr>
<td>Information systems management (pp. 223–226)</td>
<td>•</td>
</tr>
<tr>
<td>Italian language (pp. 270–271)</td>
<td></td>
</tr>
<tr>
<td>Italian literature: see Literature</td>
<td></td>
</tr>
<tr>
<td>Italian studies (p. 271)</td>
<td>•</td>
</tr>
<tr>
<td>Japanese language (pp. 271–272)</td>
<td>•</td>
</tr>
<tr>
<td>Jewish studies (pp. 272–273)</td>
<td>•</td>
</tr>
<tr>
<td>Journalism (p. 273; suspended)</td>
<td>•</td>
</tr>
<tr>
<td>Language studies (pp. 275–276)</td>
<td>• •</td>
</tr>
<tr>
<td>Chinese</td>
<td>c</td>
</tr>
<tr>
<td>French</td>
<td>c</td>
</tr>
<tr>
<td>German</td>
<td>c</td>
</tr>
<tr>
<td>Italian</td>
<td>c</td>
</tr>
<tr>
<td>Japanese</td>
<td>c</td>
</tr>
<tr>
<td>Modern Hebrew</td>
<td>c</td>
</tr>
<tr>
<td>Russian</td>
<td>c</td>
</tr>
<tr>
<td>Spanish</td>
<td>c</td>
</tr>
<tr>
<td>Latin American and Latino studies5 (pp. 276–283)</td>
<td>•</td>
</tr>
</tbody>
</table>
Combined majors. In addition, students may complete a combined major leading to a B.A. degree in a number of designated fields. Combined majors currently available include those in Earth sciences/anthropology, environmental studies/biology, environmental studies/Earth sciences, environmental studies/economics, Latin American and Latino studies/global economics, Latin American and Latino studies/politics, and Latin American and Latino studies/sociology. Students also have the option of pursuing a double major (see page 33).  

1 Combined B.A./M.S. programs in business management economics, economics/applied economics and finance, and global economics are also available.

2 A combined B.S./M.S. program in computer engineering is also available.

3 A master of fine arts (M.F.A.) degree is awarded in digital arts and new media.

4 Because California state law requires prospective teachers to earn a bachelor’s degree in an academic discipline other than education, no undergraduate major is offered. All teaching credentials are earned postbaccalaureate. UCSC offers the professional clear Crosscultural, Language and Academic Development (CLAD) and Bilingual Crosscultural, Language and Academic Development (BCLAD) multiple subjects credentials, which are used in self-contained elementary classrooms (K-6) where all subjects are taught by the same teacher. In addition, UCSC offers the CLAD and BCLAD single subjects credentials, which are used in departmentalized settings where the teacher is responsible for one subject (7-12).

5 An intensive major is also available.

6 A combined B.A./M.A. program in linguistics is also available.

7 A B.M. degree in music is also available. Doctoral recipients are awarded the doctor of musical arts (D.M.A.) degree in composition.

8 A minor is available in Southeast Asian studies only.
Academic Calendar

Fall Quarter 2004
Fall quarter begins..................September 18
Instruction begins ..................September 23
*Veterans Day .........................November 11
*Thanksgiving recess ..............November 25–26
Instruction ends .....................December 3
Final examinations .................December 6–9
Fall quarter ends ....................December 9
Campus closure .....................December 24–January 2

Winter Quarter 2005
Winter quarter begins ..............January 3
Instruction begins ..................January 4
*Birthday of Martin Luther King Jr..January 17
*Presidents' Day .......................February 21
Instruction ends .....................March 14
Final examinations .................March 15–18
Winter quarter ends ................March 18

Spring Quarter 2005
Spring quarter begins ...............March 28
Instruction begins ..................March 28
*Memorial Day holiday .............May 30
Instruction ends .....................June 3
Final examinations .................June 6–9
Spring quarter ends ................June 9
Commencements ....................June 10–12

Fall Quarter 2005
Fall quarter begins ..................September 17
Instruction begins ..................September 22
*Veterans Day .........................November 11
*Thanksgiving recess ..............November 24–25
Instruction ends .....................December 2
Final examinations .................December 5–8
Fall quarter ends ....................December 8
Campus closure .....................December 24–January 2

Winter Quarter 2006
Winter quarter begins ..............January 4
Instruction begins ..................January 5
*Birthday of Martin Luther King Jr..January 16
*Presidents' Day .......................February 20
Instruction ends .....................March 16
Final examinations .................March 20–23
Winter quarter ends ................March 23

Spring Quarter 2006
Spring quarter begins ...............April 3
Instruction begins ..................April 4
*Memorial Day holiday .............May 29
Instruction ends .....................June 9
Final examinations .................June 12–15
Spring quarter ends ................June 15
Commencements ....................June 16–18

*Academic and administrative holiday.
Web: reg.ucsc.edu/calendar
Undergraduate Admission and Financial Information

<table>
<thead>
<tr>
<th>Admission</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Procedures</td>
<td>13</td>
</tr>
<tr>
<td>Preparing for University Work</td>
<td>14</td>
</tr>
<tr>
<td>Admission as a Freshman</td>
<td>15</td>
</tr>
<tr>
<td>Admission as a Transfer Student</td>
<td>16</td>
</tr>
<tr>
<td>Admission of International Students</td>
<td>17</td>
</tr>
<tr>
<td>Readmission</td>
<td>17</td>
</tr>
<tr>
<td>Admission to Special Categories</td>
<td>17</td>
</tr>
<tr>
<td>Nondiscrimination and Affirmative Action Policies</td>
<td>18</td>
</tr>
</tbody>
</table>

| Expenses and Financial Resources | 19 |
| Expenses | 19 |
| Financial Aid | 21 |
| Veteran Services | 22 |
Admission

Undergraduate admission to the University of California is based on two principles: that the best predictor of a student’s success in the university is high scholarship in previous work and that the study of certain subjects gives a student good preparation for university work. Minimum admission requirements are the same for each UC campus, but each sets additional standards when the number of qualified applicants exceeds capacity. Last year, UCSC received over 23,000 applications for 3,000 places in the freshman class and 900 in the transfer category.

If you are considering applying to UC Santa Cruz, the Office of Admissions wants to help you learn more about the campus and its distinctive educational programs. Admissions counselors from UCSC visit many high schools and community colleges throughout California and are available to answer your questions about Santa Cruz.

If you are able to visit the campus, you may wish to take a student-led tour or attend a transfer workshop. The Office of Admissions offers tours on weekdays and selected Saturdays, and reservations are required. Visit our web site at admissions.ucsc.edu/campustours or call (831) 459-4008 for more information. When reserving a space on a tour either by e-mail or by telephone, you will need to provide the date and time that you wish to take the tour, your party name and size (no more than five in one party, please), and a phone number and e-mail address where you can be reached. For information and reservations to attend a transfer workshop, please call (831) 459-4008.

The University of California, Santa Cruz, has taken positive steps to increase the diversity of the student population, including applicants coming from educationally and/or economically disadvantaged backgrounds, disabled persons, and re-entry women and men, in its academic programs (see pages 37–40). The university does not discriminate on the basis of handicap, race, color, ancestry, religion, national origin, age, sexual orientation, or gender in admission to or participation in its programs, activities, or services.

Educational Opportunity Programs at UCSC are designed to encourage students from educationally and/or economically disadvantaged backgrounds to prepare for and enter the university. For a description of these programs, see pages 37–40.

Admission by Exception. Special consideration may be given to a limited number of applicants who do not meet standard admission requirements. Admission by Exception is granted to a very small percentage of those considered for admission each quarter. Such factors as academic accomplishments in light of a person’s life experiences and/or special circumstances, socioeconomic background, special talents and/or achievements, contributions to the community, and the quality of the applicant’s personal statement are taken into consideration when reviewing applicants seeking Admission by Exception.

Graduation rates. The following graduation-rate information is listed in compliance with the 1990 Title I: Federal Right-to-Know Act, Section 103. Forty-nine percent of the students who entered as freshmen in 1999 graduated after four years; 65 percent of those who entered in 1998 graduated after five years; and 65 percent of those who entered in 1997 graduated after six years. In recent years, students who entered as freshmen took an average of four and one-half years to graduate, and students transferring to UCSC as juniors averaged two and one-half years. These graduation rates are well above the national averages.

In accord with the Education Amendments of 1976, Section 493A, more detailed information regarding retention is available from the Office of Planning and Budget, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064.

Application Procedures

The University of California Application for Undergraduate Admission and Scholarships may be accessed online at UC’s PATHWAYS web site at admissions.ucsc.edu.

To apply online, the computer you use must meet certain minimum requirements. Details are available online. The application can also be printed from this web site if you are unable to apply via the web.

In addition to the application, the above site includes a wealth of information for prospective UC students about undergraduate education, admission, financial aid, and various topics of interest.

Paper applications are also available at the counseling office of any California high school or community college or from the Admissions Office of any UC campus. Applications are available about four weeks before the opening date of the filing period.

Submit your completed application form to

University of California
Undergraduate Application Processing Service
P.O. Box 4010
Concord, CA 94524-4010

If requested, transcripts and supporting materials should be sent directly to the campus.

Application Filing Periods

You should submit an application for admission during the filing period for the quarter in which you want to attend the university. Enrollment opportunities for winter are more limited than for fall. Check with the Office of Admissions to see if UCSC is accepting applications for winter quarter.

Quarter of Attendance Filing Period
Fall quarter 2005 November 1–30, 2004
Winter quarter 2006 January 1–31, 2005
Fall quarter 2006 November 1–30, 2005

Application Fees

The application fee is $40 to apply to one campus of the university. For each additional campus you select, you must pay an extra $40 fee. These fees are subject to change and are not refundable. A check or money order made payable to the Regents of the University of California should be included with the application form.

Fee Waivers

The University of California will waive application fees for up to four campuses for certain students who otherwise would be unable to apply for admission. To qualify for the fee waiver, you must meet specific requirements related to your family income and size. The fee waiver is for United States citizens and permanent residents only.

Students who qualify for fee waivers and who select more than four campuses must pay $40 for each additional choice.

There are several ways to apply for a fee waiver, as described below. To qualify, you must meet the same income and family-size guidelines, regardless of the application method you use.

An online fee waiver form is available to applicants who apply for admission on the web. The online application can determine if an applicant is eligible for the fee waiver as soon as the necessary form is complete.
Other methods for waiving the application fee are listed below.

- **High school students:** Use the College Board fee waiver. It is available from your school counselor.
- **EOPS community college students:** If you are enrolled in Extended Opportunity Programs and Services (EOPS) at a California community college, obtain a fee waiver authorization from the EOPS Office.
- **Other applicants:** Qualified students may obtain a UC fee waiver authorization at a UC campus Admissions, Relations with Schools, or Educational Opportunity Programs Office. When requesting a fee waiver authorization, be prepared to answer questions about your gross family income and family size.

If you are unable to obtain a UC fee waiver authorization due to time constraints, you may attach a letter to your application for admission stating your gross family income and the number of family members supported by that income, and requesting consideration for an application fee waiver.

### Preparing for University Work

A carefully planned program of high school courses provides you with excellent preparation for university work. If you did not complete the basic required courses in high school, you should take equivalent classes at a community college, state university, or private school before transferring to UC. (Requirements for transfer students are explained on pages 16–17.) This background can give you a definite edge in your undergraduate studies and provides an opportunity to do advanced preparation for your chosen field. Most important, if you master certain basic skills and subjects before entering UC, you substantially increase your chances of success at the university.

As a prospective university student, you should give priority to completing the basic subject courses required for admission—the "a–g" requirements described on page 15. In addition, you should give careful thought to the general field of study, if not the specific major, you want to pursue at the university. If you can make this decision in advance, you can take additional high school or college courses related to your field.

Your school counselor or an instructor can help you select the courses you need.

You should understand, however, that the "a–g" and transfer-student requirements are minimum entrance standards. Completing the required courses with satisfactory grades will not automatically prepare you for university-level work in every subject, much less in your major. Many entering students discover to their dismay that they are not adequately prepared for basic courses, such as English composition and calculus, which they may be expected to take in their freshman year. Also, many undergraduate majors, particularly those in sciences and mathematics, require more preparation than that necessary for admission. A lack of preparation can cause problems for students who do not decide on a major until after they enter the university or for those who prepare for one major but later change to another.

For these reasons, you should take a thorough academic program in high school—or the equivalent through a combination of high school and college-level classes—that will prepare you beyond minimum levels of competence in reading, writing, and mathematics. A student who is well prepared for university work will have taken four years of English in high school, four years of mathematics, including a course in the senior year, two to three years of a language other than English, two to three years of laboratory science, two or more years of history and social studies, and one or more years of visual or performing arts. A yearlong high school course is generally equivalent to a semester or quarter of college work.

**Reading.** Many students are not prepared for either the kinds or amounts of reading demanded at the university. You should become proficient in reading and understanding technical materials and scholarly works. You should learn to read analytically and critically, actively questioning yourself about the author’s intentions, viewpoint, arguments, and conclusions. You should also become familiar, and comfortable, with the conventions of standard written English and with various...
Subject Requirement

a. History/social science—two 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—four 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 can be used to meet this requirement.

c. Mathematics—three years required, four 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 all of this requirement, as may math courses taken in the seventh and eighth grades that your high school accepts as equivalent to its own math courses.

d. Laboratory science—two years required, three years recommended. Two years of laboratory science providing fundamental knowledge in at least two of these three disciplines: biology (which includes anatomy, physiology, marine biology, aquatic biology, etc.), chemistry, and physics. Laboratory courses in Earth sciences are acceptable if they have as prerequisites or provide basic knowledge in biology, chemistry, or physics. The appropriate two years of an approved integrated science program may be used to fulfill this requirement. Not more than one year of ninth-grade laboratory science can be used to meet this requirement.

e. Language other than English—two years required, three years recommended. Two years of the same language other than English. Courses should emphasize speaking and understanding and include instruction in grammar, vocabulary, reading, and composition. Courses in a language other than English taken in the seventh and eighth grades may be used to fulfill part of this requirement if your high school accepts them as equivalent to its own courses.

f. Visual and performing arts discipline (VPA)—one year required. One year of visual and performing arts chosen from the following: dance, drama/theater, music, and/or visual art.

g. College preparatory electives—one year required. One year (two semesters), in addition to those required in “a–f” above, chosen from the following areas: visual and performing arts chosen from the following: dance, drama/theater, music, and/or visual art.

Admission as a Freshman

The university considers you a freshman applicant if you have graduated from high school and have not enrolled in a regular session at any college or university. If you attend a summer session immediately after graduating from high school, you are still a freshman applicant.

The admission and selection process for freshmen to UC Santa Cruz reflects the academic rigor and preparation needed for admission to a major research institution. Meeting the minimum eligibility requirements for the university does not guarantee you admission as a freshman. Students are encouraged to achieve well beyond the minimum requirements to enhance opportunities for selection to the university.

Information regarding the admission and selection process for UC Santa Cruz can be accessed at admissions.ucsc.edu. This site provides information on establishing UC eligibility for both residents and nonresidents of California. If you are unable to access the online information, please call the Admissions Office at (831) 459-4008.

Examination Arrangements

Registration forms and information about the required tests may be obtained from the following addresses:

For the SAT I and SAT II:
Web: www.collegeboard.com/student/testing/satcores/sending.html
(800) 728-7267

For the ACT:
Web: www.act.org/aap/scores/bowrequest.html
(319) 337-1313
Test fees should be paid to the testing services, not to the University of California. When you take any of the required tests, you must indicate at that time that you want your scores to be reported to the UC Santa Cruz Office of Admissions. Your scores will be regarded as official only if they are reported directly to the Admissions Office by the testing services. The Educational Testing Service school code for UC Santa Cruz is 004860.

High School Proficiency Examination

In lieu of the regular high school diploma, the University of California will accept the following:

- Certificate of Proficiency, awarded by the State Board of Education upon successful completion of the California High School Proficiency Examination
- Proficiency tests from other states
- General Educational Development (GED) Certificate

Transfer Credit

Transfer credit may be granted to a freshman applicant for an acceptable college course taken while still in high school if an official transcript is received from the college that conducted the course.

Transfer credit is also granted for each College Board Advanced Placement Examination completed with a score of 3, 4, or 5 and for each International Baccalaureate Higher Level Exam completed with a score of 5, 6, or 7.

Admission as a Transfer Student

The University of California defines a transfer applicant as a student who has been a registered student in a college or university or in college-level extension classes following high school graduation. Summer session attended immediately following high school graduation is excluded in this determination. If you are a transfer applicant, you cannot disregard your college record and apply for admission as a freshman.

The admission and selection process for transfer students reflects the academic rigor and preparation needed for admission to a major research institution. UC Santa Cruz gives highest priority to junior-level transfers from California community colleges.

Information regarding the admission and selection process for UC Santa Cruz can be accessed at admissions.ucsc.edu. This site provides information on establishing UC eligibility for both residents and nonresidents of California. If you are unable to access the online information, please call the Admissions Office at (831) 459-4008.

Credit for Courses Taken Elsewhere

The university gives unit credit to transfer students for courses they have completed at other accredited colleges and universities, including courses taken at recognized institutions outside of the U.S. To be accepted for credit, your courses must be comparable to those offered at the university, as determined by the campus Admissions Office. The UC Santa Cruz department sponsoring your major decides which transfer courses may be used to satisfy major requirements.

Because a total of 70 semester units (105 quarter units) of credit toward a university degree may be earned at a community (two-year) college, only subject credit will be granted for courses taken in excess of these amounts.

Applicants will not be considered for admission if they have completed more than 90 semester units (135 quarter units) of UC-transferable credit because it is not usually possible for these students to complete a bachelor’s degree within UC Santa Cruz graduation requirements. Advanced Placement (AP) or International Baccalaureate Higher Level (IBH) credit is permitted to exceed the 90 semester unit maximum by the number of AP or IBH units granted.

Opportunities to take courses at UC Santa Cruz as a nonmatriculated student are available through Summer Session, Concurrent Enrollment through UC Extension, and Intersegmental Cross-Enrollment (see page 44).

UC Santa Cruz Transfer Services

The Admissions Office provides information and services to all students who wish to transfer to UC Santa Cruz, including transfer workshops and student-led tours of the campus.

Workshops include information on entrance requirements for transfer students, how courses taken at other colleges or universities will fulfill UCSC’s general education requirements, and
how to prepare for your major. Other topics discussed in the workshops include academic programs and resources available at UCSC, student life, financial aid, Educational Opportunity Programs, Services for Transfer and Re-Entry Students, and housing options.

Transfer workshops and guided tours happen year-round and both require advance reservations. Please call the Admissions Office, Cook House, at (831) 459-4008 to make a reservation.

In addition, UCSC counselors make regular visits to many community colleges in California. Check with your counseling department or transfer center to determine whether a UCSC counselor will be visiting your community college.

Admission of International Students

The University of California welcomes applications from international students. The academic credentials of applicants from other countries are evaluated in accordance with the general regulations governing admission.

UC Santa Cruz accepts applications from international students for the fall quarter, and students should begin application inquiries a year before the quarter of desired admission. Openings for the winter quarter may be limited. If you are interested in applying for winter, check with the Office of Admissions. For information, write to admisions@ucsc.edu or the International Admissions Specialist, Office of Admissions, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064.

Students whose native language is other than English must take the Test of English as a Foreign Language (TOEFL) or the Advanced Placement Exam in International English Language (APIEL). A minimum score of 220 (computer-based) or 550 (paper-based) is required on the TOEFL. A minimum score of 3 is required on the APIEL. Students interested in enrolling in an intensive English-language program to improve proficiency can apply to English Language and International Programs, UCSC Extension, 1101 Pacific Avenue, Suite 200, Santa Cruz, CA 95060, (831) 427-6638. Web: uce-extension.edu/elli.

A financial certificate and official academic records will be required if admitted to the university. Generally, nonimmigrant students must provide documentation that sufficient funds will be available to cover nonresident tuition, educational fees, and living expenses. The university does not have financial assistance for international students.

For information about services for international students, see Office of International Education, page 40.

Readmission

If you are an undergraduate who wants to return to UC Santa Cruz after an absence of a portion of a quarter or more, you must file an Application for Readmission. The application form is available online at advising.ucsc.edu/read and from your college office. The completed application should be filed, along with the non-refundable $40 application fee (subject to change), with the Office of Admissions during the appropriate period:

<table>
<thead>
<tr>
<th>Quarter of Attendance</th>
<th>Filing Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall quarter</td>
<td>November 1–July 31</td>
</tr>
<tr>
<td>Winter quarter</td>
<td>July 1–October 31</td>
</tr>
<tr>
<td>Spring quarter</td>
<td>October 1–January 31</td>
</tr>
</tbody>
</table>

If during your absence you attended another UC campus, an official transcript must be submitted to the Office of Admissions before your application will be sent to your college for approval. If you attended another collegiate institution, your UC Santa Cruz college may require a transcript. If you left for health reasons, clearance from the Cowell Student Health Center is required. You must pay all outstanding bills owed to the university before you will be permitted to register.

Admission to Special Categories

For information on applying for admission in the categories described below, please contact the Office of Admissions at admissions@ucsc.edu or University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064, (831) 459-2131.

Applications from students interested in pursuing a second baccalaureate or limited-status program will be considered as campus enrollment allows. Priority is given to applicants who have not yet had the opportunity to complete a bachelor’s degree.

Second Bachelor’s Degree

If your educational goals have changed substantially since receiving your bachelor’s degree, you may be eligible to pursue a second undergraduate degree in an established major at UCSC.

You must meet regular university admission requirements, and your experience or previous scholarship record must show potential for academic success in your proposed area of study. Additional selection criteria may be applied. Admission is also subject to approval by the appropriate department and the selected college.

For a second degree, you must fulfill major and residence requirements, as well as system-wide requirements in American history and institutions and Subject A (see pages 25–26). You must enroll for at least three quarters and are usually restricted to six quarters total.

Limited Status

If you have already completed an undergraduate degree and you have a particular reason to take specific undergraduate university classes, you may be eligible to enroll in a nondegree program as a limited-status student.

Your proposed program of study must either prepare you for graduate or professional school or satisfy some definite educational need or interest. Participants generally enroll full-time for a specified period that does not exceed three quarters. You must meet regular university admission requirements, and your experience or previous academic record must show potential for success in your proposed program. Additional selection criteria may be applied. Admission is subject to approval by the appropriate department or college.

High School Honors

If you are an outstanding student attending a high school in Santa Cruz County, you may be able to enroll concurrently in high school and in regular courses at UC Santa Cruz during your senior year.

To participate in the High School Honors Program, you must apply during your junior year and meet special admission standards. You may enroll only in courses that do not duplicate those available in your high school. You receive full university credit for all approved courses completed.

In this program, you pay reduced fees and are entitled to use student services except those offered by the Cowell Student Health Center.
**Nondiscrimination and Affirmative Action Policies**

**Student-Related Matters**
The University of California, in accordance with applicable federal and state law and university policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran, special disabled veteran. The university also prohibits sexual harassment. This nondiscrimination policy covers admission, access, and treatment in university programs and activities.

Grievance procedures have been established to process student complaints alleging violation of these regulations or university policies. Inquiries concerning sex discrimination and sexual harassment may be addressed to the Title IX officer. Inquiries concerning disability may be addressed to the director of the Disability Resource Center, who serves as the 504/Americans with Disabilities Act (ADA) compliance officer for student programmatic access. Student complaints related to discrimination in student programmatic academic areas are reviewed in conformity with the procedures established by the Academic Senate, and inquiries may be directed to the director, Student Judicial Affairs.

Students may also refer to the campus **Student Policies and Regulations Handbook**, Section 115.00, for procedures and resource persons regarding grievances. **The Student Policies and Regulations Handbook** may be accessed via the web at [www2.ucsc.edu/judicial/](http://www2.ucsc.edu/judicial/).

**Employment-Related Matters**
The University of California prohibits discrimination against or harassment of any person employed by or seeking employment with the university on the basis of race, color, national origin, religion, sex, gender identity, pregnancy (including childbirth and medical conditions related to pregnancy and childbirth), physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran, special disabled veteran, recently separated veteran, Vietnam-era veteran, or any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized.

University policy is intended to be consistent with the provisions of applicable state and federal law. The University of California is an affirmative action/equal opportunity employer. The university undertakes affirmative action to assure equal employment opportunity for underutilized minorities and women, for persons with disabilities, and for covered veterans (Vietnam-era veterans, special disabled veterans, recently separated veterans, or any other veterans who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized). Employment-related discrimination complaints from student employees are processed in conformity with appropriate personnel policies. Inquiries regarding the university’s equal employment opportunity policies may be addressed to the Equal Employment Opportunity/Affirmative Action Office, (831) 459-2349.

**Sexual Harassment/Title IX**
The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sexual and other forms of harassment. Students, faculty and staff who want information, advice, to file a complaint, and/or copies of UCSC’s **Sex Offense Policy and Procedures for Reports of Sexual Assault(s) and Sexual Harrassment** should contact Rita E. Walker, Title IX/Sexual Harassment Officer, 29 Clark Kerr Hall, (831) 459-2462 or via e-mail at rew@ucsc.edu. For detailed information about the services of the Title IX/Sexual Harassment Office, visit the web site at [www2.ucsc.edu/title9-sho](http://www2.ucsc.edu/title9-sho). The Title IX/SHO is also available to investigate other violations of Title IX.
Expenses and Financial Resources

Expenses

In determining the cost of attending UCSC each quarter, students should consider both required fees and personal expenses. The figures below are provided to help you draw up a realistic personal budget. If you then conclude that you will need financial assistance in order to attend UCSC, you should read the Financial Aid section below. Fees and additional financial information for graduate students appear on pages 51–52. Tuition, fees, and other charges are subject to change without notice by the UC Regents. For the most current fee information, check reg.ucsc.edu.

Required Fees

Required fees are due and payable before the start of each quarter. At the beginning of each quarter, you will need sufficient funds to cover housing charges and book costs. For many financial aid recipients, however, fees and on-campus housing charges are paid automatically from approved student aid funds. If you are a financial aid recipient, please note that checks and direct deposits for scholarships, grants, and loans in excess of university charges are not available to you until after registration and enrollment each quarter. If you do not pay your required fees in full by the announced deadline, your classes for the upcoming quarter will be dropped. You must pay required fees and relevant late fees in full before you may re-enroll for classes for that quarter.

The University Registration Fee supports student services that provide a supportive and enriching learning environment and that are complementary to, but not part of, the instructional program. Programs include, but are not limited to, services related to the physical and psychological health and well-being of students; social and cultural activities and programs; services related to campus life; and educational and career support.

The Educational Fee helps support student financial aid and related programs; admissions; registration; administration; libraries; operation and maintenance of plant; the university’s operating budget; and all costs related to instruction, including faculty salaries.

Santa Cruz campus fees help support a wide range of student services, including college and campuswide student government, extracurricular programs and recreation facilities, campus child care, community and public service projects, Educational Opportunity Programs and scholarships, and free-fare use of the local transit systems. Campus fees paid by graduate students are provided on page 51.

In addition, all students, including foreign students, are assessed a mandatory Health Insurance Premium. The Cowell Student Health Center provides the primary care services for the plan while a contracted insurance company provides major medical and hospitalization insurance. There is an annual deductible, with most expenses covered at 80 percent of the customary and usual charge. Coverage includes, but is not limited to, hospital stays; surgical services; physician visits; emergency treatment; outpatient care; and pregnancy. Dependent coverage is also available. Detailed information is on the web at www2.ucsc.edu/healthcenter/billing/insurance.shtml or contact the Student Health Insurance Office, (831) 459-2389.

Waivers from the mandatory health insurance premium are available if you can show that your private insurance provides coverage equal to or better than the student health insurance plan. Deadlines for applying for a waiver are listed in the Schedule of Classes (reg.ucsc.edu/soc).

Some courses charge an additional Course Materials Fee. These fees recover the cost of materials, supplies, equipment, and support services not covered by the normal instructional budget. The fees are reviewed and approved annually by the Miscellaneous and Course Materials Fee Advisory Committee. The list of specific courses charging fees in 2004–05 is available in the quarterly Schedule of Classes and on the web at reg.ucsc.edu/coursefees.html.

Nonresident Tuition

If you are a resident of a state other than California or of another country, you must pay nonresident tuition, the nonresident educational fee, and other required fees (university registration and Santa Cruz campus fees). The criteria for residency appear in Appendix A. Non–U.S. citizens note: Regardless of how long you live in California, only U.S. citizens and holders of immigrant visas may become qualified for resident classification.

<table>
<thead>
<tr>
<th>Undergraduate Budget, 2004–05a</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>California Residents</strong></td>
</tr>
<tr>
<td><strong>On Campus</strong></td>
</tr>
<tr>
<td><strong>Required Fees</strong></td>
</tr>
<tr>
<td>University Registration Fee</td>
</tr>
<tr>
<td>Educational Fee</td>
</tr>
<tr>
<td>Santa Cruz campus fees</td>
</tr>
<tr>
<td>Health insurance (waivable)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
</tr>
<tr>
<td><strong>Estimated Personal Expenses</strong>&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Room and board</td>
</tr>
<tr>
<td>Books and supplies</td>
</tr>
<tr>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Transportation</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
</tr>
<tr>
<td><strong>Total Budget CA Residents</strong></td>
</tr>
<tr>
<td><strong>Nonresident Tuition</strong></td>
</tr>
<tr>
<td><strong>Total Budget CA Nonresidents</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup>The 2005–06 Undergraduate Budget will be posted in the 2005–06 online catalog at reg.ucsc.edu in July 2005.
<sup>b</sup>Two quarters at $238 and one quarter at $237.
<sup>c</sup>For California residents, the annual amount for the Educational Fee is $4,971. Nonresidents of California pay an annual Educational Fee of $5,451. Undergraduates who are unable to maintain a full-time program of study because of employment responsibilities, family obligations, or health problems may be eligible for a 50 percent reduction in the Educational Fee.
<sup>d</sup>Estimated personal expenses for students living off campus total $4,301 per quarter or $12,903 for three quarters. Estimated personal expenses for students living with family total $2,379 per quarter or $7,137 for three quarters.
Late Fees

You may be assessed late fees if you fail to make university payments or enroll by the specified deadlines. For example, late fees are assessed on a graduated basis for each month there is an unpaid balance on your university account, and at $50 each for a late registration payment and/or late enrollment and $25 for a late housing payment. Deadlines are published in The Navigator (the undergraduate campus handbook) and the Schedule of Classes, both online at reg.ucsc.edu, and they appear on the Statement of Account.

Estimated Personal Expenses

The figures given for estimated personal expenses are for a single undergraduate living on campus. Expenses will be higher for married students, students with children, and graduate students. The information is as current and realistic as possible; however, expenses for students vary in accordance with lifestyles, priorities, and obligations.

Room and board (in college residences). Rates for room and board in the college residence halls are expected to range from about $8,109 to $11,274 per year, depending on the type of accommodation and meal plan. The room and board amount of $10,947 in the Undergraduate Budget table on page 19 is based on the weighted average of on-campus contracts.

Schedules of Refunds

All Continuing and Readmitted Students and New Students Not Receiving Federal Financial Aid

<table>
<thead>
<tr>
<th>Number of calendar days</th>
<th>Percentage of fees refunded*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st day of instruction</td>
<td>100</td>
</tr>
<tr>
<td>2–7</td>
<td>90</td>
</tr>
<tr>
<td>8–18</td>
<td>50</td>
</tr>
<tr>
<td>19–35</td>
<td>25</td>
</tr>
<tr>
<td>36 and over</td>
<td>0</td>
</tr>
</tbody>
</table>

New Students Who Receive Federal Financial Aid and Withdraw during Their First Academic Term

<table>
<thead>
<tr>
<th>Number of calendar days</th>
<th>Percentage of fees refunded*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st day of instruction</td>
<td>100</td>
</tr>
<tr>
<td>2–7</td>
<td>90</td>
</tr>
<tr>
<td>8–14</td>
<td>80</td>
</tr>
<tr>
<td>15–21</td>
<td>70</td>
</tr>
<tr>
<td>22–28</td>
<td>60</td>
</tr>
<tr>
<td>29–35</td>
<td>50</td>
</tr>
<tr>
<td>36–42</td>
<td>40</td>
</tr>
<tr>
<td>43 and over</td>
<td>0</td>
</tr>
</tbody>
</table>

*For new students, the nonrefundable $100 undergraduate Acceptance of Admission Fee is withheld from the University Registration Fee; the schedule of refunds applies to the balance of fees. Percentages listed (days 1–35 or days 1–42) should be applied individually to Nonresident Tuition, the Educational Fee, the University Registration Fee, and Santa Cruz campus fees. The Health Insurance Fee is nonrefundable.

Fee Refunds

Students who cancel their registration before the first day of instruction in a given quarter are refunded all required fees minus a $10 service charge. New undergraduate students who cancel their registration before the first day of instruction are entitled to a refund of all required fees except the nonrefundable $100 undergraduate acceptance of admission fee (applied toward the university registration fee).

Once the quarter has begun, students must petition for withdrawal. The percentage of fees refunded is determined by the effective date of the withdrawal, according to the schedule at the left, in which day 1 is the first day of instruction. A student is not eligible for university services after the effective date of withdrawal.

A student entering the armed forces before the sixth week of the quarter is entitled to a full refund of the university registration fee—provided no course credit is received.

More detailed information on withdrawal and refund procedures is included in the quarterly Schedule of Classes and The Navigator, both online at reg.ucsc.edu, and in the Graduate Student Handbook (graddiv.ucsc.edu).

Information on refunds of room and board charges is contained in the campus housing contract, provided to all applicants for on-campus housing. For more information on how withdrawing affects your financial aid, refer to Your Complete Guide to Financial Aid (www2.ucsc.edu/fin-aid/Brochures.html) or contact the Financial Aid Office.
Deferred Payment Plan

The Deferred Payment Plan (DPP) provides an alternative method of budgeting and paying registration fees. It allows these fees, to the extent not covered by scholarships, loans, or other financial aid, to be paid in monthly installments. Students have a choice of applying for a three-month plan for individual quarterly fees, or, at the beginning of the fall quarter only, for a nine-month plan to be used for the fall, winter, and spring quarters. A nonrefundable application fee of $25 for the three-month plan, or $60 for the nine-month plan, is required. Any student in good financial and academic standing may apply for DPP. Students receiving financial aid sufficient to cover registration fees in full are not eligible for this plan. For more information about how to apply for DPP, application deadlines, and campus policies regarding the program, contact the Office of Student Business Services, 203 Hahn Student Services Building, (831) 459-2519, e-mail earinfo@ucsc.edu, or visit the website at www2.ucsc.edu/accs-rec.

Financial Aid

For undergraduate students who require financial assistance, the university maintains a broad-based financial aid program of grants, scholarships, loans, and part-time employment. Administered by the Financial Aid Office, these resources help bridge the gap between the cost of education and what parents and students can reasonably contribute.

If you are a dependent student, the amount of the contribution expected from you and your parents is determined through a careful analysis of the contribution expected from you and your aid application file is complete. Applications are also available on the web at www.fafsa.ed.gov.

A Renewal FAFSA will be generated each year for most prior-year aid applicants. This will be available by January prior to the next academic year. If a Renewal FAFSA is not generated for you, you will need to submit the FAFSA either on paper or via the web. Prior-year financial aid applicants can use their PINs to access and sign their Renewal FAFSAs on the web. The Central Processing System will automatically send PIN mailers instead of paper Renewal FAFSAs to eligible applicants who are graduate students or who used the Internet to submit a FAFSA or make corrections. A paper version of the Renewal FAFSA will be mailed to other students.

In many cases, the Financial Aid Office will need additional information from the applicant. These applicants will be sent instructions specifying the required documents (e.g., copies of student and parent tax returns). The deadline for these supporting documents is May 1.

Applications received after the deadline will not be reviewed until those received on time have been processed. Late applicants will be considered on a funds-available basis.

The admission notification date is the financial aid application deadline for students seeking to transfer to UCSC during the winter or spring quarter of the following academic year. The supporting documents must be submitted within three weeks of the date they are requested.

Freshman applications will be processed first, and every effort will be made to provide freshmen with an aid offer by May 1. The earlier the FAFSA is submitted after January 1, the sooner you will receive an offer. Late applicants will be notified as applications are processed after that date. If you are applying for winter or spring quarter, you will receive notification of your award as soon as possible after you are admitted and your aid application file is complete.

Types of Aid

If you apply for financial aid and you meet the deadlines outlined above, you are considered for all the types of assistance described below. Depending upon the funds available and your financial need, your financial aid package may include a combination of grants, scholarships, loans, and work opportunities.

Grants

The following grants are available to undergraduates. Students must submit the FAFSA by March 2 for the following academic year.

The Cal Grant A program, open only to California residents, is expected to provide a maximum award of $5,684 in 2004–05 to help offset mandatory registration fees for the academic year. Students are selected on the basis of academic achievement and financial need. The Cal Grant B program, designed for California students from low-income families, will provide an annual living stipend of $1,551 to all eligible freshman students in 2004–05. In 2004–05, to help offset mandatory registration fees and aid with annual living expenses, this grant is expected to provide $7,235 to students at the sophomore level and above.

All California residents seeking financial aid must apply for a Cal Grant by submitting a FAFSA by March 2 and listing a four-year California college in the information-release section of the FAFSA. New applicants for the Cal Grant must also file a GPA Verification form directly to the California Student Aid Commission by March 2.

Federal Pell Grants are expected to be awarded to students for a maximum of $4,050 during 2004–05.

Federal Supplemental Educational Opportunity Grants are available to students with substantial financial need. The grants range from $100 to $4,000.

University Grants are designed for students with substantial financial need. Funds for this grant program come in part from the educational fees paid quarterly by students at all campuses of the university. The average grant in 2003–04 was $4,337.

Scholarships

A variety of scholarships, ranging from $250 per year to an amount that covers full financial need, are available to undergraduates. Funding comes from many sources—private donors, corporations, professional associations, alumni, and the university itself.

The amount of the scholarship award is generally based on the student’s demonstrated financial need. In cases where the student’s established financial need exceeds the amount of the scholarship, the award may be supplemented by other types of financial aid.

Merit scholarships are awarded competitively on the basis of high academic achievement and potential. Other scholarships are restricted to students from particular geographic areas or family backgrounds or are limited to students in particular majors, classes, or colleges. The donors have different reasons for giving, and their varied interests are reflected in the wide range of scholarships available. Merit and restricted scholarship awards range up to $2,000 and are for one year. Students must reapply for these scholarships each year.
Regents Scholarships are awarded for periods of four years to entering freshmen and for periods of two years to continuing or transfer students beginning their junior year at the university. These awards are based on academic achievement and promise, irrespective of financial need. New recipients of Regents Scholarships receive either an honorarium of $3,000, for students with no calculated financial need, or a stipend that pays full in-state financial need as calculated by the Financial Aid Office.

For the academic year beginning each fall quarter, new freshmen and transfer students apply for scholarships by filing the Application for Undergraduate Admission and Scholarships during the November 1–30 filing period. Continuing students file an undergraduate scholarship application by February 1. Late applications are not considered.

Need-Based Loans
Student loan funds are administered by UC in accordance with the regulations of the federal government and the Regents. There is no interest on need-based student loans as long as the student is enrolled in college at least half-time. To qualify, students must be enrolled in a degree program and demonstrate financial need. To apply for these loans, students must submit the FAFSA.

Through the Federal Perkins Loan Program, students may borrow up to $20,000 for undergraduate study and up to $40,000 for undergraduate and graduate study combined. Repayment begins nine months after graduation or withdrawal from higher education. The interest rate is 5 percent per year.

The University Loan Program provides long-term loans from UC funds. Repayment begins six months after graduation or withdrawal from higher education; the interest rate is 7 percent per year.

The William D. Ford Federal Direct Subsidized Student Loans are administered by the UCSC Financial Aid Office. Students must demonstrate financial need, and annual limits are $2,625 for first-year students, $3,500 for second-year students, and $5,500 for all other undergraduates. The annual limit for graduate students is $22,500. Students may borrow up to $23,000 for undergraduate study and up to $65,000 for undergraduate and graduate study combined. Students pay an origination fee and an insurance premium totaling 3 percent less a 1.5 percent upfront interest rebate, which is deducted from the loan amount. Repayment begins six months after graduation or withdrawal from higher education. The interest rate—variable for new borrowers—is based on the 91-day T-bill plus the following additions: 1.7 percent during in-school grace and deferment periods and 2.3 percent during repayment. Interest is capped at 8.25 percent. (The interest rate in 2003–04 for students in repayment was 3.42 percent.)

Non-Need-Based Loans
William D. Ford Federal Direct Unsubsidized Student Loans are administered by the Financial Aid Office. These loans are available to students who do not qualify for the subsidized loans (above), and students must first be determined ineligible for a Federal Direct Subsidized Student Loan. Interest is charged on unsubsidized loans from the date the loan is made. The interest rate—established by Congress every July 1—is variable and is the same as for Federal Direct Subsidized Student Loans. The cap is 8.25 percent. (The interest rate for 2003–04 was 3.42 percent.)

The borrower must pay an origination fee and insurance premium totaling 3 percent less a 1.5 percent upfront interest rebate, which is deducted from the amount of the loan. Eligibility is calculated by subtracting any financial assistance awarded the student from the cost of education as defined by the Financial Aid Office (see Undergraduate Budget, page 19). Loan limits for dependent students are as follows: $6,625 for first-year students; $7,500 for second-year students; $10,500 for other undergraduates; and $18,500 for graduate students. Students may borrow up to $46,000 for undergraduate study and $138,500 for undergraduate and graduate study combined.

Students may begin repaying principal and interest on Federal Direct Unsubsidized Student Loans immediately, pay only interest immediately, or defer both principal and interest until they no longer enrolled in school at least half-time.

Through Federal Direct Parent Loans for Undergraduate Students, parents may borrow up to the full cost of education as defined by the UCSC Financial Aid Office, less any financial assistance the student receives. Parents must demonstrate creditworthiness for loan approval. Borrowers pay an origination fee and insurance premium totaling 4 percent less a 1.5 percent upfront interest rebate, which is deducted from the loan amount. Loan payments begin 60 days after the last disbursement. The interest rate is variable and based on the 91-day T-bill auctioned just prior to June 1 each year plus 3.1 percent, with a cap of 9 percent. (The interest rate for 2003–04 was 4.22 percent.)

Other loans. The UCSC Financial Aid Office can provide information about other privately sponsored education loans upon request.

Work-Study Program
Employment through the work-study program is offered to eligible financial aid applicants and is available during the academic year (late September through early June). Students are hired for part-time employment at prevailing rates, with federal funds paying part of the wages and the employer paying the balance. Students may apply for a variety of jobs on campus or with approved nonprofit organizations off campus.

Job postings are announced initially at the Work-Study Orientation held on the first Sunday of fall quarter. All work-study jobs for 2004–05 are posted on the web beginning September 19, 2004, and students must apply online. For job listings, application process, and more information on the Career Center, visit our web site: www2.ucsc.edu/careers. (Check the web in September 2005 for 2005–06 jobs.)

Further Information
For more information about applying for financial aid, deadlines for filing applications and supporting documents, and campus policy regarding refunds of overpayments, contact the Financial Aid Office, 201 Hahn Student Services Building, (831) 459-2963, e-mail fin_aid@ucsc.edu, or visit www2.ucsc.edu/fin-aid.

Veteran Services
The Veteran Services staff act as a liaison between students and the Department of Veterans Affairs. This includes certifying attendance for veterans, veterans’ dependents, and reservists and processing various government forms. In addition, the office processes letters of authorization for the California Department of Veterans Affairs’ college fee-waiver program for children of veterans who have service-connected disabilities or who have died from service-related causes. Students who are California residents apply for the college fee-waiver program through their county Veterans Affairs Office.

Students who are veterans or veterans’ dependents should contact Veteran Services as soon as they receive notification of admission to UC Santa Cruz to ensure quick and efficient processing of their benefit claims. Dependents must provide the office with the VA claim number and Social Security number of the veteran spouse or parent.

Veteran Services staff are located at 190 Hahn Student Services Building. An appointment may be arranged by calling (831) 459-1358 or by e-mail at registrar@ucsc.edu.
Undergraduate Academic Program

Planning Your Academic Program 25
Graduation Requirements 25
University Requirements 25
Advanced Placement and International
   Baccalaureate 27
   Credits for Transfer Students 27
   General Education Requirements 30
   College Requirements 33
   Major and Minor Requirements 33
Evaluating Academic Performance 35
   Evaluations 35
   Grades 35
   Grade Points 35
   Grade-Point Average 35
   Pass/No Pass Option 35
   Incomplete 35
   Academic Standing/Minimum Progress 36
   Repeating Courses 36
   Comprehensive Examination/Senior Thesis 36
   Academic Integrity 36
   Honors 36
   Transcripts 37
   Privacy of Records 37
Advising: From Course Selection to Careers 37
   Career Center 38
   Educational Opportunity Programs 39
   MARC/MBRS Programs 39
   Academic Excellence Program 39
   Services for Transfer and Re-Entry Students 39
   Part-Time Program 40
   Disability Resource Center 40
   ROTC and Military Affairs 40
Office of International Education 40
   Education Abroad Program 40
   International Scholar and Student Services 40
   Fulbright Grants 41
Field and Exchange Programs 41
   UCDC Program 41
   UC Center in Sacramento 41
   Intercampus Visitor Program 41
   Domestic Exchange Programs 41
   Field Programs 41
Summer Programs 43
UCSC Extension 44
Intersegmental Cross-Enrollment 44
Planning Your Academic Program

At UC Santa Cruz, the academic year is organized on the quarter system. Three quarters—fall, winter, and spring—constitute the regular academic year. Most UCSC courses are equivalent to 5 quarter credits and require approximately equal amounts of work: about 15 hours per week per course. You are normally expected to enroll in 15 credits each quarter; enrolling in a reduced or expanded course load requires special approval. For specific information on how courses are organized, see page 105.

You are normally expected to graduate in four years. To do so, you must pass an average of 45 credits per year, for a total of 180 credits. In order to complete certain majors with extensive course requirements, junior transfer students may need to spend more than two years at UC Santa Cruz. You may exceed four years with the approval of an academic adviser from your college.

The requirements for a bachelor's degree are explained in the following section. Your adviser can help you plan a program that fulfills these requirements efficiently while meeting your own educational goals (see Advising: From Course Selection to Careers, pages 37–40).

Here is what you can expect during four years at Santa Cruz:

During your freshman year, you complete your college core course and satisfy the Subject A requirement. You also begin to fulfill the general education requirements, which expose you to a range of disciplines, and you may begin courses in your field.

If you are uncertain about your choice of major, you may explore several fields of study during your first two years at Santa Cruz. You are expected to declare your major by the end of your sophomore year. Students interested in majors requiring heavy course prerequisites, such as music and most majors in the physical and biological sciences and engineering, should be certain they start the appropriate sequences in a timely manner; contact the department for advising.

During your junior and senior years at Santa Cruz, you concentrate on the upper-division requirements for your major and complete your comprehensive requirement, as well as complete your general education requirements. If you entered UCSC without having fulfilled the requirement in American history and institutions, you will need to do so before you graduate.

Transfer students find it helpful to complete courses that fulfill campus general education requirements—as well as any lower-division requirements for their intended major that are offered at their current campus—before coming to Santa Cruz. The Office of Admissions can help you select appropriate courses, and you should also consult with your community college adviser.

Graduation Requirements

To qualify for a bachelor’s degree, you must meet the following conditions, which are explained in more detail in the following sections:

- Earn a minimum of 180 credits, each with a grade of D or better (or Pass)
- Satisfy the university requirements in American history and institutions and in Subject A (English composition)
- Meet the UCSC residence requirement
- Satisfy each of the campus general education requirements with a course graded C or better (or Pass)
- Satisfy the requirements of your UCSC college
- Complete an approved major program, including its comprehensive requirement, with grades of Pass, C, or better in all courses satisfying major requirements. In some majors, courses graded Pass may not be used to satisfy major requirements.
- Have a grade-point average of at least 2.00 in all letter-graded courses taken at UCSC and other University of California campuses
- Have no more than 25 percent of your UCSC credits graded on a Pass/No Pass basis. This includes any credits completed in the Education Abroad Program or on another UC campus in an intercampus exchange program. Departments may require that some or all courses used to satisfy the major be taken for a letter grade.

As a Santa Cruz student, you are responsible for selecting the courses necessary to fulfill graduation requirements and prepare for advanced study or a career. It is essential that you consult regularly with academic advisers about course selection (see pages 37–40). Keep copies of your own records, including your transcripts from other institutions, admission test scores, Transfer Credit Summary, UCSC quarterly academic record reports, and performance evaluations.

Transfer students may be able to use some of the courses they completed at other schools to help meet the 180-credit requirement. (Semester-system credits can be multiplied by 1.5 to derive equivalent quarter-system credits.) The UCSC Office of Admissions determines which courses are transferable.

University Requirements

The Santa Cruz campus administers three requirements for graduation from the University of California: (1) American history and institutions, (2) Subject A: English composition, and (3) UCSC residence. These requirements are described in detail below.

American History and Institutions
Every candidate for a bachelor’s degree must demonstrate a knowledge of American history and institutions. You may fulfill this requirement in one of the following ways:

- By achieving a score of 550 or higher on the College Board SAT II: Subject Test in American History
- By achieving a score of 3, 4, or 5 on the College Board Advanced Placement Examination in American History, or by achieving a score of 5, 6, or 7 on the IB History of America Examination
- By satisfactorily completing a college-level course in American history and institutions
- By certification of completion of the requirement on a transcript from an accredited California institution of higher education
- By completing an acceptable history or government course in high school that satisfies the subject requirement for admission to the university, described on page 15.

Subject A: English Composition
Every candidate for a bachelor’s degree must demonstrate an acceptable level of ability in English composition. Before your fourth quarter of enrollment, you must fulfill this requirement in one of the following ways:

- By achieving a score of 680 or higher on the College Board SAT II: Subject Test in Writing
- By achieving a score of 3, 4, or 5 on the College Board Advanced Placement Examination in English, or by achieving a *Foreign students with an F (student) or J (exchange visitor) visa are exempted from the American history and institutions requirement at the time they declare their candidacy for graduation. You can verify your exemption by bringing your passport to the Office of International Education, 205 Classroom Unit Building. Call (831) 459-2858 for more information.

†Alternatives for satisfying this requirement vary among the campuses of the University of California. If you plan to transfer to another UC campus, consult its general catalog for information on this point.
score of 5, 6, or 7 on the IBH English Language A1 Examination
• By achieving a score of 8 or higher on the UC systemwide Subject A Examination
• By demonstrating an acceptable level of proficiency on UCSC’s placement examination, given several times during the year
• Particularly for transfer students, by completing at another institution an acceptable college-level course of at least 4 quarter credits, or the equivalent, in English composition with a grade of C or better

California high school seniors who have been admitted to UCSC must take the universitywide Subject A examination given in May, unless they have already satisfied the requirement.

Residence
Every candidate for a bachelor's degree must be registered at UCSC for a minimum of three terms. (A term is a fall, winter, or spring quarter in which a student completes 6 or more credits.) Each UCSC Summer Session in which you complete at least 2 credits is the equivalent of half a term's residence.) In addition, of the final 45 quarter credits, 35 must be in regular courses of instruction that you have taken as a registered student at UCSC. No more than 18 of the 35 credits may be completed in Summer Session.

Courses taken through University Extension or the Intercampus Visitor Program do not constitute regular courses and therefore do not satisfy residence requirements.

The credit requirement for residence is applied differently to students participating in the Education Abroad Program (EAP) and the University of California in Washington, D.C., (UCDC) program. Students may satisfy the requirement in either of two ways. The first way is for students to complete 35 of their final 45 credits before leaving the Santa Cruz campus to participate in EAP or UCDC. In this scenario, students do not have to return to Santa Cruz for any additional course work after they have finished EAP or UCDC. The second way to fulfill the residence requirement is for students to complete 35 of their last 90 credits at the Santa Cruz campus, with a minimum of 12 credits completed at UCSC after their return from EAP or UCDC.

General Education Requirements

The general education requirements are designed to introduce you to various kinds of information, reasons for learning, and approaches to acquiring knowledge, as well as to promote responsible use of what is learned. Obviously, general education requirements alone cannot achieve these ends. You are urged to look for as many opportunities as possible to gain a richer understanding of your own cultural heritage and social situation; insight into countries, societies, and eras besides your own; proficiency in another language; and an understanding of the nature of ethical and moral choice. The formal requirements described here should be considered foundations for exploration.

There are nine categories of general education requirements (see table below, Types of General Education Requirements). Each category has a general education code associated with it, and only those courses carrying that code satisfy the requirement. The codes appear in the course descriptions in this catalog and in the Schedule of Classes. A list of Courses That Fulfill General Education Requirements appears on pages 30–31. The list is subject to change. You should check the Schedule of Classes each quarter for the most up-to-date information.

Some courses satisfy more than one general education requirement, so the total number of required courses may be 9 to 14.

<table>
<thead>
<tr>
<th>Types of General Education Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td><strong>Introductions to disciplines—humanities and arts area</strong></td>
</tr>
<tr>
<td><strong>Introductions to disciplines—natural sciences and engineering area</strong></td>
</tr>
<tr>
<td><strong>Introductions to disciplines—social sciences area</strong></td>
</tr>
<tr>
<td><strong>Topical courses (one course from each of the three academic areas; appropriately designated college courses fulfill this requirement)</strong></td>
</tr>
<tr>
<td><strong>Quantitative course</strong></td>
</tr>
<tr>
<td><strong>Composition course</strong></td>
</tr>
<tr>
<td><strong>Writing-intensive course</strong></td>
</tr>
<tr>
<td><strong>Arts course</strong></td>
</tr>
<tr>
<td><strong>U.S. Ethnic minorities/non-Western society course</strong></td>
</tr>
</tbody>
</table>

*For purposes of the general education requirements, humanities and arts are combined in one academic area, as are natural sciences and engineering.

Introductions to disciplines (IH, IN, and IS codes). These courses introduce a discipline’s content, scope, and methodology. Introductory courses from two different departments are required in each of three academic areas: humanities and arts (IH code), natural sciences and engineering (IN code), and social sciences (IS code). Only one language course may be used to satisfy an IH requirement, as all languages are considered to be part of the same discipline. Similarly, only one literature course may be used, and English (transfer) courses are considered to be literature. Only one of the two IH courses may be from the arts (art, film and digital media, history of art and visual culture, music, and theater arts). Transfer courses designated IN from Anatomy, Botany, Physiology, and Zoology Departments are considered to be “biology” courses for general education purposes.

Topical courses (T code). These courses expose students to introductory-level themes of broad social or intellectual relevance. Three courses are required, no more than one from each academic area. For information on which disciplines are in each area, see Arts, page 124; Engineering, page 190; Humanities, page 270; Physical and Biological Sciences, page 329; and Social Sciences, page 359; see also the list of courses on pages 30–31. College core courses are labeled topical and carry the designation of the appropriate academic area.

Quantitative course (Q code). These courses provide methods for acquiring quantitative reasoning that involve use of advanced algebra, statistics, or calculus. One course is required.

Writing courses (C and W codes). These courses stress explicit attention to the craft of writing. Having satisfied the Subject A requirement by the end of your first year of enrollment at UCSC (see page 25 for a description of the Subject A requirement), you must complete two courses in writing. One of these must be a writing-intensive course (W code) that provides instruction and extensive practice in writing applied to a particular subject. For some courses, only certain sections are writing intensive (look for the “W” in the Schedule of Classes when enrolling). You must take this course at UCSC.

Students satisfy the other part of the writing requirement through a placement exam or by passing a composition course (C code). Writing 1, Composition and Rhetoric, is the usual course. You must fulfill the composition requirement before you can enroll in a writing-intensive course.

Arts course (A code). These courses provide the exposure to creative or artistic expression necessary for a liberal arts education. One designated arts course is required; most are offered through art, film and digital media, history of art and visual culture, music, and theater arts.

Ethonic minorities/non-Western society course (E code). These courses are intended to increase knowledge of ethnic minorities in the United States and non-Western cultures, improve cross-
Advanced Placement (AP)/International Baccalaureate Higher Level (IBH) Examinations, 2004–05

AP credit earned with a score of 3, 4, or 5 is applicable toward the total credits required for graduation and the UCSC campuswide general education (GE) requirements as indicated below. Please note restrictions. IBH credit requires a score of 5, 6, or 7. If AP and IBH exams are taken in the same subject area, credit is limited to one exam.

<table>
<thead>
<tr>
<th>Subject Exam</th>
<th>Quarter Credits</th>
<th>General Education Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBH Visual Arts</td>
<td>8</td>
<td>Satisfies the A.</td>
</tr>
<tr>
<td>AP Studio Art</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drawing, 2-D Design, or 3-D Design</td>
<td></td>
<td>Any AP exam satisfies the A. Maximum of 8 credits granted for all AP exams.</td>
</tr>
<tr>
<td>AP Art History</td>
<td>8</td>
<td>Satisfies one IH* and the A.</td>
</tr>
<tr>
<td>IBH Biology or AP Biology</td>
<td>8</td>
<td>Satisfies one IN.</td>
</tr>
<tr>
<td>IBH Chemistry or AP Chemistry</td>
<td>8</td>
<td>Satisfies one IN.</td>
</tr>
<tr>
<td>IBH Classical Greek or IBH Latin</td>
<td>8</td>
<td>Either IBH exam satisfies one IH**</td>
</tr>
<tr>
<td>Virgil or Literature</td>
<td>4</td>
<td>Either AP exam satisfies one IH**. Both earn credit.</td>
</tr>
<tr>
<td>IBH Computer Science</td>
<td>8</td>
<td>Satisfies one IN.</td>
</tr>
<tr>
<td>AP Computer Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>AB exam satisfies one IN. Maximum of 4 credits granted for both AP exams.</td>
</tr>
<tr>
<td>AB</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IBH Economics</td>
<td>8</td>
<td>Satisfies one IS.</td>
</tr>
<tr>
<td>AP Economics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microeconomics or Macroeconomics</td>
<td>4</td>
<td>Either AP exam satisfies one IS. Both earn credit.</td>
</tr>
<tr>
<td>IBH English Language A1</td>
<td>8</td>
<td>Satisfies one IH**, Subject A, and the C.</td>
</tr>
<tr>
<td>AP English Language and Composition or Literature and Composition</td>
<td>8</td>
<td>Either AP exam satisfies one IH** and Subject A. AP score of 4 or 5 satisfies the C. Maximum of 8 credits granted for both AP exams.</td>
</tr>
<tr>
<td>AP International English Language</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>AP Environmental Science</td>
<td>4</td>
<td>Does not satisfy any GE.</td>
</tr>
<tr>
<td>IBH Geography</td>
<td>8</td>
<td>Does not satisfy any GE.</td>
</tr>
<tr>
<td>AP Human Geography</td>
<td>4</td>
<td>Does not satisfy any GE.</td>
</tr>
<tr>
<td>AP Government and Politics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States or Comparative</td>
<td>4</td>
<td>Either exam satisfies one IS. Both earn credit.</td>
</tr>
<tr>
<td>IBH History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa, Americas, East &amp; Southeast Asia/Oceania, South Asia/Middle East, Europe, or Islamic AP History</td>
<td>8</td>
<td>Satisfies one IH.</td>
</tr>
<tr>
<td>African, United States, or World</td>
<td>8</td>
<td>Any AP exam satisfies one IH. All earn credit.</td>
</tr>
<tr>
<td>IBH Language A1, A2, B</td>
<td>8</td>
<td>Does not satisfy any GE.</td>
</tr>
<tr>
<td>Second Language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP French, German, Spanish Language</td>
<td>8</td>
<td>Does not satisfy any GE.</td>
</tr>
<tr>
<td>AP French, Spanish Literature</td>
<td>8</td>
<td>Satisfies one IH.** Both earn credit.</td>
</tr>
<tr>
<td>IBH Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP Mathematics</td>
<td>8</td>
<td>Satisfies one IN† and the Q.</td>
</tr>
<tr>
<td>Calculus AB</td>
<td>4</td>
<td>Either AP exam satisfies one IN† and the Q.</td>
</tr>
<tr>
<td>Calculus BC</td>
<td>8</td>
<td>Maximum of 8 credits granted for both AP exams.</td>
</tr>
<tr>
<td>IBH Music or AP Music Theory</td>
<td>8</td>
<td>Satisfies the A.</td>
</tr>
<tr>
<td>IBH Philosophy</td>
<td>8</td>
<td>Satisfies one IH.</td>
</tr>
<tr>
<td>IBH Physics</td>
<td>8</td>
<td>Satisfies one IN.</td>
</tr>
<tr>
<td>AP Physics B</td>
<td>8</td>
<td>Any one AP exam satisfies one IN. Maximum of 8 credits granted for all AP exams.</td>
</tr>
<tr>
<td>C Mechanics or C Electricity and Magnetism</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>IBH Psychology</td>
<td>8</td>
<td>Satisfies one IS.</td>
</tr>
<tr>
<td>AP Psychology</td>
<td>4</td>
<td>Satisfies one IS.</td>
</tr>
<tr>
<td>IBH Social/Cultural Anthropology</td>
<td>8</td>
<td>Satisfies one IS.</td>
</tr>
<tr>
<td>AP Statistics</td>
<td>4</td>
<td>Satisfies one IN† and the Q.</td>
</tr>
<tr>
<td>IBH Theater Arts</td>
<td>8</td>
<td>Satisfies one IH* and the A.</td>
</tr>
</tbody>
</table>

*Only one IH will be granted from art history and theater arts. **Only one IH will be granted from classics, English, and literature. †Only one IN will be granted from mathematics and statistics.

---

**Courses of fewer than 5 credits.** Students usually meet the general education requirements with 5-credit courses. Several related arts courses of fewer than 5 credits with the same code may be used to satisfy the arts (A) general education requirement if they total at least 5 credits.

---

**Advanced Placement and International Baccalaureate Examinations**

The university grants credit for College Board Advanced Placement (AP) Examinations on which a student scores 3, 4, or 5 and for International Baccalaureate Higher Level (IBH) Examinations on which a student scores 5, 6, or 7. The university does not grant credit for IB standard or subsidiary level exams. Students completing the International Baccalaureate Diploma with a score of 30 or higher receive 30 quarter credits. The credit is applied toward the total credits required for graduation and toward the UCSC campuswide general education requirements, as indicated in the table at left, Advanced Placement (AP)/International Baccalaureate Higher Level (IBH) Examinations. Students should be aware that AP, IB, and college-level courses will not be granted duplicate credit. In these cases, the university will award credit for only one.

**AP and IBH Examination Credit toward Degree Requirements**

Certain departments also allow prospective majors to obtain waivers for prerequisite courses. (Please see table below). In all cases, a student should contact the particular department to discuss his or her plans with an adviser as soon as possible. Please note that approval is not automatic; a petition must be filed with most departments.

**Credits for Transfer Students**

**General Education Requirements**

Transfer students may apply courses taken at other institutions toward the general education requirements with two exceptions: The writing-intensive course (W code) must be taken at UCSC. Also, transfer courses are not applied to the topical requirement (T code), but topical courses are waived at entrance according to the following formula: 45-83.9 transferable quarter credits, one course waived; 84-104.9 transfer-
Certain departments allow prospective majors to obtain waivers or substitutions for prerequisite courses. Please note that approval is not automatic; petition must be filed with most departments. In all cases, students should contact the department adviser as early as possible to discuss their academic plans. The following departments and programs will not waive courses: History, Language Program, Legal Studies Program, Literature, Music, Physics, and Politics. The following departments offer placement tests to determine appropriate course level and enrollment: Biological Sciences, Chemistry and Biochemistry, Language Program, Mathematics, and Music.

<table>
<thead>
<tr>
<th>Subject Exam</th>
<th>Score</th>
<th>Department</th>
<th>Course or Placement Exam Waived</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP Studio Art</td>
<td>3, 4, 5</td>
<td>History of Art and Visual Culture</td>
<td>One lower-division studio course may be waived. Contact the History of Art and Visual Culture Department. AP Art History may not be used in lieu of lower-division courses for the major.</td>
</tr>
<tr>
<td>AP Art History</td>
<td>3, 4, 5</td>
<td>Art</td>
<td>One lower-division art history course may be waived. Contact the Art Department. AP Studio Art may not be used in lieu of lower-division courses for the major.</td>
</tr>
<tr>
<td>IBH Biology</td>
<td>5, 6, 7</td>
<td>Biochemistry and Molecular Biology Bioinformatics Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences</td>
<td>Waives Biology 3 ( exempt from Biology placement exam).</td>
</tr>
<tr>
<td>AP Biology</td>
<td>3, 4, 5</td>
<td>Biochemistry and Molecular Biology Bioinformatics Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences</td>
<td>Waives Biology 3 ( exempt from Biology placement exam).</td>
</tr>
<tr>
<td>AP Chemistry</td>
<td>4</td>
<td>Biochemistry and Molecular Biology Bioinformatics Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences Engineering: Bioinformatics, Computer Engineering, Computer Science</td>
<td>Waives Chemistry 1A and allows enrollment in Chemistry 1B and 1M.</td>
</tr>
<tr>
<td></td>
<td>4, 5</td>
<td>Environmental Studies</td>
<td>May substitute for Environmental Studies 23. Contact the Environmental Studies Department.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Biochemistry and Molecular Biology Bioinformatics Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences Engineering: Bioinformatics, Computer Engineering, Computer Science</td>
<td>Waives Chemistry 1A, 1B, and 1C; however, the laboratories Chemistry 1M and 1N are still required. May petition for a lab waiver by presenting high school laboratory notebook/reports to the Chemistry Department adviser for review. If the petition and approval process is completed before September, may enroll in Organic Chemistry (subject to space availability).</td>
</tr>
<tr>
<td>Subject Exam</td>
<td>Score</td>
<td>Department</td>
<td>Course or Placement Exam Waived</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>AP Mathematics:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculus AB</td>
<td>3</td>
<td>Biochemistry and Molecular Biology</td>
<td>Waives Mathematics 3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences Chemistry and Biochemistry Mathematics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3, 4, 5</td>
<td>Environmental Studies</td>
<td>May satisfy the precalculus requirement. Contact the Environmental Studies Department.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychology</td>
<td>May satisfy the precalculus requirement and the prerequisite for Psychology 2. Contact Psychology Department.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sociology</td>
<td>May substitute for the precalculus requirement—Mathematics 3 or its equivalent.</td>
</tr>
<tr>
<td></td>
<td>4, 5</td>
<td>Biochemistry and Molecular Biology</td>
<td>Waives Mathematics 11A or 19A (although enrollment in Mathematics 19A is recommended for proposed majors in mathematics or the physical and biological sciences).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences Earth Sciences Mathematics</td>
<td></td>
</tr>
<tr>
<td><strong>AP Mathematics:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculus BC</td>
<td>3</td>
<td>Biochemistry and Molecular Biology</td>
<td>Waives Mathematics 11A or 19A (although enrollment in Mathematics 19A is recommended for proposed majors in mathematics or the physical and biological sciences).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences Chemistry and Biochemistry Mathematics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineering: Bioinformatics, Computer Engineering, Computer Science, Electrical Engineering, Information Systems Management</td>
<td>May substitute for Mathematics 19A (although enrollment in Mathematics 19A is recommended for proposed majors in the School of Engineering). Contact the School of Engineering.</td>
</tr>
<tr>
<td></td>
<td>3, 4, 5</td>
<td>Environmental Studies</td>
<td>May satisfy the precalculus requirement. Contact the Environmental Studies Department.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychology</td>
<td>May satisfy the precalculus requirement and the prerequisite for Psychology 2. Contact the Psychology Department.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sociology</td>
<td>May substitute for the precalculus requirement—Mathematics 3 or its equivalent.</td>
</tr>
<tr>
<td></td>
<td>4, 5</td>
<td>Biochemistry and Molecular Biology</td>
<td>Waives Mathematics 11A and 11B or Mathematics 19A and 19B.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biological Sciences: General Biology, Ecology and Evolution, Health Sciences, Marine Biology, Molecular, Cell, and Developmental, Neuroscience and Behavior, Plant Sciences Earth Sciences Mathematics</td>
<td></td>
</tr>
<tr>
<td><strong>AP Psychology</strong></td>
<td>4, 5</td>
<td>Psychology</td>
<td>May substitute for Psychology 1.</td>
</tr>
<tr>
<td><strong>AP Statistics</strong></td>
<td>4, 5</td>
<td>Environmental Studies</td>
<td>May substitute for the Engineering 5 or 7 prerequisite. Contact the Environmental Studies Department.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Engineering: Bioinformatics, Computer Engineering, Computer Science, Electrical Engineering, Information Systems Management</td>
<td>May substitute for Engineering 5 or 7. Contact the School of Engineering.</td>
</tr>
</tbody>
</table>
Courses That Fulfill General Education Requirements

**Introduction to disciplines, humanities and arts (IH code)—two courses from different departments required (10 credits)**

Only one IH requirement may be satisfied with a course (equivalent to 5 credits) from the Arts Division (art, film and digital media, history of art and visual culture, music, theater arts); only one language course may be used to satisfy an IH requirement; and only one literature course may be used to satisfy an IH requirement. Note: Transfer courses designated IH from English departments are considered to be literature courses for general education purposes.

American Studies 1, 2
Chinese 4, 5, 6, 50, 107, 108
Film and Digital Media 20A, 20B, 20C
French 4, 5, 6
German 4, 5, 6
Hebrew 4, 5, 6
Hindi 4, 5, 6
History of Art and Visual Culture 10D, 10E, 10F, 10G
Italian 4, 5, 6
Japanese 4, 5, 6, 50
Korean 4, 5, 6
Linguistics 20, 51, 52, 53, 55
Literature 1, 61B, 61D, 61E, 61F, 61M
Spanish Literature 60
Spanish Literature 60
Spanish 4, 5, 5M, 6, 56
Spanish for Spanish Speakers 61, 62, 63
Latin American and Latino Studies 246, 80A, 80B, 80C, 80D, 80E, 80F, 80G, 80H, 80I, 80J
Economics 1, 2
Education 92A, 92B
Environmental Studies 25
Latin American and Latino Studies 1, 126A, 126B
Legal Studies 10
Philosophy 1, 4, 5, 7, 10, 20, 25, 43, 70, 72, 73
Psychology 1, 41, 65
Sociology 1, 10, 15, 20

**Topical courses (T code)—three courses required (15 credits)**

Students entering UCSC with fewer than 45 transferable credits must take three topical courses in residence at UCSC. UCSC Summer Session courses can be used to satisfy topical requirements.

Choose one course from each academic area: natural sciences (2), social sciences (3), and humanities and arts (4). Courses labeled 5, 6, and 7 satisfy topical requirements in two different academic areas; students can apply this kind of topical course to either academic area indicated. The three topical course requirements must be satisfied with three different courses. In the Schedule of Classes, courses that carry a T general education code are listed as follows:

1. Natural Sciences
2. Social Sciences
3. Humanities
4. Arts
5. Humanities and Arts
6. Social Sciences
7. Humanities and Arts

**T2—Natural Sciences**

Astronomy and Astrophysics 80A, 80B, 80D
Biochemistry and Molecular Biology 80A
Biochemistry and Molecular Biology 80A, 80D, 80F, 80H, 80I, 80L, 80N, 80P
Biomedical Engineering 80G
Chemistry and Biochemistry 80A, 80G, 80H
Computer Engineering 80N
Computer Science 80B, 80C, 80G, 80V
Crowe College 80S
Earth Sciences 80A, 80B, 80C, 80D, 80F, 80G
Environmental Engineering 80T
Environmental Toxicology 80E
Linguistics 80G
Ocean Sciences 80A, 80B, 80C
Philosophy 80G
Physics 80A

**T3—Social sciences**

Anthropology 80B, 80C, 80D, 80F, 80L, 80J, 80K, 80L, 80C, 80P, 80V
College Eight 80
College Nine 80A, 80B, 80H
College Ten 80A, 80B, 80H
Community Studies 80A, 80B, 80F, 80H, 80L, 80Q
Economics 80A, 80G, 80H
Education 80

**Environmental Studies 80C**

Latin American and Latino Studies 80A, 80B, 80C, 80D, 80F, 80H, 80M, 80N, 80Q
Merrill College 80, 80B, 80X
Politics 80T
Psychology 80A, 80B
Sociology 80E, 80I, 80Z

**T4—Humanities and arts**

Art 80A, 80C, 80D
Cowell College 80, 80S
Film and Digital Media 80B, 80C, 80D
Philosophy 1, 41, 65
Sociology 80E, 80I, 80Z

**T5—Humanities and arts or social sciences**

American Studies 80E, 80F, 80G
Economics 80J
Film and Digital Media 80A
History 80M
History of Art and Visual Culture 80A, 80B, 80D, 80E, 80F, 80G, 80H, 80J, 80K, 80M, 80N, 80P, 80Q, 80S, 80T, 80V, 80W, 80X, 80Y
Philosophy 80D, 80H, 80T
Porter College 80, 80E, 80H
Stevenson College 80H
Theater Arts 80B, 80E, 80G, 80H, 80L, 80M, 80N, 80Q, 80S, 80T, 80U, 80V, 80W, 80X, 80Y, 80Z
Women’s Studies 80S

**T6—Natural sciences or humanities and arts**

Art 80F
Computer Engineering 80E
Crowe College 80, 80H
Music 80C, 80L, 80R
Philosophy 80S
Physics 80D
Porter College 80B

**T7—Natural sciences or social sciences**

Environmental Studies 80A, 80B
Information Systems Management 80A, 80B, 80C
Physics 80C
following formula: 45–83.9 transferable quarter
credits, one course waived; 84–104.9 transfer-
able quarter credits, two courses waived; 105 or
more transferable quarter credits, all three
courses waived. If one topical course is required
in residence at UCSC, it may be chosen from
any of the three academic areas (humanities and
arts, natural sciences and engineering, and
social sciences). If two are required, they must
be from two different areas.

If you are currently attending one of the
California community colleges, consult with the
UCSC Office of Admissions or your current
counselor to determine which college courses sat-
sify UCSC general education requirements.

Transfer students who have satisfied the
general education or breadth requirements of
another UC campus prior to transfer will be
considered to have completed the UCSC
general education requirements. Completion
of the Intersegmental General Education
Transfer Curriculum (IGETC) prior to enroll-
ment at UCSC will also be accepted in lieu of
the campus general education requirements.

**Intersegmental General Education
Transfer Curriculum (IGETC)**
The Intersegmental General Education Transfer
Curriculum (IGETC) is a series of courses
prospective California community college trans-
fer students may complete to satisfy the lower-
division breadth/general education requirements
at any University of California or California State
University (CSU) campus (see table, this page).
This curriculum is the result of an agreement, by
the University of California, the California State
University, and the California community col-
leges, aimed at simplifying the transfer process for
community college students. The IGETC is
intended exclusively for California community
college transfers and is not an option for continu-
ing UCSC students or for students transferring
from four-year colleges or universities.

Students must complete the IGETC prior to
transfer or they will be required to satisfy the
UCSC general education requirements. All cours-
es must be completed with a grade of C (2.00) or
better. A grade of Credit or Pass may be used if
the community college’s policy states that it is
equivalent to a grade of C (2.00) or better.

**Major Requirements and Course
Prerequisites**
Students who believe they have taken courses at
other institutions that satisfy either major require-
ments or UCSC course prerequisites should con-
tact the sponsoring department for review.

**IGETC Subject and Unit Requirements**

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Course Required</th>
<th>Units/Credits Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English Communication</td>
<td>2 courses</td>
<td>6 semester units or 8–10 quarter units</td>
</tr>
<tr>
<td>2. Mathematical Concepts and Quantitative Reasoning</td>
<td>1 course</td>
<td>3 semester units or 4–5 quarter units</td>
</tr>
<tr>
<td>3. Arts and Humanities</td>
<td>3 courses</td>
<td>9 semester units or 12–15 quarter units</td>
</tr>
<tr>
<td>4. Social and Behavioral Sciences</td>
<td>3 courses</td>
<td>9 semester units or 12–15 quarter units</td>
</tr>
<tr>
<td>5. Physical and Biological Sciences</td>
<td>2 courses</td>
<td>7–9 semester units or 9–12 quarter units</td>
</tr>
<tr>
<td>6. Language Other Than English</td>
<td>Proficiency</td>
<td>Proficiency</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11 courses</td>
<td>34 semester units</td>
</tr>
</tbody>
</table>

*Source: Student Academic Services, Office of the President, University of California, 1991.*

An undergraduate research assistant helps prepare a chemical solution as part of a UC Santa Cruz project to improve the way diabetics manage their glucose levels.
**College Requirements**

You must fulfill the requirements of your college in addition to those of your major and of the university. Each college has established a core course, which first-year students—including some incoming transfer students—are required to complete. College requirements are outlined below. The core courses are described more fully in the individual college descriptions, pages 75–93.

**College Eight**
- College Eight 80, *Environment and Society*, fall quarter
- Transfer students with fewer than 45 transferable quarter credits are required to take the core course.

**College Nine**
- College Nine 80A, 80B, or 80H, *International and Global Perspectives: A Writing and Discussion Seminar*, fall quarter
- Transfer students with fewer than 45 transferable quarter credits are required to take the core course.

**College Ten**
- College Ten 80A, 80B, or 80H, *Social Justice and Community: A Writing and Discussion Seminar*, fall quarter
- Transfer students with fewer than 45 transferable quarter credits are required to take the core course.

**Cowell**
- Cowell 80, *The Cowell Core Course*, fall quarter
- Computing skill requirement: satisfied by completing any UCSC computer science or computer engineering course
- Transfer students with fewer than 30 transferable quarter credits are required to fulfill these college requirements.

**Crown**
- Crown 80 or 80H, *Ethical Issues in Emerging Technologies: Transgenics, Clones, Cyborgs, and Artificial Intelligence*, fall quarter
- Transfer students with fewer than 30 transferable quarter credits are required to take the core course.

**Kresge**
- Kresge 80, *Power and Representation*, fall quarter
- Transfer students with fewer than 30 transferable quarter credits are required to take the core course.

**Merrill**
- Merrill 80 or 80X, *Cultural Identities and Global Consciousness*, fall quarter
- Transfer students with fewer than 45 transferable quarter credits are required to take the core course.

**Oakes**
- Oakes 80, *Value and Change in a Diverse Society*, fall quarter
- Transfer students with fewer than 45 transferable quarter credits are required to take the core course during the first fall quarter of enrollment.

**Porter**
- Porter 80, *Arts in a Multicultural Society*, fall quarter
- Transfer students with fewer than 30 transferable quarter credits are required to take the core course.

**Stevenson**
- Stevenson 80A-B, *Self and Society*, fall and winter quarters; both quarters required
- Transfer students with fewer than 45 transferable quarter credits are required to complete the sequence.

**Major and Minor Requirements**

To qualify for a bachelor’s degree at UCSC, you must complete the minimum requirements for a major program, as well as satisfy university, campus, and college requirements.

At UCSC, you have the option of pursuing a single major, a double major, or a combined major. The minimum requirements for an established major program are set by the sponsoring department. (If you are a transfer student, the department will determine which of your transferable courses may be used to satisfy major requirements.) Only courses in which you earn a grade of Pass, C, or better satisfy major or minor requirements.

**Declaring a Major**

The field of interest you indicate on your application to UCSC does not automatically place you in a major. You are required to file a study plan and declare a major no later than the beginning of your junior year, in consultation with the appropriate academic advisers. Certain majors have a limit on the number of students they can serve. Be sure you are aware of all necessary criteria. It is wise to apply for major status as soon as you feel sure of the field you wish to enter. You will not be allowed to enroll in classes for the second quarter of your junior year until you have declared a major. Junior transfer students must file a study plan and declare a major during their second quarter at UCSC by the deadline printed in the Academic and Administrative Calendar in the Schedule of Classes.

You should determine the requirements for possible major choices as soon as possible because certain majors require substantial preparation, with many interlocking course sequences. If you intend to pursue such a major, you should start work toward it early in your undergraduate career. (Review majors that interest you in the Programs and Courses section, pages 105–384.) Academic advisers can offer considerable assistance in selecting courses appropriate to your individual needs (see pages 37–40).

**Comprehensive Requirement**

Typically, in your senior year you must satisfy the comprehensive requirement for your major by satisfactorily completing a comprehensive examination or an equivalent body of work that is defined by the unit supervising your major. A comprehensive examination may be written or oral or both. For some major programs, a written thesis or other project that involves extensive work and reflects comprehensive understanding of subject matter may be accepted in place of a comprehensive examination.

**Double Major**

To complete a double major, you must fulfill all of the requirements for both majors declared, including the comprehensive requirement for each major. In general, a single thesis may not be used for more than one major. In meeting the minimum number of upper-division courses required for each major, you may count any course for one major only. A double major may include an individual major or consist entirely of established majors.

The diploma of a student who has completed a double major in history and music, for example, would read “Bachelor of Arts with Majors in History and Music.”

**Combined Major**

A combined major allows you to complete a course of study involving two disciplines offered as regular programs at UC Santa Cruz. Examples of combined majors include environmental studies/economics and Latin American and Latino studies/politics. A com-
A combined major is designed by faculty representatives from both disciplines. In general, fewer courses are required than for a double major, and students complete the comprehensive requirements as specified for each combined major. Combined majors currently available are listed in the footnotes on page 9.

The diploma of a student who has completed a combined major in environmental studies and economics, for example, would read “Bachelor of Arts with a Major in Environmental Studies/Economics.”

**Individual Major**

Areas identified as appropriate for individual majors (see pages 8–9) have been designated because small groups of faculty are willing to sponsor individual majors. Other areas of interest, such as ethnic studies (page 238), are described in detail with advice regarding customizing existing majors to suit your individual interests. Students should be aware that forming an individual major can be very difficult, as three faculty members must agree to serve on a committee to supervise the major. Over the last several years, fewer than 2 percent of UCSC students have graduated with an individual major.

**Institutional Responsibility**

As a general rule, undergraduate students who have made significant progress toward a degree in a specific major can assume that a degree will be granted if they maintain continuous enrollment and meet all catalog degree requirements. However, because of reductions in financial support, retirement of faculty, or other significant reasons, UCSC may find it necessary to discontinue a degree program or major. When this occurs, further admission into the degree program or major will be frozen effective with the official action suspending the degree program or major. Every effort will be made to allow currently enrolled majors to complete their degrees within a reasonable period of time.

To facilitate this process, department chairs (and the appropriate deans) have the obligation to provide for the individual needs of these students: for example, (1) students may be encouraged to complete requirements for graduation in similar or related degree tracks; (2) the major department may substitute degree requirements (in extreme cases a limited number of waivers may be considered, but general education requirements and the minimum total credits required for a degree cannot be waived on an individual basis); (3) students may be allowed to petition for an individual major; or (4) through the Intercampus Visitor (ICV) Program, students may be allowed to complete remaining requirements at another University of California campus and transfer the appropriate courses and credits back to UCSC to meet graduation requirements. Graduating seniors should check major requirements at their home campus. A statement verifying senior completion of residency requirements may be required by the host campus.

In all cases, the financial obligations are the responsibility of the individual student involved unless otherwise noted.

**Catalog Rights**

Effective for all those who entered in fall quarter 1993 or after, students may select the UCSC General Catalog they will follow to meet their requirements from either the one published at the time of entering UCSC or a subsequent catalog. A student must follow the chosen catalog in its entirety, including university, campus general education, college, and major requirements.

Students who seek readmission to UCSC after a break in attendance of greater than two years’ duration must adhere to the graduation requirements in effect at the time of readmission or those subsequently established.

Students who entered prior to 1993 should see an adviser. Their catalog year for graduation, whether the year they entered UCSC or a subsequent year, will be decided at the discretion of their major department and/or their college.

Students transferring from other collegiate institutions may elect to meet graduation requirements either (1) those in effect at the time of transfer to UCSC; (2) those subsequently established; or (3) those in effect when the student was enrolled at a previous collegiate institution, provided those requirements were published no more than three years prior to the time of transfer to UCSC.
Minor Programs
See pages 8–9 for undergraduate minors currently offered at UC Santa Cruz. Completion of a minor is optional. If you wish, you may complete more than one minor.

The sponsoring department establishes the course requirements for a minor. The minor will involve substantial work in the discipline and normally require no fewer than 25 upper-division or graduate credits. The courses required for a minor follow the same pattern as those for the corresponding major, except that the number of courses required is fewer and there is no comprehensive requirement. You may not design your own minor program. The minor appears on your official transcript but not on your diploma.

Evaluating Academic Performance

UC Santa Cruz has one of the more comprehensive systems for evaluating students’ academic performance of any research university in the United States. The evaluation system consists of two major components: the assignment of a final grade in the course and an accompanying evaluation of your performance.

Evaluations
In each course for which you receive a grade of D or better (or P), you should receive an evaluation of your academic performance. An evaluation may

• describe the strengths and weaknesses of your performance in the various areas of class activity (discussion, laboratory work, term papers, examinations)
• assess your general understanding of the course content
• recognize additional or particularly outstanding work

Evaluations are used at UCSC in academic advising, reviewing scholarship applications, and awarding College Honors and Honors in the major. Evaluations are a permanent part of your academic record. All students may request transcripts either with or without evaluations. An evaluation for your senior comprehensive examination or senior thesis also becomes part of your academic record.

Grades
At the end of each course, you will receive one of the following grade notations:

- A: excellent
- B: good
- C: fair
- D: poor
- F: fail
- P: passing
- NP: not passing
- I: incomplete
- IP: in progress
- W: withdrawal

The grades of A and B may be modified by a plus (+) or a minus (-). The grade of C may be modified by a plus only. You will not receive credit for graduation in any course in which you receive a final grade of F or NP. The grades I and IP are temporary grades used in special circumstances. The final notation W indicates that you officially withdrew from the course before completing it.

Grade Points
Grade points are assigned to a letter grade as follows:

- 4.0 = A+
- 4.0 = A
- 3.7 = A-
- 3.3 = B+
- 3.0 = B
- 2.7 = B-
- 2.3 = C+
- 2.0 = C
- 1.0 = D
- 0.0 = F

The grades P and NP are not included in calculating your GPA and so are not assigned grade points. Courses in which the interim grades I and IP are assigned earn no grade points or credit until the interim grade is replaced by a final letter grade.

Grade-Point Average (GPA)
Undergraduates entering UCSC in fall 2001 and thereafter have a UCSC cumulative grade-point average calculated from UCSC courses, courses taken through the Education Abroad Program, and courses taken at another UC campus as part of the Intercampus Visitor Program. Undergraduates who entered UCSC for the first time in or after fall 1997 and before fall 2001 have a UCSC cumulative grade-point average only if they have elected letter grades in at least two-thirds of the cumulative credits attempted. Undergraduates who entered UCSC prior to fall 1997 cannot have an official UCSC grade-point average calculated.

A grade-point average is determined by dividing the number of grade points earned by the number of units attempted for a letter grade. In calculating your UCSC GPA, the interim grades IP and I are not included in the computation because you do not earn those credits until they are replaced with a final grade. (However, when checking for whether you have satisfied the 2.00 UC GPA requirement for graduation [see page 25], these interim grades are included and counted as courses with grade F [or NP]).

If you repeat a course in which you have received a D or F, only the last grade recorded shall be computed in your GPA for the first 15 credits of repeated work. After the 15 credit maximum is reached, the GPA will be based on all grades assigned and total credits attempted.

Pass/No Pass Option
Students in good academic standing may request to take specific courses on a Pass/No Pass basis. Students receive a P (Pass) for work that is performed at C level or better. Work performed at a C level receives a notation of NP on the student’s transcript, and no academic credit is awarded for the course. Requests for Pass/No Pass grading must be submitted and confirmed by the Grade Option deadline printed in the Academic and Administrative Calendar (reg.ucsc.edu/calendar). If you request P/NP grading in a course and you are later placed on academic probation, your P/NP grading request will be canceled.

Incomplete
The notation I may be assigned when your work for a course is of passing quality but for which some specific required work has not been completed. You must make arrangements with the instructor before the end of the course in order to receive an Incomplete. To remove the Incomplete, you must submit the remaining course work and file a petition by the deadline printed in the Academic and Administrative Calendar (generally the end of the following quarter). If you do not meet the deadline, the Incomplete lapses to a No Pass or an F, depending on the grading option selected at the beginning of the quarter.

The notation IP (In Progress) is reserved for a single course extending over two or three terms of an academic year. The grade for such a course may be awarded at the end of the course and...
shall then be recorded as applying to each of the terms of the course. A student satisfactorily completing only one or two terms of a course extending over two or three terms of an academic year will be given grades for those terms. The grade option selected in the first quarter of the multiple-term sequence applies to all quarters of the sequence.

Grade changes (except for I and IP, as above) are allowed only to correct clerical or calculation errors by the instructor and must be submitted to the Office of the Registrar by the instructor in charge of the course within one year from the close of the quarter for which the original grade was submitted.

**Academic Standing and Minimum Progress**

Full-time undergraduate students at UCSC are expected to enroll in and pass (with a grade of A, B, C, or Pass) an average of 15 credits per quarter, completing the 180 credits necessary for graduation in four years. (This expectation is adjusted for students who are officially part-time students.) Your college will periodically check to ensure that you are making normal progress toward completion of your degree and will determine your academic standing at the end of each term. Extensions of enrollment beyond the equivalent of 12 full-time quarters require the approval of your college.

Academic progress is measured for all students, regardless of whether they have an official UCSC GPA. In checking your academic progress, the college will determine your current progress and your cumulative progress. You are expected to remain above minimum progress level on both measures.

**Current progress.** You must have passed (with a grade of C or better or Pass) at least 40 credits in your three most recent quarters of attendance at UCSC to be considered to be making satisfactory progress and be in good academic standing. Students who have passed fewer than 30 credits in their three most recent quarters of attendance are below the level of minimum progress.

**Cumulative progress.** You must earn a minimum number of credits appropriate for your total quarters of attendance at UCSC to be considered to be making satisfactory progress and be in good academic standing. For example, at the end of the sixth full-time quarter of attendance, a student must have earned at least 75 credits (with grades of Pass, C, or better) to be making satisfactory progress. Students who have passed fewer than 65 credits at the end of their sixth full-time quarter are below the level of minimum progress.

If you fall below the level of satisfactory progress on either current or cumulative progress, you are given a warning or placed on probation by your college. If you fall below the level of minimum progress, your enrollment at UCSC may be barred for a specified period or you may be disqualified indefinitely from attending UC.

**Note:** For students entering UCSC for the first time in fall 2001 or thereafter, official academic standing may be based upon the UCSC grade-point average. Those students are also expected to maintain satisfactory academic progress. For further information about academic standing and progress, see The Navigator (reg.ucsc.edu/navigator).

**Repeating Courses**

Undergraduates may repeat courses in which they earn a D, F, or No Pass. Courses in which a D or F is earned may not be repeated on a Pass/No Pass basis. Courses in which a grade of No Pass is earned may be repeated on the same basis or for a letter grade. For the first 15 credits of repeated courses, the original grade and corresponding grade points earned are excluded in calculating the GPA, and only the grade and grade points from the repetition are used. After the 15-credit maximum is reached, the GPA will be based on all grades assigned and grade points earned. However, credit is not awarded more than once for the same course. The grade assigned each time the course is taken will be permanently recorded on the official transcript. Repetition of a course more than once requires approval of the student’s college.

**Comprehensive Examination and Senior Thesis**

A senior exit requirement (e.g., a comprehensive examination, senior thesis, or equivalent body of work) is required in every major. These are evaluated Honors, Pass, or Fail. The full evaluation of a comprehensive examination or senior thesis awarded Pass or Honors becomes part of a student’s official transcript of record. (See Comprehensive Requirement, page 33.)

**Academic Integrity**

The university is dedicated to the unhindered pursuit of knowledge and its free expression. It is essential that faculty and students pursue their academic work with the utmost integrity. This means that all academic work produced by an individual is the result of the sole effort of that individual and acknowledges the contributions of others explicitly. It is the responsibility of students and faculty to be absolutely clear about what constitutes plagiarism, cheating, or other violations of academic integrity. Violations of academic integrity by students result in both academic sanctions (e.g., failing the course) and disciplinary sanctions (e.g., suspension or dismissal). Consult Appendix G of the campus’s Student Policies and Regulations Handbook (www2.ucsc.edu/judicial) for more discussion and information.

**Honors**

**Honors at UCSC**

There are a variety of opportunities for advanced work at UCSC, ranging from independent studies with a professor, to internships, departmental programs, and programs at the colleges. An extensive list of these opportunities is available online at admissions.ucsc.edu/discoverhonors/index.cfm.

**Dean’s List**

Each quarter, any undergraduate student who earns a 3.8 or higher grade-point average (GPA) and takes a minimum of 12 units of credit for a grade is named to the Dean’s List. The Dean of Undergraduate Education will notify students who qualify for the Dean’s List.

**Chancellor’s List**

Any undergraduate who meets the qualifications for the Dean’s List for all three quarters of the academic year (fall, winter, and spring) is named to the Chancellor’s List. These students receive special recognition from the Chancellor and the Dean of Undergraduate Education.

**College Honors**

The faculty of your college may confer College Honors at graduation if they determine that your academic performance is of outstanding quality throughout your undergraduate career. This notation appears on your transcript as well as on your diploma.

**Honors in the Major**

At graduation, the department sponsoring your major program may confer Honors or Highest Honors in the major. This notation appears on your transcript as well as on your diploma.

**Phi Beta Kappa**

Phi Beta Kappa—an honorary society founded in 1776—advances scholarship and recognizes excellence in the liberal arts and sciences. The United Chapters of Phi Beta Kappa authorized the establishment of a chapter at UCSC in 1985.
Transcripts

Academic records are kept at the Office of the Registrar, which will issue an official transcript only on your written request. It normally takes 10 working days to process a transcript. Transcripts without evaluations are available about two weeks following the end of the quarter. Transcripts that include evaluations for the most recent quarter are not issued until about six weeks after the quarter ends.

Transcripts for courses taken in the summer are available approximately two weeks following the end of each session. Official transcripts, which may include evaluations, are available at the beginning of October.

For information on ordering transcripts, please refer to the following URL: reg.ucsc.edu.

If you have outstanding financial obligations to the university, a hold may be placed on your transcript. The Office of the Registrar does not provide unofficial copies of transcripts.

Transcripts for UCSC Extension courses should be requested from UCSC Extension Records, 1101 Pacific Avenue, Suite 200, Santa Cruz, CA 95060-4536 (831) 427-6600.

Privacy of Records

UCSC students are informed annually of the federal Family Educational Rights and Privacy Act and its provisions. This act, which the institution follows, was designed to protect the privacy of education records and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Educational Rights and Privacy Act Office concerning alleged failures by the institution to comply with the act.

UCSC policy explains in detail the procedures to be used by the institution for compliance with the provisions of the act. Copies of the policy can be found in the Offices of the Registrar and of the Vice Chancellor for Student Affairs. The policy is available in The Navigator, the student handbook. The full text of the University of California policies applying to the Disclosure of Information from Student Records is available online: reg.ucsc.edu/faculty/guidelines.html.

Questions concerning the Family Educational Rights and Privacy Act may be referred to the Office of the Registrar, 190 Hahn Student Services Building.

Advising: From Course Selection to Careers

Translating your goals and interests into a coherent academic program requires careful planning. Advising can help you make decisions at the university—selecting courses, choosing a major, deciding on a career, or determining prerequisites for graduate school. UC Santa Cruz offers many forms of academic and career advising tailored to various student needs. In addition, the student handbook called The Navigator and the quarterly Schedule of Classes—both online at reg.ucsc.edu—answer most procedural and administrative questions.

Attending summer orientation is one of the most important steps a new student takes in preparing for the transition to university life. Summer orientation provides the academic advising you need to make informed decisions about classes and majors, and the opportunity to ask important questions regarding financial aid and housing.

In addition to facilitating initial advisement, orientation is designed to provide you with a comprehensive introduction to all aspects of UCSC. While at orientation, you will be introduced to continuing students, faculty, and staff who will collectively assist in your academic as well as personal success at the university.

Summer orientation occurs six times over the course of the summer. Separate programs for first-year and transfer students help to better meet the needs of each group. Families play an important role in the academic and personal success of students; UCSC has designed corresponding programs for parents and family members to better support their student’s transition to the university.

Reservation brochures are mailed to new students as soon as they submit their Statement of Intent to Register at UCSC. These brochures provide details on the summer program and allow students to make a reservation. New students who have advising questions over the summer but are unable to attend summer orientation should contact their college office.

Fall Welcome Week, occurring during the first week of fall quarter, is the next step in your orientation and advising process. It provides you with an opportunity to settle into life at UCSC, take advantage of important services, and continue your academic advising.

Questions can be directed to the Office of Campus Orientation Programs at (831) 459-5468, or via e-mail to orientation@ucsc.edu. Web: admissions.ucsc.edu/orientation.

Important information on particular majors may be viewed on individual departmental web sites. The sites will give you contact information and office hours. Advisers provide detailed information regarding requirements for the major and assist you in planning a program of study. The department adviser can also assign you to an appropriate faculty adviser who may serve as a mentor in your field, recommending courses and helping you refine your educational goals.

It is also important to seek departmental advising for assistance in planning your overall academic program. For transfer students and for students in many majors (such as those in the physical and biological sciences, arts, environmental studies, and others) it is necessary to obtain departmental advising prior to or at the start of the first quarter on campus.

For more general academic questions, make an appointment with a college adviser. Each college has specialized staff members, called academic preceptors, who advise students on everything from general education requirements to choosing a major. Copies of your academic records are housed at your college, so your academic preceptor is in a good position to look at your program as a whole and ensure that you fulfill college, campus, and university requirements.

For help in assessing career interests and exploring and choosing career options, contact the Career Center. The staff will also assist with resume preparation, interviewing skills, apply-
If you plan to go on to graduate school, consult with faculty in your major. Faculty advisers are the best people to ask about the quality of graduate programs in your field of interest. In addition, the Career Center offers advising and workshops on applying to graduate school. A letter-of-reference service enables you to maintain your recommendation letters at the Career Center.

If you intend to pursue graduate study in a field not offered as a major at Santa Cruz, you can prepare for your intended program through one of the campus’s regular majors. You must plan your studies carefully, however, and advising will be especially important. The Career Center library has information that will help you prepare for graduate and professional programs. The following are some fields in which UCSC alumni have pursued graduate study and successful careers:

- Architecture
- Business
- Conservation
- Film
- Finance
- Guidance and counseling
- High-tech industry
- Human resources
- Industrial and labor relations
- International relations
- Law
- Marketing
- Museum administration
- Public administration
- Urban planning

If you plan to pursue a career in medicine or another health-related field (including dentistry, nursing, nutrition, occupational therapy, optometry, osteopathic medicine, pharmacology, physical therapy, public health, and veterinary medicine), contact the Division of Physical and Biological Sciences’ Health Science Career Advising Office at (831) 459-2954. Ethnic minority students may also be eligible for the MARC/MBRS Programs, described below.

If you are interested in the field of law, the prelaw adviser for UCSC is at the Career Center, (831) 459-2957.

A number of programs provide additional academic advising and comprehensive support services to students with specific needs. Educational Opportunity Programs (EOP), Services for Transfer and Re-Entry Students (STARS), the Disability Resource Center, and International Programs are described below. If you need assistance in another area, check to see if it is listed in the Index, pages 425–431. For additional information, check with your college office or consult The Navigator or Schedule of Classes (reg.ucsc.edu).

Counseling on personal and family issues is available through Counseling and Psychological Services, described on page 97.

Career Center

UC Santa Cruz graduates find success in many different career fields, and their superior education is the foundation for this success. The staff at the Career Center will help you link your educational experience to the world of work. The center provides a variety of employment and career-development services to help students obtain rewarding and successful careers.

Students are encouraged to visit the Career Center early during their first year on campus. The first step is to meet with a career adviser to begin developing a focused career plan. Simply sign in at the reception desk for a drop-in advising appointment. Your career adviser will show you how to research and discover the many opportunities that are available to UC Santa Cruz students and graduates. Workshops offered by the Career Center include Selecting an Internship, Resume and Cover Letter Writing, Job-Searching Techniques, and Job-Interviewing Techniques, the Graduate and Professional School Information Workshop, Work Opportunities Abroad, Applying to Law School, and special workshops on specific majors or career fields.

Your college experience is likely to include a part-time job or internship in your area of interest. The Career Center has hundreds of opportunities available. Off-campus and on-campus employment opportunities (both work-study and non-work-study) are posted on the Career Center’s web site. For your convenience, you may apply for on-campus jobs online.

An internship is one of the best ways to gain practical work experience in your area of interest. The Career Center has a database with over 1,000 internship opportunities in a wide variety of career fields. The center’s resource library contains some of the best internship directories available, listing local, national, and international opportunities. While visiting the center, be sure to check out the Professions Training Program (PTP) and the Chancellor’s Undergraduate Internship Program (CUIP).

These two unique internship programs are designed to give participants a professionally enriching work experience in the private sector (PTP) or directly on campus (CUIP) in one of the university’s colleges, administrative units, or academic departments.

Another interesting and challenging position is the UC Student Regent, with an annual recruitment process. For information, e-mail cynde@ucsc.edu or visit the web: www2.ucsc.edu/careers/jobs/regent/html.

The Career Center’s resource library contains material organized in the following manner: Career Exploration, Graduate and Professional Schools, Job Search, Career Fields, Internships, and Employer Information. A computer lab links you to the top career-development sites on the web. However, the most exciting part of the computer lab is the Career Advice Network database. The Career Advice Network (CAN) contains career profiles of over 700 UCSC alumni. The members of the network have volunteered to answer questions and give career advice pertaining to their particular career field. You may contact CAN members to obtain information on educational preparation, job responsibilities, resume preparation, and tips on how to conduct your job search.

UC Santa Cruz students and alumni looking for full-time career opportunities need look no further than MonsterTRAK and NACElink—online sites that list job openings targeted to UCSC graduates. You may connect to MonsterTRAK and NACElink by visiting the Career Center web site. Another way to obtain a career position is to participate in the On-Campus Interview Program. Corporate recruiters visit campus every fall, winter, and spring to interview and hire students. Visit the Career Center web site for a list of participating companies.

The Career Center sponsors several major events every academic year. The Graduate and Professional School Fair brings hundreds of graduate and professional school representatives from the nation’s top universities to campus to share information about their advanced-degree programs. Job fairs, which bring hiring companies to campus, take place several times a year. Students looking for a job or internship will want to come prepared with a great resume. Other events include the Student Employment Recognition Awards Program Ceremony, where outstanding student employees are recognized and rewarded for their hard work and dedication, and the Multicultural Career Conference, which brings
students and alumni together for a day to develop
mentor relationships and explore career options.

The Career Center—located at the Bay Tree
Building, Room 305, in Quarry Plaza—can be
reached at (831) 459-4420. Office hours are 9
A.M. to noon and 1 to 4 P.M. Visit the center’s
web site at www2.ucsc.edu/careers.

Educational Opportunity Programs
(EOP)
The Educational Opportunity Programs (EOP)
provide a variety of academic and personal sup-
port programs designed to promote the reten-
tion, academic success, and graduation of
California residents who are first-generation
college students from low-income and educa-
tionally disadvantaged backgrounds. EOP pro-
grams and services are designed to ensure that
students successfully complete their under-
graduate education and acquire the skills that will
prepare them for future careers and graduate or
professional school opportunities.

Academic Support Programs
EOP academic support programs work to
enhance student academic achievement and
advancement. These support services include
the EOP Bridge Program for a select group of
entering first-year students, orientation activi-
ties for new students, academic advising and
personal counseling, time management and
study-skills development, peer advising, and
community-building activities. EOP also spon-
sors programs designed to promote graduate
and professional school interests and prepara-
tion.

Learning Support Services
The Learning Center—located on the second
floor of the Academic Resource Center with
satellite centers at Oakes, Crown, and Morrell
Colleges—provides a number of learning sup-
port programs for students. Through the
Modified Supplemental Instruction program,
peer-guided learning groups are attached to
courses that have historically proven to be chal-
lenging for students. All students enrolled in
these courses are encouraged to participate in
the interactive learning groups. Individual and
small-group tutoring in all subjects is available
and accessible through an online sign-up sys-
tem. Two-credit courses in academic reading,
research, and writing—as well as writing men-
tors—are offered for incoming transfer stu-
dents. Three-credit courses providing language
development and writing support are available
for bilingual students. The Learning Center can
also help students organize course-related peer-
study groups. Academic skill-building work-
shops are sponsored by the Coalition for
Student Academic Success (CSAS) each quarter
on topics such as note taking, time and stress
management, exam preparation, academic read-
ing, and research paper and thesis writing.

Inquiries to the Learning Center can be
made Monday–Friday, 9 A.M. to 6 P.M. at (831)
459-4333.

For more information about the Educational
Opportunity Programs, drop by the Academic
Resource Center, call (831) 459-2296, or visit
the web site: www2.ucsc.edu/eop.

MARC/MBRS Programs
The Division of Physical and Biological
Sciences sponsors two National Institutes of
Health grant programs: the Minority Access to
Research Careers (MARC) Program and the
Minority Biomedical Research Support
(MBRS) Program. Though separately funded,
the projects share a similar mandate: to increase
the number of well-prepared ethnic-minority
students who are admitted to graduate or pro-
fessional schools in biomedical sciences. The
program seeks students from groups that have
traditionally been denied equal access to educa-
tional opportunities in the science professions.

Continuing students who have successfully
completed specific introductory courses in biol-
ogy, chemistry, and mathematics are invited to
apply for the MARC/MBRS Programs, which
begin in the summer and introduce students to
program faculty, their research, and research
techniques. After students successfully complete
the summer program, they have the opportuni-
ty to work in a faculty lab for the following aca-
demic year. Financial compensation is available
for laboratory placements and participation in
the summer program.

The MARC/MBRS Office also works with
other campus offices to help make the most of
campus resources and provide practical assistance
with the graduate and professional school admis-
sion process. In addition, the staff maintains an
information file on summer enrichment pro-
grams, which can provide you with vital research
or clinical experience or help you prepare for the
Graduate Record Examination.

The program’s well-equipped student office
provides additional academic support and a
convenient place for students to meet. The staff
courages students to make use of this study
space and assists them in learning to use the
office’s personal computers.

For further information, contact the
MARC/MBRS Office, 377 Thimann
Laboratories, (831) 459-4770, or e-mail
jmartinez@biology.ucsc.edu. Web: marcmbrs.
ucsc.edu.

Academic Excellence Program (ACE)
ACE is supported by the Division of Physical
and Biological Sciences and has as its goal to
increase diversity among students receiving
bachelor’s degrees in mathematics and science,
by offering discussion sections for selected
mathematics and science courses.

The program received the 1999 Presidential
Award for Excellence in Science, Mathematics,
and Engineering Mentoring. This award,
presented by the White House and administered
by the National Science Foundation, is given to
individuals or programs that have demonstrated
outstanding and sustained mentoring efforts for
students underrepresented in science, mathe-
matics, and engineering.

Helping students excel in gateway mathe-
matics and science courses is ACE’s focus. The
ACE sections provide a structured, workshop
setting where students learn by teaching each
other. This collaborative method reinforces cri-
tical thinking and problem-solving skills.
Enrollment in ACE is limited. A professional
section leader with an academic background in
the subject facilitates these workshops. In addi-
tion, an undergraduate coleader who has
excelled in the course assists the section leader.
This brings the student to teacher ratio to 10:1.
Students also meet with a peer mentor, who
helps them strengthen their study techniques.
Other opportunities available through ACE
include office hours, study groups, and career
counseling.

Applications are accepted quarterly for the
upcoming term. For more information, visit the
web site: ace.ucsc.edu.

Services for Transfer and
Re-Entry Students (STARS)
Services for Transfer and Re-Entry Students
(STARS) offers a broad range of personal and
academic support services for all transfer and
re-entry students (undergraduates 25 years and
older, graduate students 29 years and older), stu-
dents who are parents regardless of age, and mili-
tary veterans. These services include admissions
information; orientations for new students; aca-
demic seminars and study-skills workshops; tuto-
rial services; informal academic advising; drop-in
assistance; social, recreational, and cultural pro-
grams; scholarships; and a newsletter. Full ser-
ces are available at the Center located at the
Bay Tree Building, Room 305, in Quarry Plaza.
For more information, contact STARS at
(831) 459-2296, or visit the web site:
www2.ucsc.edu/eop.

For further information, contact the
MARC/MBRS Office, 377 Thimann
Laboratories, (831) 459-4770, or e-mail
jmartinez@biology.ucsc.edu. Web: marcmbrs.
ucsc.edu.
Disability Resource Center

The campus accommodates students with documented disabilities and welcomes their attendance at UCSC. The Disability Resource Center (DRC) provides the following to help meet the needs of students with disabilities: counseling and advising; mobility services; parking accommodations; assistance with registration and enrollment; testing accommodations; print accommodations; adaptive equipment loans; notetaker and interpreter services; and liaison and referrals to appropriate resources, services, and agencies.

The Disability Resource Center is located at 146 Hahn Student Services Building and can be reached by telephone at (831) 459-2089 (voice) or (831) 459-4806 (TTY), or by e-mail at drc@ucsc.edu. Web: uatas.ucsc.edu/drc.

Campus access for people with mobility impairments. Transportation and Parking Services, in coordination with the DRC and Cowell Student Health Center, provides accessibility maps, vans equipped with wheelchair lifts that can transport students to any point on campus, and authorization to use parking spaces for the disabled, which are adjacent to all campus buildings. Most buildings on campus have wheelchair-accessible ramps, modified rest rooms, and other facilities. If necessary, classes are rescheduled to meet accessibility needs.

Questions and concerns

• about program accessibility should be addressed to the director of the Disability Resource Center, at (831) 459-2089 (voice); (831) 459-4806 (TTY)
• about transportation, physical, or computing access to the campus should be directed to (831) 459-3759 (voice/TTY)
• about accommodating job applicants or current employees with disabilities should be directed to (831) 459-2349 (voice)

ROTC and Military Affairs

Reserve Officer Training Corps (ROTC) is not available on the UC Santa Cruz campus. However, interested UCSC students have the option of attending programs at Santa Clara University and UC Berkeley.

To find out about the Army ROTC program, contact the Department of Military Science, Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053-6041 or (408) 554-6831, e-mail jakobek@scu.edu, or visit rotc.scu.edu.

For information on the Air Force ROTC program, contact the Department of Aerospace Studies, 176 Hearst Gymnasium, University of California, Berkeley, CA 94720, (510) 642-3572, e-mail airforce@uclink.berkeley.edu, or visit the web: airforcesrotc.berkeley.edu.

Students may call or inquire about program prerequisites, scholarship availability, and class schedules at the Department of Aerospace Studies.

UC Berkeley offers a variety of courses in military affairs, including courses offered by the Departments of Naval Science, Military Science, and Aerospace Studies, subject to departmental approval. (See UC Berkeley General Catalog, Military Officers' Education Program, www.berkeley.edu/catalog/curricula.html). These courses are offered to cadets and noncadets.

Arrangements for all ROTC programs are made on an individual basis with the appropriate sponsoring campus.

Office of International Education (OIE)

The Office of International Education (OIE) oversees coordination of the UCSC Education Abroad Program (EAP), International Scholar and Student Services (ISSS), Fulbright Grants for Graduate Study and Research Abroad, and other activities in support of international educational exchange.

For further information, contact the Office of International Education, 107 Classroom Unit Building, (831) 459-2858, EAP: eap.ucop.edu, ISSS: iss@ucsc.edu. Web: oie.ucsc.edu.

Education Abroad Program (EAP)

The Education Abroad Program (EAP) offers undergraduate and graduate students the opportunity to study at more than 140 host universities and colleges in 34 countries as part of their regular UC academic program. The program serves students at all UC campuses and is administered by the University Office of the Education Abroad Program in Santa Barbara: eap.ucop.edu.

UCSC endeavors to bring this program within the reach of all students. Extension of studies up to 15 quarters is possible when related to the educational benefits of participating in EAP. Students receiving financial aid can apply their award to a program abroad.
International Scholars and Students

The International Scholar and Student Services (ISSS) staff advise foreign students, scholars, and staff on a variety of issues ranging from visa questions and employment to adjustment to life in Santa Cruz and study at UCSC. The program sponsors orientations and serves as a resource for campus international activities. ISSS also serves as UCSC’s liaison with the Department of Homeland Security concerning visa matters. New international students and scholars should come to the office soon after arrival.

Fulbright Grants for Graduate Study and Research Abroad

For UCSC students, OIE facilitates the annual awards competition for postdoctoral study and research administered by the Institute of International Education: www.iie.org/fulbright.

Field and Exchange Programs

UCDC Program at the UC Washington Center

The UCDC Program at the UC Washington Center in Washington, D.C., supervises and supports students who pursue internships and academic study in the nation’s capital. The program is open through a competitive application process to students in all majors who will have upper-division status by the quarter in which they participate. (Physical and biological sciences and engineering majors are eligible to participate in their sophomore year with department approval.) Students enroll for fall, winter, or spring quarter, earn 12–15 course credits, and continue to be registered as full-time students. (In addition, see Residence, page 26.) Courses are taught by faculty from the Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, Santa Barbara, and Santa Cruz UC programs in Washington and by visiting faculty from the Washington area. Applicant selection is based on academic record, a written statement, letters of recommendation, and in some cases a personal interview.

Financial-aid eligibility is maintained, and students who are eligible for financial aid may qualify for a President’s Washington Scholarship to help cover supplemental costs.

Students live in the UC Washington Center with students from all the participating UC campuses. This provides a social and intellectual community throughout the quarter.

Interested students with strong academic records are encouraged to apply. For further information, contact the UCDC coordinator, 5 Merrill College, (831) 459-2855.

The UCDC Program also offers a unique opportunity for UCSC faculty members and graduate students to teach and pursue research in the Washington, D.C., area. Faculty members and graduate students in residence advise students regarding their internships and course work. Along with faculty from the other UC programs, UCSC faculty offer upper-division courses in diverse academic fields. To inquire about participation in UCDC, contact the director, (831) 459-2134. Information is available through the web: zzyx.ucsc.edu/Pol/ucdc.

University of California Center in Sacramento

Students must be in good standing with UCSC and must have a GPA of 3.0 or above. Junior standing is required before entering the program. Scholar interns participating in the UCSC program will enroll in 12 to 16 credits comprising an internship plus the Sacramento Seminar course and an optional elective course. All courses are taught at the UC Sacramento Center just one block from the Capitol.

For information on the program, please contact the UC Santa Cruz Career Center Internship Program, 305 Bay Tree Blvd., Santa Cruz, CA 95064, (831) 459-2184 (voice); (831) 459-3860 (fax); e-mail intern@ucsc.edu.

Intercampus Visitor Program

UCSC students may take advantage of educational opportunities at other campuses of the University of California through the Intercampus Visitor Program. This program enables you to take courses not available at Santa Cruz, to participate in special programs, or to study with distinguished faculty at other campuses.

To qualify for participation in this program, you must be in good standing after completing at least three quarters in residence at Santa Cruz. Each host campus establishes its own criteria for accepting students from other campuses as visitors. You must also have the approval of your college. Consult with your department about how courses taken at the host campus may apply to your major requirements.

Applications are available at the Office of the Registrar. The application form contains a great deal of useful information about the program and how and when to file; please read it carefully. A nonrefundable application fee of $40 is due when the application is filed. For further information, contact the special programs assistant in the Office of the Registrar, 190 Hahn Student Services Building, (831) 459-3459, or by e-mail at registrar@ucsc.edu.

Domestic Exchange Programs

UCSC has exchange programs with the University of New Hampshire (UNH) and the University of New Mexico (UNM). UNH is located near the New Hampshire seacoast in the picturesque colonial town of Durham, a little more than an hour from Boston, Massachusetts. UNM is located in Albuquerque, a city of approximately half a million population, situated on the banks of the Rio Grande. Both schools give students the opportunity for an educational experience in an entirely different environment.

While enrolled in the exchange program, students maintain their status at UCSC, and they are expected to return to complete their studies following enrollment at UNH or UNM. Both universities are on the semester system, so students usually participate in the exchange program for the entire academic year. But the option exists for students to participate during fall quarter only, or during winter and spring quarters.

Participants are selected from among students who are in good academic standing. Selection for 2005–06 will take place during winter quarter 2005. Selection for 2006–07 will take place during winter quarter 2006. Each department of study determines the applicability of UNH and UNM courses toward requirements for the major. Letter grades earned while at UNH and UNM will not be calculated into the UCSC GPA or the UC GPA. Further information is available from the exchange program coordinator in the Office of the Registrar, (831) 459-4412. Web: reg.ucsc.edu/students/exchange.html.

Field Programs

Many UCSC students complement their major programs with field experience or off-campus internships, which also provide opportunities for students to become involved in public service activities in the local community and throughout the world. Most of the field programs described below are open to students in a range of majors, although some are restricted to students pursuing a designated area of study. Students in all majors may apply for internships sponsored by the Career Center (see page 38).

In addition to the off-campus placements provided by the programs described below, inde-
dependent field study is available through some colleges and departments. Public service activities can be arranged through field programs.

Community Studies Field-Study Program
Community studies is an interdisciplinary undergraduate major that examines social change in the context of community. Each student in the program designs his or her curriculum around a six-month field study or internship with a community organization or agency.

The core curriculum for the major includes courses in field-study preparation as well as theory and analysis. Students complete the major by preparing a senior project integrating field study, classroom work, and research. The major has no lower-division prerequisites and usually takes about two years to complete.

With the guidance of a faculty adviser, community studies students choose field placements related to one of the areas of the department’s focus. (See the listings of Theory and Practice Seminars, Community Studies 100A–Z, for descriptions of these areas of focus.) In recent years, students have worked as far away as Mexico, Central America, New York, London, Paris, and Nairobi, though the majority of field studies have been in California. Students have been placed at health centers, radio and television stations, newspapers, city planning departments, political parties, neighborhood organizations, civil rights groups, battered women’s shelters, legal clinics, child care centers, programs for seniors, tenants’ unions, government agencies, the offices of elected officials, trade unions, and other organizations working for social change in communities.

The practical experience gained from the six-month field study provides graduates with many choices. About half go on to graduate work in urban studies, public administration, social work, planning, law, policy studies, medicine, or academic disciplines like sociology, anthropology, and politics. Others enter the work world directly, in many cases continuing with agencies such as those in which they did their field study. Community studies graduates are also doctors, community organizers, program directors, public officials, lawyers, university teachers, therapists, nurses, librarians, social workers, news directors, forest management consultants, reporters, day care teachers, union officials, and labor organizers.

One-quarter, 2- to 10-credit field studies are also available to all UCSC students through community studies. For more detailed information, see page 156, or contact the Community Studies Department Office, 207 College Eight, (831) 459-2371, or the community studies field-study coordinator, 203 College Eight, (831) 459-4601. E-mail: openup@ucsc.edu. Web: communitystudies.ucsc.edu.

Economics Field-Study Program
The Economics Department offers its majors the opportunity to integrate their academic knowledge with career-related work. The field-study program places students in internships under the supervision of a faculty sponsor and a professional in the workplace. Students can select from a wide variety of field placements such as accounting firms, community nonprofits, government agencies, brokerage firms, marketing agencies, banks, and businesses in Santa Cruz and beyond. Students apply and prepare for field study a quarter in advance. Acceptance into the field-study program is determined by academic standing, class level, and successful completion of Economics 100A, 100B, and 113 (see pages 179–180). Students may earn a maximum of 10 credits and complete up to two quarters in a field placement.

Along with the training and supervision by a professional in the workplace, students receive guidance from a faculty sponsor who directs their academic project. It is completion of this project and the job supervisor’s evaluation of performance that earn the student credit.

Economics Field Study (course 193 or 198, see page 182) does not satisfy an upper-division requirement for the major and is available on a passing/not passing (P/NP) basis only.

Interested students should make an appointment or stop by the Economics Field-Study Office: 217A Social Sciences 1; call (831) 459-2028; or e-mail econintern@ucsc.edu. Web: econ.ucsc.edu/.

Environmental Studies Field and Internship Program
Open to all UCSC students, the Environmental Studies Field and Internship Program is an integral academic component of the environmental studies major, and it augments the research and professional development of undergraduate and graduate students (see page 228). Interns are placed, individually and in groups, in off-campus agencies, where their work results in publications and resource documents and in many cases serves as the primary basis for policy formation. Placements have included research with small businesses and farms, state agencies, nongovernmental organizations, and planning departments; assignments as natural history interpretive guides for state and national parks; and apprentice positions with consultants, agroecologists, resource specialists, and teachers.

Part- and full-time placements are available, and students may receive 2 to 15 course credits for their work. Each student’s placement is supervised by a faculty adviser, a field sponsor, and the internship coordinator. Students spend 12 to 15 hours each week on their assignments for every 5 credits they receive.

Internships and fieldwork are designed to complement a student’s course work and are available for both lower- and upper-division credit. Qualified environmental studies majors may undertake a senior internship to fulfill the department’s comprehensive requirement. Students are also encouraged to use their placements as a basis for senior thesis research, and occasionally internships are given, but must have returned from their work to make lectures in classes or present seminars. In addition, internships provide a fieldwork component for some environmental studies courses.

Further information is available from the Environmental Studies Field and Internship Program Office, 491 Interdisciplinary Sciences Building, (831) 459-2104, e-mail: eisintern@ucsc.edu. Web: eis.ucsc.edu/internship/.

Global Information Internship Program
The Global Information Internship Program (GIIP) is an instructional program at UCSC sponsored by the Center for Global, International, and Regional Studies (CGIRS, see page 60). Guided by administrative and technical support from staff and faculty, GIIP is organized as a student-managed service-learning program that transfers the benefits of information technology to the world’s excluded majority. The program places highly motivated interns—trained in social science and information technology—with nongovernmental organizations and civic groups in the U.S. and abroad. GIIP’s mission is twofold: to upgrade the informational capacity of excluded communities while nurturing a new generation of information-savvy student leaders committed to advancing the public good.

GIIP interns acquire their skills by enrolling in 140 hours of instruction in Sociology 30A-B-C (see page 363) over a nine-month period. Sixty hours of technical training is computer-based instruction. The other 80 hours are devoted to working on projects involving one of GIIP’s six themes: Global Justice, Women’s Empowerment, Sustainable Environments, Human Rights, Peace and Conflict Resolution, and Education and Social Enterprise.

For more information, visit: www2.ucsc.edu/giip or call (831) 459-1572.
Health Sciences Internship Program
The B.S. in health science is designed to meet the needs of UCSC students who are interested in pursuing careers in medicine or biomedical research. It is based on the existing B.S. degree in molecular, cell, and developmental (MCD) biology, with identical course requirements in chemistry, physics, and math. But unlike the MCD biology major, student course work is directly relevant to human health.

The health sciences major (see page 135) includes volunteer community health care service as an internship requirement. Students are required to report on their internship experiences. The health sciences internship coordinator maintains an office where students may go to find information concerning the availability of internships within the local medical community and assists students in the selection of appropriate activities. Records of past internships are also available at the internship office.

The health sciences major also requires proficiency in Spanish, a language that is commonly used in medical settings in California. The Humanities Division offers an educational plan that will allow students to achieve Spanish proficiency in a medical setting in five quarters. This course of study entails four quarters of Spanish grammar and conversation (students enroll in the regular Spanish 1–4 series), followed by one quarter of medical Spanish (Spanish 5M; see page 369). This new course covers medical terminology and issues of cultural sensitivity.

More information about the health sciences major and internship program is available at the Biological Sciences Undergraduate Advising Office, 103A Thimann Laboratories, (831) 459-4143, or e-mail bioadvise@biology.ucsc.edu, or from the health sciences internship coordinator, 323 Sinheimer, (831) 459-5647, or e-mail borrego@ucsc.edu. Web: www.biology.ucsc.edu/fieldstudy, or phone (831) 459-4430 (borrego@ucsc.edu) or 459-5897 (jafcox@ucsc.edu).

Psychology Field-Study Program
The Psychology Field-Study Program provides qualified students an opportunity to integrate what they have learned in the classroom with direct service to a community agency. Each year, more than 200 students develop new skills and clarify personal and professional goals by working as interns in schools, criminal justice programs, and mental health and other social service agencies, where they are supervised by a professional within that organization. Psychology faculty members sponsor field-study students, helping them to synthesize their intern experience with psychology course work and guiding them through an academic project.

Junior and senior psychology majors in good academic standing are eligible to apply for this competitive program (see page 351). Applications can be obtained from the field-study office, 273 Social Sciences 2 Building, and are due one quarter in advance. There is a minimum commitment of two quarters. Information can be viewed on the web at psych.ucsc.edu/fieldstudy, or phone (831) 459-4410.

Education Field Programs
The M.A. in education program provides students with the necessary credential preparation for K–12 teaching in the California public schools. Crosscultural (CLAD) and Bilingual Crosscultural (BCLAD) emphases are included for the preparation of elementary and secondary math, science, English, and social science teachers.

Students pursuing an M.A. in education (which includes the CLAD/BCLAD teaching credential) must complete an extensive student-teaching course sequence. Student-teaching placements are restricted to enrolled students. The student-teaching sequence consists of five courses: Education 203, 283, and 284A-B-C. The first and second quarters of the sequence involve part-time placements in public schools in Santa Cruz County. The third quarter of student teaching is a full-time experience in which students gradually take over full responsibility for the daily instructional program of the classroom in which they are placed. Substantial field-work is also incorporated in other courses that are required for the teaching credential.

The minor in education is an undergraduate program in which students explore the history of educational thought and philosophy, the politics and economics of education, learning theory and pedagogy, and issues of cultural and linguistic diversity. As a part of the six-course minor sequence, students engage in field study in schools through Education 80, Introduction to Teaching.

For more information, see Education, page 184, or contact the Education Department, 212 Crown College, (831) 459-2589 (reception). E-mail address: education@ucsc.edu; web: education.ucsc.edu.

M.S. in Computer Engineering (Network Engineering)
The Department of Computer Engineering offers a distance-learning version of its M.S. in computer engineering, with a concentration in network engineering, in collaboration with UCSC Extension. Required and elective courses are presented in Silicon Valley using real-time video technology and, at times, faculty in person. This part-time M.S. degree program can be completed in three years. For further information, contact msc@ece.ucsc.edu.

Summer Programs
Summer Sessions at UC Santa Cruz are offered from mid-June through the end of August. Registration fees are the same for California residents and nonresidents. Please contact the Summer Session Office, UC Santa Cruz, 1156 High Street, Santa Cruz, CA 95064, for further information about Summer Session programs listed below. To request a Summer Session catalog, telephone (831) 459-2524 or fax (831) 459-3070. For additional information, telephone (831) 459-2524 or e-mail summers@ucsc.edu. Visit our home page: summer.ucsc.edu.

Summer Session Courses
Undergraduate credit courses are offered in the arts, engineering, humanities, physical and biological sciences, and social sciences during two
five-week Summer Sessions. The sessions run from mid-June through July, and late July through late August. Students may enroll in several classes, with a recommended maximum of 10 credits per session.

**Spanish Language Intensive Program**

Through the Spanish Language Intensive Program, students can complete the equivalent of a three-quarter sequence of Spanish, offered in eight weeks. Teaching staff are experts with native-speaker proficiency who provide intensive classroom instruction Monday through Friday.

Fifteen quarter credits are awarded to students who successfully complete the three-course language sequence during the program. The courses can be applied toward the second-language requirement of the language studies major (see page 275). Please see the Summer Session catalog for a list of other nonintensive languages offered.

**Shakespeare Santa Cruz Internship**

Shakespeare Santa Cruz (SSC), a professional theater company in residence at the Theater Arts Center at UCSC, offers internships in acting, design, directing, dramaturgy, stage management, and production. Interns attend classes and work closely with artistic, technical, and stage management staff in support of the summer festival productions, backstage in rehearsal and in performance. Acting interns are part of the ensemble and/or understudies in the productions. The 5-credit classes, which are part of the SSC Internship Program and offered through UCSC Summer Session, include acting, directing, voice, and stage management. These classes are taught by SSC company members. Interns thus have a direct link with top theater professionals, exposure to the latest skills and techniques, professional theater experience to list on their resume, and an inside advantage for marketing new skills. For more information on internships, contact SSC’s company manager at (831) 459-5810 or visit the web: shakespeare santacruz.org.

**UCSC Extension**

University of California Extension is the statewide, year-round continuing education service linking the university with the people, businesses, and communities of the state.

Extension programs vary in length and format from one-day seminars to short lecture series to 10-week courses. Certificate programs, such as new cutting-edge programs in bioinformatics and biotechnology, generally take nine months to two years to complete. The programs provide opportunities to pursue the following:

- Education for professional or career advancement
- Intellectual and cultural interests
- Updates of professional and technical skills
- Personal growth

Most extension programs are open to any adult who can benefit from university-level study. The instructors are professionals working in the fields that match the subject areas they teach, faculty from UC and other educational institutions, as well as other authorities. Credit and noncredit programs are offered in Santa Clara, Santa Cruz, Monterey, and San Benito Counties; most courses are held at UCSC Extension’s facilities in Silicon Valley.

University Extension also offers professional continuing education through its Corporate Training Division, which provides technical and management courses on-site at area businesses, and through English Language and International Programs, which offers English language, American culture, and global business courses for students from around the world.

Enrollment for degree credit in extension courses numbered 1–199 is permitted for regularly enrolled UCSC students. Upon submission of the extension transcript to the Office of Admissions, the course credit may be applied toward a bachelor’s degree at UCSC. Extension courses numbered other than 1–199 are not applicable to a UCSC degree.

Inquiries about current course offerings should be addressed to UCSC Extension, University Town Center, 1101 Pacific Avenue, Suite 200, Santa Cruz, CA 95060-4536, (831) 427-6600. To be placed on the mailing list for a catalog, call (831) 459-8639. Course offerings are also listed at UCSC Extension’s website, ucsc-extension.edu.

**Concurrent Enrollment**

Concurrent Enrollment through Extension is a cooperative arrangement between UC Santa Cruz and UCSC Extension that enables members of the public to enroll in one or two regular UCSC undergraduate or graduate courses per quarter for credit. The program is administered by UCSC Extension, and course credit granted appears on a UCSC Extension transcript. Participants must meet certain criteria outlined in the Concurrent Enrollment application. An application fee is charged for each quarter of enrollment in addition to course fees. A first-time application filed at least one week prior to the first day of instruction for the quarter has a $50 fee; subsequent applications filed at least one week prior to the first day of instruction for the quarter have an $10 fee. Applications filed later than one week prior to the first day of instruction for the quarter have a $50 fee.

Concurrent Enrollment through Extension may be used as a path toward a part-time or full-time degree program or as a way of studying subjects of personal or occupational interest. Credit earned through this program may be used toward degree requirements, when applicable, if participants subsequently seek admission to the university and are accepted.

Seniors 62 and older pay reduced fees and do not pay the application fee.

Financial aid is not available to participants in the Concurrent Enrollment program.

For further information and to obtain the application packet, contact UCSC Extension, 1101 Pacific Avenue, Suite 200, Santa Cruz, CA 95060-4536, (831) 427-6600.

**Intersegmental Cross-Enrollment**

This program permits a student who is currently enrolled in a California community college or a California State University campus and who meets certain eligibility criteria to enroll in one undergraduate course at UCSC each term, on a space-available basis. A student is qualified to participate in this program if he or she meets the following requirements:

- has completed at least one term at the home campus as a matriculated student and is enrolled in at least 6 credits at the home campus during the term in which he or she wishes to enroll;
- has a grade-point average of 2.00 for work completed;
- has paid tuition fees or required by the home campus for the academic term in which he or she seeks to cross-enroll;
- has appropriate academic preparation as determined by the host campus, consistent with the standard applied to currently enrolled students;
- is a California resident for tuition purposes at the home campus; and
- has not been previously admitted to and registered at UCSC.

Interested students may obtain additional information and an application from the registrar at their home campus.
Graduate Studies

Graduate Education at UCSC 47
Degrees and Programs 47
Program Descriptions 47
Administration 47
Evaluation of Performance 47
Graduate Opportunity Program 47
Diversity-Enhancement Programs 47
Intercampus Exchange Program 48

Student Life 48
College Affiliation 48
Graduate Student Association 48
Housing 48

Application and Admission 48
Application Deadlines 48
Admission Requirements 49
Application Processing 50

Fees and Expenses 51
Financial Support 51
Ecology and evolutionary biology graduate student Cynthia Hays collects samples and records data at Pigeon Point, on the coastline north of Santa Cruz.
Graduate Education

UC Santa Cruz offers graduate study in 32 academic fields. About 1,500 graduate students are enrolled at the certificate, master’s, and doctoral levels. The small size of the UCSC graduate programs encourages close working relations between students and faculty in an informal atmosphere conducive to rapid learning and professional growth. Many graduate programs have interdisciplinary components, and students are encouraged to explore the conceptual connections between related fields as they acquire mastery in their areas of specialization.

Research facilities at UCSC are excellent, and there are extensive opportunities for graduate students to engage in significant independent research and teaching conducted on the campus. They are highly valued members of the UCSC community, contributing substantially to the instruction of undergraduates and the research program. Most graduate students are also encouraged to obtain teaching experience, primarily as supervised teaching assistants.

Research facilities and programs have interdisciplinary components, and students are encouraged to explore the conceptual connections between related fields as they acquire mastery in their areas of specialization. Research facilities at UCSC are excellent, and there are extensive opportunities for graduate students to engage in significant independent study and research (see Resources for Learning and Research, pages 53–72). Graduate students are also encouraged to obtain teaching experience, primarily as supervised teaching assistants. They are highly valued members of the UCSC community, contributing substantially to the research and teaching conducted on the campus.

Degrees and Programs

The University of California, Santa Cruz, offers graduate programs leading to advanced degrees or certificates in the following areas:

- Anthropology
- Astronomy and astrophysics
- Bioinformatics
- Biology
- Ecology and evolution
- Chemistry and biochemistry
- Computer engineering
- Computer science
- Digital arts/new media
- Earth sciences
- Economics
- Education teaching
- Education research
- Electrical engineering
- Environmental studies
- Environmental toxicology
- History
- History of consciousness
- Linguistics
- Literature
- Mathematics
- Music

Ocean sciences
Philosophy
Physics
Politics
Psychology (with emphasis in social, developmental, or cognitive)
Science communication
Writing
Social documentation
Sociology
Theater arts

Certificate
M.A.
M.A./Ph.D.
M.S./Ph.D.
M.S., Ph.D.
M.S., Ph.D.
M.A.
M.A./Ph.D.
M.S.
M.A.
M.A./D.M.A.

Program Descriptions

Descriptions of individual programs appear under the specific disciplines in the programs and courses section, which begins on page 105. Application materials for all programs are available online at graddiv.ucsc.edu.

All of our graduate programs have information on the web at www.ucsc.edu/academics. Inquiries about part-time study should be directed to the individual departments. If there are any problems with the online application process, please e-mail gradadm@ucsc.edu.

Administration

At UCSC, the individual graduate programs are directed by departments. Overall policy is determined by the Graduate Council, and coordination and record keeping for matters common to all graduate students—such as admission applications, fellowships, and advancement to candidacy—are the responsibility of the Division of Graduate Studies. The dean of graduate studies, an appointee of the chancellor, is the chief administrative officer. The Graduate Student Handbook—containing graduate policies and other information—can be found online at graddiv.ucsc.edu.

Evaluation of Performance

Graduate students are graded Satisfactory/Unsatisfactory (S/U) or, at student option, A, B, C, D, F. The grade A, B, or S is awarded for satisfactory work. A graduate student receiving a grade of C, D, or U will not be allowed to use the credit for that course to satisfy any course requirement for a graduate degree. Courses in which a graduate student receives a grade of C, D, or U may be repeated. Credits will be counted once, and the most recently earned grade will determine whether a degree requirement has been met. Repeating a course more than once requires the prior written approval of the dean of graduate studies.

Graduate student performance in all courses taken for credit at UC Santa Cruz is also evaluated according to the Narrative Evaluation System. A narrative evaluation usually runs from one to four paragraphs in length and describes in detail (1) the nature and requirements of the course, (2) the student’s strengths and weaknesses in the various aspects of the course (e.g., discussion, laboratory work, term papers, and examinations), and (3) the student’s general understanding of the course content. Evaluations are used by academic advisers and become part of the student’s official academic record. Please also refer to the statement on Academic Integrity, page 36, Appendix F, Graduate Student–Faculty Adviser Relationship Guidelines; page 42; and Appendix O, Official University Policy on Academic Integrity for Graduate Students, published in the Student Policies and Regulations Handbook at www2.ucsc.edu/judicial/handbook03-04/o.htm.

Graduate Opportunity Program

Applicants assisted by the Graduate Opportunity Program must be U.S. citizens or permanent residents. During the application process, the Graduate Opportunity Program can help students by requesting an application fee waiver for cases of hardship, by providing insight into the application process, and by distributing information about the various graduate academic and fellowship programs. The primary goals of the program are to increase the number of applicants through extensive outreach and to increase the number of enrolled students from diverse backgrounds through effective recruitment. Applicants who feel that their acceptance into the academic community at UC Santa Cruz will contribute to the diversity of the institution should call (831) 459-4108 early in the application process.

Diversity-Enhancement Programs

The Eugene Costa-Robles Fellowship Program is a merit-based diversity-enhancement fellowship program that provides financial support to assist students from diverse backgrounds to pursue and complete a graduate degree successfully. This fellowship is awarded to entering doctoral students who have overcome significant obstacles to achieve a baccalaureate-level degree, and whose economic, educational, or social background contributes to intellectual diversity of the graduate student population. Applicants should refer to the information under Financial Support in the application to gain a better understanding of this fellowship. Fellowship recipients must be U.S. citizens or permanent residents.

The Eugene Costa-Robles Fellowship and the Dissertation-Year Fellowship are part of the University of California’s Academic Career Development Program. The Dissertation-Year Fellowship is a fellowship-support program...
available to continuing students. Enrolled students are assisted through formal and informal group orientations, individual advice about academic matters, financial aid, postdoctoral opportunities, and the provision of information about career planning, health care, and housing. If you have questions about the fellowship programs, contact the Division of Graduate Studies, (831) 459-4108.

Intercampus Exchange Program

A graduate student in good standing at Santa Cruz who wishes to take advantage of educational opportunities available only at another campus of the university may become an intercampus exchange graduate student for a quarter or more. This program also permits students to take courses on more than one campus of the university during the same quarter.

To participate in the program, a student must have the approval of his or her faculty adviser, the dean of the Division of Graduate Studies at UC Santa Cruz, and the graduate dean on the campus to be visited. Application forms may be obtained from the Division of Graduate Studies and should be submitted three weeks before the quarter in which the exchange begins.

Student Life

The campus offers a variety of programs to enhance the quality of student life, all available to graduate students. These include child care, sports and recreation, health services, cultural events, transportation services, and the UCSC Women’s Center. See pages 94–102 for information on these services and a description of the local community. See page 40 for services available to students with disabilities.

College Affiliation

Graduate students at Santa Cruz have the opportunity to affiliate with one of the ten colleges on campus (college descriptions begin on page 75). Participation in the activities of a college may range from taking an occasional meal there or living in the college to participating in the college’s educational and preceptorial programs or in its extracurricular activities.

Graduate Student Association

The Graduate Student Association (GSA) is an organization of all graduate students at UCSC. It seeks to advance the general welfare of the graduate student body and is responsible for promoting extracurricular activities on campus.

Graduate students elect a GSA steering committee, which coordinates activities and their funding. In past years the steering committee has sponsored student social gatherings, musical events, poetry readings, lectures by visiting scholars, and other activities of special interest to graduate students. A portion of the college student government fee, paid by all students, is available to the association for this purpose. The steering committee also recommends graduate students for appointment to university committees.

Housing

As at all other UC campuses, finding housing is a challenge. Students who wish to utilize on-campus housing should put in their application as soon as possible to aid in securing housing in a timely manner. Likewise, students who wish to find off-campus housing will find this task challenging. Often, single students share housing as a means of lowering expenses. The problem of housing is acute for married students or students with dependent children, who do not always have the option of sharing housing with other students.

Twenty apartments for single graduate students are located on the west side of campus between Kresge College and the Baskin Engineering Building. City and campus bus stops are nearby. On-site parking is available.

The units are fully furnished with solid oak and energy conservation, and aesthetics in mind. The wood-frame units have cedar exteriors and are bordered by redwood forest on two sides. Four students share each apartment, which has a living and dining room, a kitchen, two bathrooms, four single bedrooms, an outdoor deck, and abundant closet and cabinet space. The units are fully furnished with solid oak and maple furniture, although residents must supply their own linens, cooking utensils, and household supplies. Common facilities include a laundry room and lounges with computer terminals and a large-screen television.

The apartment rental rate is $8,320 for the 2004–05 academic year. Graduate student residents may stay for the summer at additional cost. First-year graduate students are usually given priority in assignment of apartments.

Graduate students may also apply to the individual colleges for a limited number of resident preceptorships. These positions offer an on-campus apartment as a stipend and the opportunity to participate in a college community.

Married students and students with dependent children may live in Family Student Housing, a complex of two-bedroom unfurnished apartments located on the west side of campus. These apartments are in great demand, and students often wait up to a year for a vacancy. Interested students should apply as soon as possible.

Another on-campus option is UCSC’s 42-space camper park, available to students who own appropriate recreational vehicles.

To assist students in locating accommodations in the surrounding communities, the Community Rentals Office maintains a list of available rentals. Students intending to live off campus should begin their search at least four to six weeks before classes begin.

See pages 94–96 for more detailed information about on- and off-campus housing.

Application and Admission

Application Deadlines

Students may apply for only one UCSC graduate program at a time. The list below shows the date set by each program as the final deadline for submission of all documents. Applications are limited to programs of study beginning in fall quarter (except the M.A. program in education). Please visit our web site at graddiv.ucsc.edu for the most current information on applying to UCSC graduate programs and for application deadlines for 2005–06.

Anthropology......................January 5, 2005
Astronomy and astrophysics.............January 15, 2005
Bioinformatics...................December 15, 2004
Biology
cell and molecular, cell, and developmental.............December 15, 2004
Chemistry and biochemistry............January 15, 2005
Computer engineering................December 15, 2004
Computer science..................January 15, 2005
Digital arts/new media..............February 1, 2005
Earth sciences........................January 5, 2005
Economics
applied...........................February 1, 2005
international.....................January 5, 2005
Education
history............................January 5, 2005
History..............................January 5, 2005
History of consciousness..............December 1, 2004

* has not been previously admitted to and registered at UCSC.
Linguistics
M.A. ..........................May 2, 2005
Ph.D. ..........................December 31, 2004
Literature ..........................December 15, 2004
Mathematics ..........................January 15, 2005
Music ..........................February 1, 2005
Ocean sciences ..........................December 15, 2004
Philosophy ..........................January 15, 2005
Physics ..........................January 15, 2005
Politics ..........................January 15, 2005
Psychology ..........................December 15, 2004
Science communication
writing ..........................April 1, 2005
Social documentation ..........................January 15, 2005
Sociology ..........................December 15, 2004
Theater arts ..........................March 1, 2005

The dates listed here are the official deadlines, but students are strongly advised to submit applications in October or November. If an application deadline falls on a weekend or holiday, materials should arrive before the deadline.

To be considered for fellowship support for fall quarter, the admission application and all supporting materials must arrive at the Division of Graduate Studies by the program’s deadline or by February 1, 2005, whichever is earlier.

Admission Requirements
To be admitted with graduate status at UC Santa Cruz, a student must have completed a bachelor’s degree or its equivalent from an accredited undergraduate institution of acceptable standing and demonstrate ability to pursue a program of study leading toward an advanced degree. Preparation must provide an adequate foundation for advanced study, as determined by the department for the program in which the student intends to enroll. If the bachelor’s degree is not in the same discipline as the graduate program, the student must have sufficient preparation in the intended area of study to undertake graduate-level work.

To apply for admission, the items described below must be submitted before the deadline date to the Division of Graduate Studies. UC Santa Cruz requires that applicants complete an online application to be considered for admission to a graduate program. The Graduate Studies Division will provide access to a printed version for those who qualify under the Americans with Disabilities Act. The application and the accompanying materials should be paid for online with either a credit card or e-check. This application fee is not refundable. Application fee waivers are available for cases of hardship. International applicants are not eligible for fee waivers.

Applicants to the programs in anthropology, computer engineering, computer science, and electrical engineering also need to conform to the admission guidelines posted on the web pages for these departments. These web pages can be accessed from the Division of Graduate Studies home page: graddiv.ucsc.edu.

2. Statement of purpose. This should be a concise, well-written essay about the applicant’s background and reasons for pursuing graduate study in the field chosen. Selection committees place particular importance on the statement of purpose. It exhibits the applicant’s ability to present ideas in clear, coherent language. The statement of purpose should indicate

- how knowledgeable the applicant is in the desired field of study;
- how undergraduate studies and other experiences (work, community involvement, and so forth) serve as a foundation for graduate study; and
- how and why the applicant intends to build on this foundation of knowledge and apply the training to social or theoretical problems.

3. Official transcripts. Official transcripts of all previous course work since high school, including certification of degrees received or documentation of status upon leaving each institution, should be obtained. UC Santa Cruz requires only one transcript from each institution. Official evidence that the applicant has received a bachelor’s degree from an accredited institution of higher education must be presented. All of the official transcripts and documentation should be requested well in advance of the program deadline to be sent to Graduate Application Processing. Only official transcripts bearing the signature of the registrar and the seal of the issuing institution will be accepted. If work is in progress at the time of application, a final transcript of such work should be submitted before the student can be officially enrolled at UC Santa Cruz. If the bachelor’s degree is in a field other than that in which the student intends to apply, evidence of course work sufficient to prepare for graduate study in the intended field must be shown.

4. Letters of recommendation. Three letters of recommendation should be included in the online application packet, or the applicant should arrange to have them forwarded to the Graduate Application Processing. These letters of recommendation should be prepared by professors or others who are in a position to analyze the applicant’s abilities and academic promise in the chosen field of graduate study.

5. Graduate Record Examination scores. Individual departmental requirements for the Graduate Record Examination (GRE) follow:

Anthropology: GRE General Test
Astronomy and astrophysics: GRE General Test and GRE Subject Test in Physics or Mathematics
Bioinformatics: GRE General Test; Subject Test in major strongly recommended
Biology: (ecology and evolution or molecular, cell, and developmental): GRE General Test and GRE Biology Test or Biochemistry, Cell, and Molecular Biology Test
Chemistry and biochemistry: GRE General Test required; GRE Subject Test in any of the following strongly recommended: Biochemistry, Cell, and Molecular Biology; Chemistry; Computer Science; Physics
Computer engineering: GRE General Test required; GRE Computer Science Test or Subject Test in major strongly recommended
Computer science: GRE General Test required; GRE Computer Science Test or Subject Test in major strongly recommended
Digital arts/new media: GRE General Test
Earth sciences: GRE General Test
Economics
applied: GRE General Test
international: GRE General Test
Education:
teaching (M.A.): GRE General Test
research (Ph.D.): GRE General Test
Electrical engineering: GRE General Test required; GRE Subject Test in major strongly recommended
Environmental studies: GRE General Test required; GRE Subject Test in disciplinary field of student’s choice strongly recommended
Environmental toxicology: GRE General Test required; GRE Subject Test in major strongly recommended
History: GRE General Test
History of consciousness: GRE General Test
Linguistics: GRE General Test
Literature: GRE General Test
Mathematics: GRE General Test and GRE Mathematics Test
Music: GRE General Test and UCSC’s Music Graduate Entrance Examination
Ocean sciences: GRE General Test and GRE Subject Test in major
Philosophy: GRE General Test
Physics: GRE General Test and GRE Physics Test
Politics: GRE General Test
Psychology: GRE General Test
Science communication
writing: GRE General Test and GRE Subject
Test in Biochemistry, Cell, and Molecular
Biology; Biology; Chemistry; Computer Science;
Geology; Mathematics; or Physics
Social documentation: No GRE required
Sociology: GRE General Test
Theater arts: No GRE required

If the applicant is applying for admission to a program that requires the GRE, the scores must be received by UC Santa Cruz Graduate Application Processing before the application deadline. It is strongly recommended that all applicants complete testing by November, since December test scores will not reach the division prior to application deadlines.

The Educational Testing Service should be requested to forward the test scores directly to the division. UC Santa Cruz’s school code is 4860. Test results are electronically submitted to UC Santa Cruz Division of Graduate Studies four to six weeks after the exam has been taken.

6. Additional required material. Many of the graduate programs have special application requirements, such as writing samples, portfolios, auditions, or personal interviews.

Education requires a supplemental application. The environmental studies graduate program requires that a substantial writing project (undergraduate or master’s level) be submitted with the application materials. Also, as part of the application process, applicants are required to contact faculty regarding sponsorship.

History of consciousness requires a writing sample of not more than 10 pages, and literature requires a writing sample of 10 to 20 pages.
The ocean sciences graduate program requires that applicants contact faculty directly about sponsorship as part of the application process. Music requires a writing or composition sample (e.g., term paper or senior thesis, scores, or other projects) and a CD, audiocassette, or videocassette of one or more recent performances as instrumentalist, vocalist, or conductor, or performances of original compositions. The music DMA has the added requirement of three composition scores with recordings (if available) on CD, DVD, or VHS. If the applicant’s work involves improvisation, digital audio, or other approaches that are not well served by scores, one of the three compositions may be submitted in the form of a recording with brief notes on the media and/or performance conditions. In this case, two works with scores are still required. Philosophy requires a 10- to 15-page writing sample. Politics requests that the writing sample (ideally not to exceed 20 pages) be a term paper, thesis, article, conference paper, or problem solution; it need not be in the area of politics. Sociology requests a writing sample, preferably in sociology or a related field. Theater arts requires a portfolio of projects along with the application. The brochure or web site for the program to which the student is applying should be consulted and all of the requirements specified should be fulfilled.

Duplication of Higher Degrees
It is the policy of the Santa Cruz campus to prohibit the pursuit of duplicate advanced degrees. However, applicants may petition the graduate dean for an exception to this policy if the degree sought is in a field of study distinctly different from the field in which the original advanced degree was attained.

In order for a student who already holds the doctorate to be admitted or readmitted to work toward a second Ph.D.—or toward an academic master’s degree—all of the following conditions must be met:
1. The applicant must petition the graduate dean in writing prior to the application deadline for the program in question.
2. The department sponsoring the program to which admission is sought must support the applicant’s petition.
3. The department must present the graduate dean with a clear and complete outline of the program required for the degree sought, and must explain the intellectual separateness of the proposed program from that completed by the applicant in attaining the earlier degree.

The graduate dean will review all materials submitted and decide whether or not to admit the applicant, consulting with the Graduate Council when appropriate.

Admission to a professional master’s program after a Ph.D.—or to an academic master’s program after a professional doctorate—is not subject to these restrictions.

Transfer of Credit
UC Santa Cruz does not automatically grant credit for graduate-level work undertaken at other universities. Each department determines credit transferability on an individual basis.

International Applicants
Applicants from other countries must meet standard admission requirements and provide satisfactory evidence of financial support before they may obtain the necessary visa documents. Because it normally takes much longer to process international applications, such students are urged to apply as early as possible. A Certificate of Eligibility (I-20) will not be issued by the UC Santa Cruz Office of International Education until all requirements are satisfied and the student has been formally admitted. Please note that international students are not eligible for need-based financial aid nor application fee waivers.

Applicants from countries where English is not the primary language must take the Test of English as a Foreign Language (TOEFL). A minimum score of 550 on the paper-based TOEFL or 220 on the computer-based test is required. Chemistry and biochemistry, computer engineering, computer science, and electrical engineering require 570 on the paper-based test or 230 on the computer-based test.

All official academic records must be issued in the original language and be accompanied by English translations prepared by the issuing institution. If translations are not available from the institution itself, translations may be prepared by government or official translators. In order for translations to be acceptable, they must bear the stamp or seal of the issuing institution or governmental agency and the original signature of the translator. They must be complete and exact word-for-word translations of the original documents, not interpretations. Grades must not be converted to the American scale. Specially prepared English versions are not acceptable in place of documents issued in the original language. Records submitted to the Division of Graduate Studies may not be borrowed, returned, or sent elsewhere.

Application Processing
The Division of Graduate Studies receives most application materials and sets up a file for each applicant. Once the application is submitted online, it will be available to the appropriate department for review and recommendation. Applicants are admitted by the graduate dean following recommendations by the department. Applicants will be notified by e-mail whether or not they have been admitted for graduate study at UCSC after all reviews are complete. Under no circumstances will UCSC give out this information over the phone, in person, or by proxy. E-mail notifications are sent throughout the month of March. By a general agreement to which UC Santa Cruz and most graduate schools in the U.S. are signatories, applicants admitted to graduate schools have until April 15 to reply with their acceptance of fellowship offers. Any information about the completeness of the file can be found at apply.graddiv.ucsc.edu. Specific questions about the evaluation of the application should be directed to the graduate representative of the department.
For information on fee refunds, see page 20.

Minimum annual expenses, including registration fees, for a single graduate student living on campus are estimated to be $25,885 per academic year. Students should not plan to undertake graduate study without assured funding, since outside employment in the Santa Cruz community can be difficult to obtain. Here is a sample student budget for the 2004–05 academic year. Non–U.S. citizens should add $14,940 in nonresident tuition and fees to the total. Living expenses and student fees are likely to increase for 2005–06.

**Graduate Student Budget, 2004–05**

| Fees            | $ 8,536.00 |
| Books and supplies | 1,302.00 |
| Room and board (on or off campus) | 12,279.00 |
| Transportation | 1,548.00 |
| Personal         | 2,220.00 |
| Total            | $25,885.00 |

*The 2005–06 Graduate Student Budget will be posted in the 2005–06 online catalog at reg.ucsc.edu in July 2005.

Non–U.S. citizens note: Regardless of how long you live in California, only U.S. citizens and holders of immigrant visas may be qualified for resident classification.

**Deferred Payment Plan**

The Deferred Payment Plan (DPP) provides an alternative method of budgeting and paying registration fees. It allows these fees, to the extent not covered by scholarships, loans, or other financial aid, to be paid in monthly installments. Students have a choice of applying for a three-month plan for individual quarterly fees, or, at the beginning of the fall quarter only, for a nine-month plan to be used for the fall, winter, and spring quarters. A nonrefundable application fee of $25 for the three-month plan, or $60 for the nine-month plan, is required. Any student in good financial and academic standing may apply for DPP. Students receiving financial aid sufficient to cover registration fees in full are not eligible for this plan. For more information about how to apply for DPP, application deadlines, and campus policies regarding the program, contact the Office of Student Business Services, 203 Hahn Student Services Building, (831) 459-2519, e-mail oarinfo@cats.ucsc.edu, or visit the web site at www2.ucsc.edu/acts-rec.

**Financial Support**

The University of California, Santa Cruz, makes a strong effort to provide financial support to all graduate students who make normal progress in their program of studies. Certain kinds of support are awarded on the basis of academic merit, and others are granted on the basis of need. Students are encouraged to apply for both kinds of assistance by submitting the Free Application for Federal Student Aid (FAFSA). This form must be submitted after January 1 prior to the academic year for which you are requesting aid. To receive need-based support for the fall quarter, the FAFSA should be submitted by March 1.
The following kinds of financial support are available through the Division of Graduate Studies:

**Regents Fellowships.** A limited number of these fellowships are awarded to first-year graduate students in master’s and doctoral programs. For the 2004–05 academic year, these awards provide a stipend of $15,000 plus payment of all university fees except nonresident tuition. Regents Fellowships may be awarded for one to three quarters.

**Grants-in-Aid** are designed for students with substantial financial need. Funds for this grant program come from the educational fees paid quarterly by students at all campuses of the university. Eligibility is determined by analysis of data provided by the applicant on the FAFSA.

**Chancellor’s Fellowships.** A limited number of these fellowships are awarded to first-year graduate students in doctoral programs. For the 2004–05 academic year, these nine-month awards provide a stipend of $20,500 plus payment of all university fees and nonresident tuition.

**Humanities Predoctoral Fellowships.** These state-funded fellowships are intended for entering graduate students enrolling in humanities programs leading to the Ph.D. The fellowships provide guaranteed support for four years: a $12,900 stipend plus fees for the first year, teaching or research assistantship support provided by the department for the second and third years, and a dissertation award for the fourth year.

**Eugene Cota-Robles Fellowships.** These state-funded merit-based fellowships of $18,000 plus fees are awarded on a competitive basis to first-year graduate students who have overcome significant social or educational obstacles to achieve a college education, and whose backgrounds equip them to contribute to intellectual diversity among the graduate student population. Doctoral program candidates who demonstrate strong potential for university teaching and research will be selected.

**Dissertation-Year Fellowships.** These state-funded merit-based fellowships are awarded on a competitive basis to doctoral graduate students who have overcome significant social or educational obstacles to achieve a college education, and whose backgrounds equip them to contribute to intellectual diversity among the graduate student population. Fellows receive a $18,000 stipend plus payment of fees.

**Tuition Fellowships.** A number of Nonresident Tuition Fellowships are available for students who are recommended by their department. (Nonresident tuition is $4,898 per quarter for 2004–05.)

**Cal Grant A and B Programs.** Students who received one of these awards as undergraduates may request a one-year extension from the California Student Aid Commission to attend a teacher credential program. The Cal Grant A program is expected to pay a maximum of $6,269, and the Cal Grant B program is expected to pay a maximum of $7,820 per year for study at the University of California in 2004–05. Renewal of these awards also requires the student to submit the FAFSA by March 2.

**Teaching Assistantships.** For the 2003–04 academic year, half-time teaching assistantships provided a salary of $4,786 per quarter. For the 2003–04 academic year, half-time research assistantships provided a salary ranging from $1,219 to $1,756 per month, depending on the student’s academic level and department.

The application for fellowships, assistantships, and research assistantships is Part C of the admission application, which may be obtained from the Division of Graduate Studies. It should be filed by the program’s deadline or by the February 1 preceding admission, whichever is earlier.

The division and the UCSC Career Center (see page 38) can provide information about graduate fellowships and grants available from external sources.

**Loan Forgiveness Programs**

The Assumption Program of Loans for Education (APLE) is another program offered by CSAC for students. This program serves students who plan to become public schoolteachers.

Students must be nominated by the UCSC Career Center. Under the program, the commission may assume up to $11,000 in educational loan balances in return for service as a public schoolteacher in California, in either a designated subject-shortage area or at a school serving large populations of students from low-income families. The amount is raised to $15,000 for teaching mathematics, science, or special education. In addition, participants who teach mathematics, science, or special education in the lowest-performing schools may have a total of $19,000 in debt assumed. To receive full benefits, you must provide four consecutive years of teaching at a California public school.

Additional eligibility criteria include California residence, U.S. citizenship or eligible noncitizenship, academic ability, and financial need. The postmark application/nomination deadline is July 15, 2005. However, the funding status of the program for 2005–06 is subject to California budget deliberations. Call the California Student Aid Commission at (888) 224-7268 for updated information.

**Student Loans**

Graduate students may apply for student loans through the Financial Aid Office. Students who apply using the FAFSA are eligible for loans funded by the federal government. Students who demonstrate financial need qualify for the William D. Ford Federal Direct Subsidized Student Loan, and students who do not demonstrate need or who want an additional loan qualify for the William D. Ford Federal Direct Unsubsidized Student Loan. Subsidized loans are interest-free while the student is enrolled; interest accrues on unsubsidized loans during enrollment. See page 22 for additional information.
## Resources for Learning and Research

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Library</td>
<td>55</td>
</tr>
<tr>
<td>Center for Teaching Excellence</td>
<td></td>
</tr>
<tr>
<td>Computing Facilities and Services</td>
<td>55</td>
</tr>
<tr>
<td>Information Technology Services</td>
<td>56</td>
</tr>
<tr>
<td>Research Programs and Facilities</td>
<td>57</td>
</tr>
<tr>
<td>Arboretum</td>
<td>57</td>
</tr>
<tr>
<td>Arts Computing Labs</td>
<td>57</td>
</tr>
<tr>
<td>Baskin Engineering</td>
<td>57</td>
</tr>
<tr>
<td>Carlyle</td>
<td>59</td>
</tr>
<tr>
<td>CASFS (Agroecology)</td>
<td>59</td>
</tr>
<tr>
<td>CBSE (Biomolecular Sci./Eng.)</td>
<td>60</td>
</tr>
<tr>
<td>Cultural Studies</td>
<td>60</td>
</tr>
<tr>
<td>CGIRS (Global, Int., Reg. Studies)</td>
<td>60</td>
</tr>
<tr>
<td>CILS (Informal Learning &amp; Schools)</td>
<td>60</td>
</tr>
<tr>
<td>CITRIS and ITI (Information Tech.)</td>
<td>61</td>
</tr>
<tr>
<td>CJTC (Justice, Tolerance, Community)</td>
<td>61</td>
</tr>
<tr>
<td>Center for RNA</td>
<td>61</td>
</tr>
<tr>
<td>CREDE (Education, Diversity, Excel.)</td>
<td>62</td>
</tr>
<tr>
<td>CLRC (Chicano/Latino Research)</td>
<td>62</td>
</tr>
<tr>
<td>Dickens</td>
<td>62</td>
</tr>
<tr>
<td>EPC (Educational Partnerships)</td>
<td>62</td>
</tr>
<tr>
<td>FRA/Performance/Visual Studies</td>
<td>63</td>
</tr>
<tr>
<td>FRA/Performance Practice/Context in Arts</td>
<td>63</td>
</tr>
<tr>
<td>FRA/Shakespeare</td>
<td>63</td>
</tr>
<tr>
<td>GIS Lab</td>
<td>64</td>
</tr>
<tr>
<td>IAFR (Feminist Research)</td>
<td>64</td>
</tr>
<tr>
<td>IHR (Humanities Research)</td>
<td>64</td>
</tr>
<tr>
<td>QB3 (Biomedical Research)</td>
<td>65</td>
</tr>
<tr>
<td>IGPP (Geophysics/Planetary Physics)</td>
<td>65</td>
</tr>
<tr>
<td>IMS and SCPRG (Marine Sci./Predatory Birds)</td>
<td>65</td>
</tr>
<tr>
<td>Linguistics</td>
<td>67</td>
</tr>
<tr>
<td>MBEST (Education, Science, Tech.)</td>
<td>67</td>
</tr>
<tr>
<td>NRS (Natural Reserve)</td>
<td>67</td>
</tr>
<tr>
<td>NTC (New Teachers)</td>
<td>68</td>
</tr>
<tr>
<td>Phys./Bio. Sciences Division</td>
<td>68</td>
</tr>
<tr>
<td>Ray FASC (Satyajit Ray)</td>
<td>70</td>
</tr>
<tr>
<td>SCCIE (International Economics)</td>
<td>70</td>
</tr>
<tr>
<td>SCIPP (Particle Physics)</td>
<td>70</td>
</tr>
<tr>
<td>Social Sciences Media Lab</td>
<td>71</td>
</tr>
<tr>
<td>STEPS (Interdisciplinary)</td>
<td>71</td>
</tr>
<tr>
<td>UARC (NASA)</td>
<td>71</td>
</tr>
<tr>
<td>UCO/Lick and CfAO (Adaptive Optics)</td>
<td>72</td>
</tr>
</tbody>
</table>
University Library

The handsome McHenry and Science & Engineering Library buildings house the increasingly impressive collection of UCSC’s University Library. In nearly four decades, the collection has grown from a few shelves of books and a substantial dependence on the libraries of UC Berkeley, to nearly 1.5 million volumes, nearly 17,000 periodical titles (including electronic journals), over 825,000 microforms, and more than 500,000 nonprint items, including maps, slides, and audio and video recordings.

As part of the statewide University of California library system, the University Library also serves as gateway to millions of other books and periodicals at other campuses throughout the state. The library’s efficient Interlibrary Loan service is heavily used, especially the online request service of the California Digital Library. Faculty, staff, and graduate students may also use the Slug Express service for on-campus delivery of local materials.

The University Library collection is divided into two parts. Resources in the humanities, arts, and social sciences are contained in the McHenry Library at the heart of the campus, while the science collection is housed in the beautiful Science & Engineering Library, conveniently located on “Science Hill.”

Subject bibliographers manage the growth and development of UCSC’s collection and provide in-depth research assistance. Most of the holdings of the University Library are shelved in open stacks. Students and faculty are encouraged to help themselves, using information found via the local CRUZCAT online library catalog, the statewide Melvyl® catalog, and the library home page. The library home page provides a convenient gateway to the CRUZCAT and Melvyl® catalogs, the California Digital Library, and a host of other electronic information resources, such as article databases and electronic journals. The library staff is also eager to offer its assistance at any of several service points.

At the Reference desks in both libraries, reference librarians give individual guidance: general orientation for the newcomer and specialized help for the researcher. Librarians assist in the use of a wide range of indexes—in print, on CD-ROM or the World Wide Web, and in more than 150 online article databases to which the library subscribes. Librarians also offer group instruction: orientation sessions at the beginning of each quarter, library research workshops, special web seminars for students and faculty, and upon request, specialized instruction to classes in all disciplines.

The Reserve desks lend copies of assigned class readings on a short-term basis, operate a web-based electronic reserve system, and provide protection for vulnerable circulating materials and heavily used periodicals. In addition, the McHenry Library Reserve Unit provides access to recent newspapers.

Special Collections at McHenry Library contains rare, valuable, and often fragile materials that do not circulate. Holdings focus on local history and 20th-century literature and book arts. Special Collections also houses the official campus archives, as well as the archives of George Barati, Gregory Bateson, Thomas Carlyle, Lou Harrison, Kenneth Patchen, Edward Weston, and the Shameless Hussy, Trianon, and Turtle Island presses.

Other important collections and services include the following:

- Government Publications, a selective depository for documents published by U.S., California, and Santa Cruz government agencies
- The Media and Electronic Resource Center (MERC), which provides access to CD-ROMs, computer files, and language-related audio and video recordings; electronic support for language study at UCSC; and printing support for the Electronic Reserve System (ERes)
- The Map Collection, with maps and aerial photographs of Santa Cruz and adjoining counties and topographic, nautical, and aeronautical maps from all over the world
- The Mary Lea Shane Archives of the Lick Observatory, a national resource for the history of astronomy
- The Film and Music Center, which houses music recordings and a growing collection of videos and DVDs
- The Regional History Project’s documentation of central California history
- The Visual Resource Collection, which emphasizes art history but also includes slides on science, history, and the UCSC campus and offers the web-based SlideCat slide catalog

For more information, see the library’s home page, library.ucsc.edu.

Center for Teaching Excellence

The Center for Teaching Excellence (CTE) is a professional resource dedicated to promoting, sustaining, and recognizing teaching excellence at UCSC. Serving the faculty and graduate students, CTE programs and services support instructors in their efforts to develop as teachers, to enhance the quality of instruction, and to improve students’ learning.

Regular programs and services include Instructional Improvement Grants, Excellence in Teaching Awards, Teaching Convocations, Mid-quarter Class Interviews, Electronic Mid-quarter Analysis of Teaching, Videotaping of Teaching, UCSC Instructor Evaluation, and Faculty Focus, a quarterly newsletter featuring the voices of the UCSC community speaking out on teaching and learning.

CTE is located on the first floor of McHenry Library, in Room 168C. For more information, visit the CTE web site: cte.ucsc.edu/CTE.

Computing Facilities and Services

Rapid expansion is occurring in the computing environment at UC Santa Cruz. Below are the key features of this expansion:

- The campus is rapidly expanding its CruzNet wireless network to reach many points on the campus. If you have a laptop computer with a wireless network card, you can sit with a group of classmates in a serene setting among the redwoods, or at a cafe with an ocean view to do your homework, and still have Internet access.
- Because of the ubiquitous wireless access being developed, we highly recommend that you purchase a laptop computer. We have included minimum specifications below.
- The campus offers a high-speed data residential network called ResNet to all students living in university residential areas. The service cost is included in the housing fees. There are no additional fees for students who live in university residential areas to use the service that includes technical support (by phone, or room visits when necessary) provided by ResNet staff.
- There are 15 Instructional Computing Labs across the campus with high-speed network service and specialized hardware and software. Each lab is open to all students. These include the Digital Media Lab for students in the arts and the Solaris...
Unix labs for students in the sciences and engineering. There is a wireless laptop lab at the Academic Resources Center where you can check out an Apple laptop and have a network connection while sitting in the meadow overlooking the ocean. The 15 labs have over 340 computers available for students to use, including PCs, Macs, and Sun workstations. See ic.ucsc.edu for more information.

- Students are expected to communicate via e-mail using a UCSC e-mail account. Your account is assigned when you enroll for classes the first time. There is no cost for the e-mail account. Mail may be accessed via the web on campus into one newly created division. Below is a description of IT services and resources as of March 2004. Once the new IT organization is developed, these services and resources will expand and change. Please visit its.ucsc.edu for more information about the IT transformation project.

**Purchasing a Computer?**
If you are planning to buy a new computer, UCSC recommends purchasing a laptop with both wired and wireless network capability. In 2003–04, 98 percent of students who came to campus had a personally owned computer in their residential housing rooms. The campus community embraces both PCs and Macs, and in some circles, Unix-based Sun Solaris and Linux are popular. The Humanities Division and the Arts Division both are heavily Mac oriented. The Social Sciences Division and the Physical and Biological Sciences Division use both Macs and PCs. The School of Engineering uses primarily PC/Windows and PC/Linux (as well as Sun Solaris), and there is an emerging interest in Macs with the Unix-based OSX environment.

**Academic Course Materials on the Web**
The WebCT course-management system is a tool to create sophisticated web-based course materials to supplement classroom instruction, not to replace it. WebCT uses a web browser as the interface for the course. Faculty using WebCT can incorporate a wide variety of tools in their course site such as a course calendar, student conferencing system, electronic mail, group projects with student created web pages, and quizzes. Outside of class time, students can use WebCT to view course materials, participate in web-based class discussions, collaborate on group projects, and take quizzes. Faculty can use WebCT to see what materials students have viewed before they arrive in class. When faculty administer preclass quizzes on WebCT, they can see what concepts students understand before class and tailor the lecture accordingly. Students must have established their UCSC account to be enrolled in WebCT courses. See more information about WebCT and other UCSC course web sites at ic.ucsc.edu/docs/webct and ic.ucsc.edu/courses.

**Disability Accommodations for Computing**
If you have a disability and will require adaptive or assistive technology to use lab computers, library facilities, or other campus services, please contact the Disability Resource Center (DRC) right away so that they can coordinate services for you. Instructional Computing Labs have common adaptive technologies, such as enlarged type for students with low vision and Dvorak keyboards for students with repetitive strain injuries. If you need accommodations, please call the DRC at (831) 459-2089 (voice), or 459-4806 (TTY).

**Information Technology Services**
UCSC has begun a major transformation process that will consolidate Information Technology Services (ITS) from across the campus into one newly created division. Below is a description of IT services and resources as of March 2004. Once the new IT organization is developed, these services and resources will expand and change. Please visit its.ucsc.edu for more information about the IT transformation project.

ITS at UCSC currently provides a broad spectrum of IT related resources and services that support teaching, learning, and research by providing information technology to students, faculty, and staff in the areas of instructional computing; administrative computing; network, voice, and data services; information systems security; web services; media services; technical support; and training.

ITS operates the UCSC network, which interconnects the campus network, the student residential network, and the Internet. On-campus network resources include academic, library, and administrative computing, database, and information servers. Many instructors are choosing to provide course materials via the web or electronic mail, and both the UCSC and UC-wide library catalogs are accessible via the web.

ITS manages 15 Instructional Computing Labs (IC Labs) throughout the campus that provide for both instructional and individual open-access use. The 15 labs, including wired and wireless labs, have over 375 computers available for students to use; platforms include Intel-based PCs, Macs, and Suns. Lab workstations are replaced every three years.

Labs are used like classrooms: reserved by faculty or teaching assistants (TAs) for instruction. When not reserved for instruction, the labs are available to students on a walk-in basis. Even if they are not teaching in the labs, many faculty request to have academic software installed in the labs so that their students can complete homework assignments. Every IC Lab is open to every student, no matter what his or her major. Assistive technologies are provided to disabled students who request services via the Disability Resource Center. If you need assistive technologies, please see oaisas.ucsc.edu and make your request so ITS can provide services for you in a timely manner.

Technical training is available for students in the labs. In addition, faculty or TAs can request ITS staff to conduct training sessions as part of an academic course. Contact fitc@ucsc.edu for more information.

More extensive lab information, including hardware and software specifications, hours of operation, and student employment opportunities, is available at ic.ucsc.edu.

WebCT Learning Management System is a standardized tool provided by IC’s Faculty Instructional Technology Center (FITC). UCSC faculty can use WebCT to deliver web-based course materials to supplement their classroom instruction. At FITC, student web developers provide faculty services such as audio and video digitizing, CD-ROM burning, flatbed as well as slide scanning, and web authoring. FITC student web developers provide faculty four hours per quarter of free technical assistance to develop digital course materials and train students in skills needed for academic courses.

ResNet, a network in the residence halls, is available in nearly all campus residence halls and apartments. Students can connect to the ResNet and access campus resources and the Internet from their rooms at speeds significantly faster than provided by modems. Students can also access the UCSC campus network and the Internet by modem at speeds of up to 56K. UCSC is connected to other UC campuses and the Internet via a high-speed connection to the UC network. UCSC is also part of the state and national initiatives for the next-generation Internet, joining the other UC campuses and select California universities in this project.

To access any of the central computing services, including e-mail, individuals must have a UCSC Identity (UCSC ID). Registered students are assigned an e-mail account and may set the initial password via the web at any of the Instructional Computing Labs or from their own computers. Faculty and campus units send e-mail about classes and student services to this account. Students may forward e-mail sent to their UCSC e-mail account to another address via a web form.
ITS provides support for its services to students, faculty, and staff. This support includes walk-in, phone, and online support, including a knowledge database at ic.ucsc.edu/help. For support, please call (831) 459-4357 (459-HELP), e-mail infocat@ucsc.edu, or visit the web site: www2.ucsc.edu/cats/sc.

Research Programs and Facilities

Research at UC Santa Cruz is thriving, facilities are excellent, and the amount of external funding received for research continues to grow. In addition to their individual research projects, faculty are involved in organized research on various scales, from small focused activities within academic divisions, to large research units, some with campuswide scope and others with wider connections to the whole 10-campus University of California system.

Specialized research facilities in addition to those listed below are described in the programs and courses section, pages 105–384.

Arboretum

The Arboretum at UCSC is a research and teaching facility committed to plant conservation and serves both the campus and the public. Its rich and diverse collection, containing representatives of more than 300 plant families, provides beginning students with a broad survey of the plant kingdom. Facilities for growing plants offer students and research faculty opportunities to experiment with living plants. The Arboretum maintains collections of rare and threatened plants of unusual scientific interest. Particular specialties are world conifers, primitive angiosperms, and bulb-forming plant families. Large assemblages of plants from Australia, New Zealand, and South Africa, and California natives are displayed on the grounds. Many of the species in these collections are not otherwise available for study in American botanical gardens and arboreta.

Arboretum events educate and engage the public about plant diversity and conservation. Of service to the public and the nursery industry are the Arboretum’s activities in importing, selecting, and breeding choice ornamental plants, especially those that are drought tolerant and pest resistant. To date, the Arboretum is the original importer of more than 1,500 different selections of choice ornamentals. Many of these have been and will continue to be the plants of future California gardens.

Norrie’s, the Arboretum’s volunteer-run gift shop, supports the Arboretum and is open Monday through Saturday, 10 A.M. to 4 P.M., and Sunday, 1 to 4 P.M. Arboretum: (831) 427-2998; Norrie’s gift shop: (831) 423-4977; e-mail: arboretum@ucsc.edu; web: www2.ucsc.edu/arboretum.

Arts Instructional Computing Laboratories

Instructional Computing (IC) has three labs that primarily serve the Arts Division: the IC Arts Mac lab, the IC Digital Media Lab, and the IC Music Lab. The IC Arts Mac Lab and IC Digital Media Lab at Porter are equipped with Arts-specific software complemented with high-end sound-, graphic-, and video-editing software. The Digital Media Lab (DML) is oriented more exclusively toward the moving image. It is equipped with Apple workstations and software capable of high-end video import, digitizing, editing, compositing, and output. The Music Lab includes hardware and software for music editing, notation, and working with MIDI. See hardware and software details at ic.ucsc.edu/labs.

These Instructional Computing labs are open to all UCSC students. In addition, the Arts Division manages computer labs for the exclusive use of students taking classes in the Art, Film and Digital Media, and Theater Arts Departments.

Baskin School of Engineering Facilities

Computing Infrastructure

The Jack Baskin School of Engineering (SOE) operates a computing network of several hundred Unix and Windows computers and several computer laboratories. These support research and graduate instruction in applied mathematics and statistics, biomolecular engineering, computer engineering, computer science, and electrical engineering. Undergraduate computing is supported by a combination of SOE Undergraduate Laboratories (BELS Labs) and the campus’s Instructional Computing Laboratories (IC Labs). For graduate and research computing, the SOE supports:

- Central file servers for core services such as mail, name service, file sharing, and backup
- Several general-access Unix systems
- Several compute servers
- Several graduate student computer labs with a mix of Windows, Linux, and Solaris workstations and network printers
• A variety of software purchased in cooperation with UCSC central computing, SOE computing, and individual faculty members

Details of SOE computing services can be found at www.soe.ucsc.edu/administration/computer.

Research Laboratories. The SOE operates and supports the following research laboratories. Current information about SOE Research Labs can be found at www.soe.ucsc.edu/research/labs.

Computer Communication Research Group. The Computer Communication Research Group (CCRG) is dedicated to basic and applied research in computer communication. CCRG research focuses on new algorithms, protocols, and architectures for wireless networks based on packet switching (packet-radio networks), Internetworking, multipoint communication, and the control of resources by multiple administrative authorities. Web: www.cse.ucsc.edu/labs/ccrg.

Geospatial Visualization Laboratory. The lab is creating a consistent four-dimensional space-time visualization of geospatial data and intelligence associated with the environment. This task requires intelligent collection of data using various sensors, including a variety of cameras, LIDAR data, and multispectral imagery in all kinds of frequency bands. The spatiotemporal GIS (geographic information systems) visualization will bring together several layers of information including terrain data, street maps, buildings, environment data, aerial images, and mobile objects data. Web: www.cse.ucsc.edu/lab/geospatial.

Group Researching Advances in Software Engineering. The Group Researching Advances in Software Engineering (GRASE) laboratory performs research in the areas of software evolution and reengineering, and software configuration management. Current areas of research include identifying unstable areas of evolving software, automatic generation of software configuration-management repositories, and development of web-based versioning and configuration-management infrastructure. Web: www.cse.ucsc.edu/labs/grase.

High-Speed Network Laboratory. Members of the High-Speed Network Laboratory explore and expand the field of high-speed computer networking and communication. Current areas of research include high-speed switching, traffic-scheduling algorithms for providing quality-of-service (QoS) guarantees in packet networks, ATM congestion control, and optical networks. Projects are funded by NSF, ARPA, and private industry. Web: www.cse.ucsc.edu/labs/hsnlab.

Image Processing and Multimedia Laboratory. The Image Processing and Multimedia Lab (IPMML) is the central venue for ongoing research into topics in image processing and multimedia. Areas of interest include wireless digital video; virtual scene and panorama generation; natural and machine-generated image compression; video capture, processing, and editing techniques; color printing technology; image libraries; and combinations of the above. Web: sapphire.cse.ucsc.edu.

Internetworking Research Group. The Internetworking Research Group (i-NRG) conducts research in the design, experimental evaluation, and implementation of network protocols for Internetworks consisting of wired as well as wireless networks. Research activities span a number of areas in computer networks and distributed systems. Web: ingr.cse.ucsc.edu.

Multidimensional Signal Processing Research Group. The Multidimensional Signal Processing (MDSP) Research Group’s interests are in the area of inverse problems in imaging, statistical detection and estimation, and associated numerical methods. Current projects include image-resolution enhancement and superresolution, computationally efficient image-motion estimation, shape reconstruction from local and global geometric data, multiscale modeling and analysis of signals and images, radon transform-based algorithms for deformation analysis and dynamic imaging, image processing and inverse problems in remote sensing, and automatic target detection and recognition. The group is also associated with the Image Processing and Multimedia Lab. Web: www.cse.ucsc.edu/967Emilanfarl/MDSP.

Santa Cruz Laboratory for Visualization and Graphics. Recent research at the Santa Cruz Laboratory for Visualization and Graphics includes animal modeling and animation, environmental visualization, isosurfaces, d.v.r., hierarchical grids, massively parallel volume rendering through the net, uncertainty visualization, virtual reality in scientific visualization, nomadic collaborative visualization, tensor visualization, and flow visualization. Web: www.cse.ucsc.edu/labs/vis.

Storage Systems Research Center. Composed of faculty from the Computer Science, Computer Engineering, and Electrical Engineering Departments, the Storage Systems Research Center focuses on caching, storage systems hierarchies, large-scale distributed storage systems, security, and performance. Web: ssrc.soe.ucsc.edu.

UCSC Scientific Visualization Laboratory. The UCSC Scientific Visualization Laboratory provides the means for creating visualizations from scientific data. Projects include a simulation of an “extensive air shower” striking the Milagro detector at Los Alamos National Lab, representing a subsonic flow over a delta wing aircraft, a demonstration of direct volume rendering on a multiply-gridded space shuttle launch vehicle, an N-body simulation of large-scale structure in the universe, and a representation of a diving whale based on location data from a Monterey Bay tagging experiment. Web: vizwww.cse.ucsc.edu.

UCSC Visual Computing Laboratory. The UCSC Visual Computing Laboratory explores visual tracking, stereo and sparse IBR, facial modeling and analysis, and image and video processing. Web: www.cse.ucsc.edu/research/labs/oumop.

Undergraduate Engineering Laboratories (Baskin Engineering Lab Support—BELS). The SOE operates the following special instructional laboratories for the exclusive use of engineering students. These laboratories are typically open 24 hours a day, seven days a week, during instructional quarters. Detailed information about these labs can be found at the following web site: www.soe.ucsc.edu/bels.

• Digital Logic Design Laboratory
• Controls, Signals and Instrumentation Laboratory
• Analog Circuits Laboratory
• Electrical Engineering Senior Projects Laboratory
• Optics and Laser Laboratory
• Computer Engineering Projects Laboratory
• Electromagnetic and Radio Frequency Laboratory
• Physical Electronics Laboratory
• Computer Networking Laboratory

Engineering Building Wireless Computer Network (CruzNet). A wireless (IEEE-802.11b) computer network (CruzNet) is installed on the first floor of the Baskin Engineering Building. UCSC students and faculty may access the Internet using their own laptops with wireless Internet cards. Information on CruzNet may be found at the following web site: its.ucsc.edu/services/network_access/cruznet.
At UCSC's Center for Agroecology & Sustainable Food Systems, researchers investigate the ecological basis for sustainable agriculture, with the goal of designing farming systems that conserve energy and water, recycle nutrients, and manage weeds and pests with minimal environmental and economic costs. The center's work is multifaceted, covering multiple aspects of sustainable agriculture and food systems. Center facilities and resources are available to researchers on and off campus, government agencies at many levels, nongovernmental organizations, producers, consumers, students, gardeners, and other individuals interested in multiple aspects of sustainable agriculture and food systems. Center staff coordinate major agricultural conferences, teach short courses, make presentations at agricultural and ecological events, and publish a newsletter twice yearly. In addition, about 35 people complete a six-month apprenticeship organized and taught by center staff each year, earning a Certificate in Ecological Horticulture through UCSC Extension. Through workshops, lectures, and hands-on instruction, apprentices master basic organic farming and gardening techniques.

UCSC Instructional Computing Laboratories. In addition to the facilities provided by the Jack Baskin School of Engineering, students have access to the computing facilities of the UCSC Instructional Computing Labs (IC Labs). These include several computer labs located around the campus consisting of Unix, Mac, and Windows workstations. There are two large IC Labs located in the Baskin Engineering Building. Check the UCSC Instructional Computing web site for details on these labs and hours of operation: ic.ucsc.edu.

For additional information regarding the School of Engineering, please check the web site: www.soe.ucsc.edu

California Carlyle Edition
The splendid Norman and Charlotte Strouse Collection of Thomas Carlyle in Special Collections at McHenry Library is the focus of an exciting and innovative effort by an international group of scholars to publish an eight-volume critical edition of Carlyle's major works. Headquartered at UCSC, it is the first "scientific" edition of Carlyle, using computer technology to compare all the lifetime editions of each work in order to establish an accurate text, as well as providing explanatory notes for the modern reader. The edition promises to set the agenda for work on Carlyle and the Victorian era for the next generation. In addition to producing a much needed critical edition of the works of Carlyle, the project is using the campus's computer facilities to develop and demonstrate many state-of-the-art applications of data-processing technology in the humanities, from optical scanning of some editions and machine-assisted collation and proofreading, to desktop typesetting and the creation of an online Carlyle textual archive. The first volume, On Heroes, Hero Worship, and the Heroic in History, was published in 1993 by the University of California Press. The second volume, Sartor Resartus, was published in 2000. Historical Essays and The French Revolution are forthcoming. Web: www.nd.edu/~carlyle/strouse.html.

Center for Agroecology & Sustainable Food Systems
The Center for Agroecology & Sustainable Food Systems (CASFS) is a research, education, and public service unit of the Division of Social Sciences, dedicated to increasing ecological sustainability and social justice in the food and agriculture system. Center researchers investigate the ecological basis for sustainable agriculture and the cultural, political, and economic aspects of developing sustainable food and agricultural systems. The center’s work is multifaceted, covering a spectrum that includes research (theoretical and applied), education (practical and academic), and public service (with audiences ranging from local schoolchildren to international agencies). Much of the center’s farming-systems research takes place on organic and conventional farms throughout the region, including a number of projects in the Santa Cruz/Monterey area and the Elkhorn Slough watershed. Center social issues staff organize and participate in the Agrifood Working Group for UCSC faculty, researchers, and graduate students, which meets regularly to discuss topics related to food systems. Center facilities and resources are available to all UC Santa Cruz undergraduate and graduate students. Students can take part in ongoing center research and education efforts, design their own projects and internships in collaboration with the center’s affiliated faculty and staff, and apply for research funds through the center’s competitive grants program. Many undergraduate students participate in the center as part of the environmental studies major (see page 228) and as participants in the Apprenticeship in Ecological Horticulture (see below). The graduate program in environmental studies includes a focus on agroecology and sustainable food systems (see page 229); graduate students have access to the center’s facilities and staff assistance for field based work. Students have also pursued undergraduate and graduate studies with the center by working through the Departments of Biology, Education, Anthropology, and Sociology.

In addition, about 35 people complete a six-month apprenticeship organized and taught by center staff each year, earning a Certificate in Ecological Horticulture through UCSC Extension. Through workshops, lectures, and hands-on instruction, apprentices master basic organic farming and gardening techniques. The center gives high priority to forging links with, and serving as a resource for, researchers on and off campus, government agencies at many levels, nongovernmental organizations, producers, consumers, students, gardeners, and other individuals interested in multiple aspects of sustainable agriculture and food systems. Center staff coordinate major agricultural conferences, teach short courses, make presentations at agricultural and ecological events, and publish a newsletter twice yearly. In addition, the center hosts a growing number of international researchers interested in working with faculty and staff.

The center manages two facilities: the 25-acre Farm on a lower meadow of campus and the four-acre Alan Chadwick Garden on the upper part of campus. As the center’s primary on-campus research facility, the Farm includes research...
plots, raised-bed gardens, row crops, and orchards, as well as staff offices, a laboratory, greenhouses, and a visitors center. The Garden showcases small-scale intensive horticulture and supports a diverse collection of ornamentals, food crops, and native California plants.

The Farm & Garden are open to the public daily from 8 A.M. to 6 P.M. In conjunction with the Friends of the UCSC Farm & Garden, the center sponsors a variety of public education events for the community. For further information, contact the center at (831) 459-3240; for directions to the Farm & Garden, call (831) 459-4140. The web address is www.ucsc.edu/cagf.

Center for Biomolecular Science & Engineering
The Center for Biomolecular Science & Engineering (CBSE) fosters interdisciplinary research and academic programs that address the scientific questions of the post-genomic era—the scientific opportunities arising from the completion of the Human Genome Project and the sequencing of other model organisms. As they further our understanding of biology, these scientific investigations have potential applications to medicine, agriculture, and ecology. The center serves as an umbrella organization at the University of California, Santa Cruz, spanning the Baskin School of Engineering and the Division of Physical and Biological Sciences in pursuit of the following goals:

- Promote interdisciplinary research in areas that encompass the study of genomic information and structural biology.
- Support the UCSC Genome Browsers, a crucial resource for the international scientific community.
- Support a core of instrumental facilities, such as the KiloKluster processing system and microarray facilities.
- Help meet the need for trained professionals in industry and academia by developing courses, curricula, and internships leading to degrees in the areas of bioinformatics and biomolecular engineering.
- Attract research funding for the center, for affiliated faculty, and for students from federal, state, and private agencies.
- Cultivate and maintain mutually beneficial relationships with industry through research collaborations, internship opportunities, and gift programs.

Our location near the San Francisco Bay Area and proximity to Silicon Valley allows UCSC researchers to collaborate actively with colleagues in other world-class institutions (Stanford, UC Berkeley, UC San Francisco) and in leading biotechnology and high-tech companies.

For more information about CBSE, visit the web site: www.cbse.ucsc.edu.

Center for Cultural Studies
The Center for Cultural Studies builds on UCSC’s strong history of innovative scholarship in the humanities, and particularly on its unusual strength in interdisciplinary and global cultural studies. The center sponsors conferences, lectures, film series, seminars, scholarly visits, workshops, and discussion groups. It also organizes and supports research clusters of faculty and graduate students working on a variety of topics, including cultural theory, critical regional studies (Asia-Pacific America, Inter-Americas, and Hawai‘i have been recent foci), contemporary cultural production, minority discourse, and queer studies. The center is based in the Humanities Division, under the rubric of the Institute for Humanities Research (see page 64), but it also sponsors collaborative work involving faculty and graduate students from the social sciences, the physical and biological sciences, and the arts. From 2003 to 2006, the center will host several visiting scholars each year in conjunction with an ongoing project on “Other Globalizations,” funded by the Rockefeller Foundation. It also sponsors an unfunded residency program for U.S. and international scholars in cultural studies. The center publishes a quarterly newsletter listing events and activities and maintains a web site with programs, schedules, and other material at humanities.ucsc.edu/CulturalStudies. The center can be reached at (831) 459-4899, by e-mail at cult@ucsc.edu, or by mail at Oakes College Academic Services.

Center for Global, International and Regional Studies
The Center for Global, International and Regional Studies (CGIRS) was established within the Division of Social Sciences in 1996, bringing under one umbrella the Center for the Study of Global Transformations, the Institute on Global Conflict and Cooperation (IGCC)–UCSC Campus Program, the UC Pacific Rim Research Program, the Global Information Internship Program (see page 42), the Global Studies Honors Program initiative, and related research, teaching, conferences, workshops, and public-education activities. CGIRS is organized around the idea that human activities, although anchored in specific regions and nation-states, are increasingly integrated by social, economic, and cultural networks to states, regions, and communities in other parts of the world. Accordingly, globalization processes and responses to them are a major research focus of CGIRS.

The center also sponsors collaborative research groups focusing on five main areas. These research areas are global economics; civil society and social movements; global environment and development; globalization; states, and regulation; and regions and networks. CGIRS is funded by the Division of Social Sciences, the UC Institute on Global Conflict and Cooperation, multicampus research units, private donors, and foundation support. For further information, e-mail global@ucsc.edu or visit the web site: www2.ucsc.edu/girs.

Center for Informal Learning and Schools
The Center for Informal Learning and Schools (CILS) was created in 2002 through a Center for Learning and Teaching (CLT) grant from the National Science Foundation. The primary intent of this center is to strengthen K–12 science and mathematics education through deepening the understanding of informal learning and the alliances informal science environments can have with schools. CILS is a collaboration among UC Santa Cruz, the Exploratorium in San Francisco, and King’s College London, England. All three institutions offer CILS graduate programs.

CILS programs at UC Santa Cruz offer doctoral and postdoctoral research support to study the nature of informal learning in diverse settings and in diverse communities traditionally underserved by schools. UC Santa Cruz CILS programs include the following:

Doctoral Fellowships
CILS doctoral students at UCSC receive support to pursue a Ph.D. through either the Science and Mathematics program in the Education Department or the Developmental Psychology program in the Psychology Department. CILS students complete the requirements in their department, as well as attend joint doctoral seminars.

Postdoctoral Fellowships
This two-year program is aimed at new Ph.D. recipients who want to develop their research in directions compatible with the goals of CILS. Postdoctoral researchers collaborate with one or more faculty members in developmental psychology, or science and mathematics education, on research of mutual interest.
CILS Science Fellows
This program offers three quarters of support for students at UC Santa Cruz who are working on their doctorates in the fields of natural or social sciences and who want to deepen their understanding about informal science learning and connections among diverse learning environments. CILS Science Fellows participate in a core course, colloquia, and a practicum in informal science education and informal learning with other CILS Ph.D. students.
For further information on CILS at UCSC, e-mail sallyd@ucsc.edu. For information on all CILS programs at all three institutions, visit the web site: www.exploratorium.edu/cils

Center for Information Technology Research in the Interest of Society
The Center for Information Technology Research in the Interest of Society (CITRIS) is one of four California Institutes for Science and Innovation created in 2000. Financed by state, federal, and private funds, the centers concentrate on areas of science and innovation that are of special importance to California's high-tech economy and to homeland security.
CITRIS is seeking new ways to help realize information technology's potential for solving many of the complex problems facing society, including those in transportation, education, emergency preparedness, health care, and the environment. At their core, such issues depend on widespread, reliable, and secure information systems that adapt to the varied needs of users and continue to perform even if part of the system is down, disabled, or threatened.
With participation from engineers, scientists, and social scientists, the focus of the institute is to develop the technical foundations of such Societal-scale Information Systems (SIS) to meet many of California's infrastructure needs. Initial work will provide distributed "smart classrooms" for enhanced education and training; "smart buildings" that adapt their environment to their inhabitants; an urban SIS for transportation management, disaster response, seismic planning, and environmental monitoring; and a medical alert network to monitor and treat patients.
CITRIS’s lead campus is UC Berkeley. UC Santa Cruz, UC Davis, and UC Merced are partners in the institute. Web: www.citris.berkeley.edu.

Information Technologies Institute
The Information Technologies Institute (ITI), formerly Institute for Networking, Information Systems & Technologies (INIST), is a Focus Research Activity (FRA) founded in 2001 and housed at the Baskin School of Engineering. ITI’s objective is to provide an environment in which its members can attract large-scale projects that bridge technology research from concept to prototype and that solve critical problems in the social and commercial sectors nationally.
In ITI, advanced Internet applications provide the impetus and focus that bring together the components of research related to the rapidly expanding world of networks, distributed computing, "smart" sensors, and Internet appliances. As electronics and packaging developments lead to powerful low-cost sensors, resulting in a broad array of instruments, these become Internet devices, bringing a significant increase in the data captured, transmitted, stored, managed, and displayed.
ITI focuses research, via its research centers in an interrelated set of areas in computer science, computer engineering, and electrical engineering as well as physics, chemistry, and applied mathematics. Areas of emphasis include the following:
- Internet and information systems: architecture, performance, and applications
- Multimedia systems and applications in education, telecommuting, and distance learning
- Design and development of complex networked systems and software technologies
- Storage systems and databases
- Communications
- Optoelectronics (including nanotechnology devices)
- VLSI design, packaging, testing
- Sensors and Internet appliances
- Visualization and computer graphics
ITI manages the participation with other research partnerships of its faculty, including the activities of the Baskin School of Engineering in the Center for Information Technology Research in the Interest of Society (CITRIS), with UC Berkeley, UC Davis, and UC Merced; the High Dependability Computing Consortium (with NASA Ames, Carnegie Mellon, and other universities); the National Partnership for Advanced Computing Infrastructure (NPACI) and the San Diego Supercomputer Center; and local universities and organizations with mutual research interests, including the Naval Postgraduate School; San Jose State University; California State University, Monterey Bay; and the Monterey Bay Aquarium Research Institute (MBARI).
Web: www.ece.ucsc.edu/researchcenters/itiitl.

Center for Justice, Tolerance, and Community
The Center for Justice, Tolerance, and Community (CJTC) was established in 2000. Housed in the Division of Social Sciences and funded by divisional monies, university initiative funds, private donors, and various foundations, CJTC is an interdisciplinary center tackling issues of social justice, diversity and tolerance, and the building of collaborative communities. The center includes research clusters on age and aging; poverty and inequality; the role of faith-based movements in social change; sexuality and the public sphere; the relationship between science, technology, and social justice; and youth, education, and inequality. Current research projects include studies of environmental justice, regional and community linkages for housing and employment, the changing labor market in Silicon Valley, transnational movements for social justice, the digital divide, and the barriers faced in the welfare-to-work transition for poor women and others. While the mix of work includes considerations of fundamental issues of discrimination, power, and domination, the center actively seeks to play a public role in providing research that can inform policy and programs to improve equity. To ensure a public presence, the center sponsors an annual lecture series as well as smaller events bringing together community leaders and academic researchers. The center draws researchers from all departments in the division as well as from the humanities and arts, and includes opportunities for post-doctoral and affiliated researchers. For more information, contact CJTC at cjt@ucsc.edu or (831) 459-5743. Web: cjtc.ucsc.edu.

Center for Molecular Biology of RNA
The center, established in 1992, brings together an interdisciplinary group of researchers whose common interest is to understand the structure, function, and biological roles of DNA’s intriguing cousin, RNA. An important goal of the center is to promote interaction among structural biologists on the one hand and molecular geneticists and biochemists on the other; thus, members of the center comprise faculty from molecular, cell, and developmental biology; chemistry and biochemistry; and computer science and engineering. Major funding for the center has come from grants from the Lucille P. Markey Charitable Trust and the W. M. Keck Foundation, as well as individual research grants from the National Institutes of Health, the National Science Foundation, and other sources available to members of the center.
Creation of the center was motivated by the many exciting developments in the molecular biology of RNA in recent years. It is now known that RNA can have enzymatic activity and has the ability to catalyze specific biochemical reactions. Accordingly, many molecular biologists now believe that RNA may have preceded both protein and DNA in the early molecular evolution of life. It is becoming apparent that RNA, like protein, can fold into complex and unusual three-dimensional structures and that this is crucial for its ability to carry out enzymatic functions. A better grasp of the fundamental properties of RNA will benefit a wide range of medical research projects: for example, a rigorous molecular understanding of RNA viruses—such as HIV and SARS—has become a national priority.

Research laboratories for the center are located in Sinsheimer Laboratories, a state-of-the-art research facility. High-resolution nuclear magnetic resonance (NMR) spectroscopy and X-ray diffraction facilities have been established to determine three-dimensional structures of RNA molecules and study the mechanisms of RNA-protein recognition. Among the research areas currently under investigation by members of the center are RNA processing, translation, mRNA stability and structure, ribonucleoprotein assembly, RNA-protein recognition, three-dimensional structures of RNA and RNA-protein complexes (including the ribosome), the mechanism of action of functional RNAs, in vitro evolution of novel catalytic RNAs, and RNA genomics. Members of the center participate in the research training of doctoral students in the graduate program offered by the Molecular, Cell, and Developmental Biology Department as well as graduate programs offered by the Departments of Chemistry and Biochemistry, Computer Science, and Computer Engineering. The center sponsors research seminars and provides a forum for discussion of topics in RNA. Web: rna.ucsc.edu/rrncenter/

Chicano/Latino Research Center

The Chicano/Latino Research Center (CLRC) was founded in 1992 and is located at Merrill College’s Casa Latina. CLRC faculty associates and affiliates conduct research within a cross-border perspective that links Latina/o studies to the rest of the Americas. The interdisciplinary approach spans empirical social scientific research and policy studies with cultural studies and the humanities. Research clusters focus on “Borders, Nations, Regions,” “Chicana/Latina Feminisms,” “Feminist Translation in the Latin/a Americas,” “Inter-Ethnicity,” “Latinos in California,” “Hemispheric Dialogues: Rethinking Area and Ethnic Studies,” “Mexico in Transition,” “Transnational Imaginaries,” and “Transnational Popular Cultures and Brazil.” The CLRC funds collaborative faculty, policy-related, and graduate research initiatives. The center supports research clusters; sponsors conferences, a colloquium series, and a visiting scholar program; and publish an annual newsletter and a working-paper series. For further information, e-mail clrc@ucsc.edu or visit the web page: labs.ucsc.edu/yclrc.

Dickens Project

Through a regular program of conferences, courses, and scholarly gatherings, the Dickens Project coordinates research and instruction in the work, times, influence, and achievement of Charles Dickens. Twice a year, faculty members and graduate students from the nine general campuses of the University of California, joined by colleagues from other universities, present their research findings to conference participants, interested undergraduate and graduate students, and members of the general public. They meet on the Santa Cruz campus each summer and at Davis or Riverside each winter. The topic for summer 2004 was A Tale of Two Cities. Each year, this conference is available as a regular Summer Session undergraduate course. The project also publishes its own newsletter, publishes curricular materials, cosponsors international conferences, and sponsors a web site, humwww.ucsc.edu/dickens/. Founded in 1981, the Dickens Project is a multicampus research group of the University of California.

Educational Partnership Center

The UC Santa Cruz Educational Partnership Center (EPC) is the first point of contact for schools, community colleges, and members of the educational community interested in forging new relationships or partnerships with UCSC. It also offers support to UC Santa Cruz faculty and staff interested in collaborating with local schools. The EPC coordinates a variety of outreach programs to elementary, middle, and high schools, as well as community colleges in five counties: Monterey, San Benito, Santa Clara, Santa Cruz, and San Mateo. The overall goal of the EPC is to increase UC eligibility, competitive eligibility, and college-going rates among low-income and traditionally non-college-going students.

The EPC central support team includes a financial service center, integrated planning support, grant writing, tutor coordination, summer residential program coordination, curriculum advising, communications support, and a research and evaluation team. Housed with the central support team are the integrated and affiliated programs listed below.

The EPC is located at 3004 Mission Street, Suite 220, in Santa Cruz. Call (831) 460-3000 or visit the web: epc.ucsc.edu.

EPC Integrated Programs

The Monterey Bay Educational Consortium (MBEC)—an alliance among public educational institutions in the Monterey Bay Area—
is dedicated to increasing the levels of educational attainment of all students in the region.

The Partnership Schools program works at an intensive level with a number of local high schools and their feeder school systems.

Designed to work in tandem with Partnership Schools, SAAGE (Students Achieving A–G Expectations) identifies high school sophomores who lack one or more courses needed to complete the A–G sequence required for university admission, and coordinates efforts to provide them with academic counseling and advisement.

Kids Around the University provides copies of a book about college written by Aromas, California students, tours of the UCSC campus, and a curriculum guide for all fourth-grade teachers in the region to begin to learn about the importance of higher education and the pathways to attaining a college education.

The Early Academic Outreach Program (EAOP) provides direct assistance to students in grades six through 12 in local schools with high percentages of low-income and traditionally non-college-going families.

The Transfer Partnerships Program is an initiative designed to increase the number of students transferring from community colleges to the UC system.

GEAR UP offers a full range of student- and school-centered activities for Watsonville High School and its feeder middle schools, with a focus on college-preparatory mathematics.

The EPC coordinates residential programs on the UCSC campus providing high school students with enriched learning experiences. Among them is the California State Summer School in Mathematics and Science (COSMOS), which selects academically talented high school students from around the state.

**EPC Affiliated Programs**

Also housed at EPC are program affiliates: the UC College Preparatory (UCCP) Initiative, which provides students opportunities to take advanced placement courses online in schools that might not normally be able to offer such courses; UC Gateways, an online database to help California K–12 students track their progress toward UC admission; MESA (Mathematics, Engineering, Science Achievement), a program to increase the number of minority students entering the fields of math, engineering, and science; ACCESS (Baccalaureate Bridge to the Biomedical Sciences), which brings community college students to work as interns with UCSC researchers; and the UCSC/Monterey Bay California Reading and Literature Project (CRLP).

**Focused Research Activity in Performance Practice and Context in the Arts**

The Focused Research Activity in Performance Practice and Context in the Arts explores issues within and around performance. The research and creative work of this multidisciplinary group of scholar-performers integrates the presentation and study of performance itself with the intellectual, historical, and cultural context of the performance, utilizing the various perspectives of ethnomusicology, historical musicology, systematic musicology, and ethnology. The FRA focuses on recorded music performance as a modality of creative expression rather than on writing about the arts, although scholarly notes typically establish a context for performances. By long-standing FRA policy, our members thus engage in basic research in cultural performance practice as well as in audio or video recordings documenting arts performance not already accessible. Our creative work consists of (1) recordings interpreting musical scores through informed performance, and (2) documentary films interpreting oral tradition performance in cultural context. Our projects are published as reviewable professional multi-author CD recordings and films.

Members collaborate with each other, visiting scholar-performers, and UCSC professorial faculty who are not yet ongoing members of the FRA. Typical projects also involve UCSC lecturers, students, staff, and alumni. Our team projects are often successful in securing external matching funds to support recording and publication costs. In the area of historical performance practice, the FRA has produced a series of recorded performances. A CD *Virtual Mozart* (2000), a project for Classical orchestra involving computer-generated Mozart-style "composition" by Experiments in Musical Intelligence, brought all four members of the FRA into productive collaboration with professional early-music specialists. A related project with Baroque orchestra, *Virtual Bach*, appeared in 2003; it premiers and records a new "Brandenburg Concerto," a new harpsichord concerto, and a suite for solo violoncello. In the area of 20th-century performance practice, FRA members have released CDs of the works of pioneering American composer Lou Harrison, celebrated French composer Germaine Tailferre, and American dance works by the avant-gardist Henry Cowell. A CD of music by Darius Milhaud was recorded and edited in 2003. The FRA cluster in Indonesian cultural documentation focuses on documentation of traditional music as embedded in the context of calendrical Hindu-Buddhist ritual. The first film of a projected trilogy is *Kawitan* (2002), distributed by the Center for Media and Independent Learning, UC Berkeley Extension.

**Focused Research Activity in Shakespeare: Text, Interpretation, Performance**

The Focused Research Activity in Shakespeare: Text, Interpretation, Performance brings together faculty in literature and theater arts who are engaged in research and creative activities relating to Shakespeare and other premodern drama. Members explore methodologies for establishing the texts of plays, problems in interpreting them, original performance contexts, and issues and techniques involved in presenting
older drama to modern audiences. The members’ research and creative activities focus especially on the productions of Shakespeare Santa Cruz (described on page 101). The group sponsors colloquia (including the annual Weekend with Shakespeare, held during the Shakespeare Santa Cruz Festival), lectures by visiting scholars, rehearsed play readings, and open rehearsals. The group is also responsible for the archival documentation of Shakespeare Santa Cruz productions as a scholarly and pedagogical resource. For further information, call the Shakespeare Santa Cruz company manager, (831) 459-5810.

**Geographic Information Systems Laboratory**

Geographic Information Systems (GIS) refers to a computerized information system that works with data referenced by spatial or geographic coordinates. GIS integrates procedures designed to support the capture, management, manipulation, analysis, modeling, and display of data for solving complex environmental planning and scientific problems. GIS allows researchers to work with vast amounts of information—ranging from local field data to satellite imagery to the U.S. Census. During the last several decades, GIS has become well established in environmental sciences, city and county planning departments, and resource management agencies, to map everything from vegetation and endangered habitat to transportation routes.

The purpose of the laboratory is for environmental and policy research and training, including teaching and self-instruction. Beyond serving the training and research needs of the campus, the lab serves as a regional resource through data and technology exchanges (e.g., with NOAA, the California Coastal Commission, U.S.G.S.). GIS brings technology to bear on critical science and policy issues and provides scientists and policy makers with a new way to analyze, simulate, and visualize alternatives.

Housed on the fourth floor of the Interdisciplinary Sciences Building, the laboratory consists of networked workstations and numerous peripherals including global positioning system (GPS) equipment. It is administered by the Environmental Studies Department, Division of Social Sciences, which teaches Environmental Studies 115A (see page 231). Among the donors who have helped establish the lab are ESRI (ARC/INFO software), Sun Microsystems, ERDAS (imaging software), and the Instructional Improvement Grant Program. Interested students may contact the GIS coordinator at (831) 459-2890 (fulfrost@ucsc.edu). Web: gis.ucsc.edu.

**Institute for Advanced Feminist Research**

The focus of the UCSC Institute for Advanced Feminist Research (IAFR) is Feminism and the Public Sphere. IAFR sponsors projects that are historical, international, and interdisciplinary in their conception, and collaborative and experimental in their practice. Employing scholarly methodologies and activist strategies, participants address a range of intellectual and academic problems. They seek, above all, to engage current political debates, including those from which feminist critiques have been largely absent.

Centrally, the institute facilitates sustained conversations among individuals who do not ordinarily have the opportunity to brainstorm and act in concert: scholars, artists, activists, journalists, community people and public intellectuals; people of different generations from diverse geographical areas; those who define themselves as feminists and those who do not. These conversations create new conceptual spaces, theoretical formulations and strategic interventions: written work of varying length—popular as well as academic, films and art shows, conferences and symposia, working groups and public policy collectives.

Chief among the Institute’s projects is the support of residential groups, which focus on specific problems in seminars and workshops. To facilitate their activities, faculty are given released time, graduate students receive fellowships, and undergraduates do internships—all on a rotating basis. Visiting scholars, journalists, activists, and artists are supported for varying periods of time. Each research group sponsors activities for the larger community and maintains connections—nationally and internationally—with other similar entities. Each group chooses the forms of its own productions and the kinds of social and political interventions it wishes to make. In addition, the institute sponsors other activities, which are determined by its Executive Committee.

For information, contact the director at (831) 459-4146, moglen@ucsc.edu, or staff at (831) 479-1776, nsg@ucsc.edu. Web: iafr.ucsc.edu.

**Institute for Humanities Research**

The Institute for Humanities Research (IHR) was established in the fall of 1999 with funding from the Campus Provost/Executive Vice
Chancellor’s Office and the Humanities

Dean’s Office. The mission of the IHR is to enhance the environment for faculty and graduate student humanities research on the UCSC campus. Recognizing that humanities research is an important component of a first-rate research university and is crucial to excellent teaching and scholarship, the IHR provides time, space, and support for the maintenance of a lively, active research community. The IHR includes the Center for Cultural Studies (see page 60) and research units including Black Music, Jewish Studies, Language, Learning and Teaching, Living Writings, Mediterranean Studies, Modernist and Avant-Garde Studies, and Pre- and Early Modern Studies. It supports the Humanities Research Fellows Program, Faculty Research and Travel Grants, Graduate Dissertation Fellowships, Graduate Research and Travel Grants, and special events. In addition, the IHR sponsors the Dean’s Distinguished Lecturers and Humanities in the Schools, an outreach initiative to middle and high schools in the region. Further information is available on the web: humanities.ucsc.edu/ihr. The IHR may be contacted by e-mail at ihrstaff@ucsc.edu, by mail at IHR, Oakes College Academic Services, or by phone at (831) 459-4899.

Institute for Quantitative Biomedical Research

UCSC is one of three UC campuses sponsoring the Institute for Quantitative Biomedical Research (QB3), a new California Institute for Science and Innovation (CISI). A cooperative effort with UC San Francisco as the lead campus, UC Berkeley, and industry, QB3 focuses on biomedical research, integrating the physical, mathematical, and engineering sciences to create powerful techniques for solving complex biological problems. The Institute builds on strengths in the mathematical and computational sciences at UCSC, the biomedical engineering and physical sciences at UCB, and the medical sciences at UCSF, as well as strong biology programs on all three campuses.

QB3 focuses on four major challenges: developing new mathematical and computational techniques to analyze vast quantities of biological data, new imaging technologies combined with advanced mathematical and computer modeling to understand complex biological systems, new engineering technologies to analyze biological systems, and new physical and biological techniques to synthesize and modify components of living systems. QB3 is organized around four programs: Bioengineering and Biotechnology, Structural and Chemical Biology, Bioinformatics and Computational Biology, and Experimental Genomics/Proteomics/Biochemistry.

The Bioinformatics (BI) Program is based at UCSC. Its mission is twofold: (1) to interact closely with the other three programs of the institute to provide the theoretical and computational expertise needed to translate experimental results into predictive models and comprehensive profiles of biological regulation at multiple levels; and (2) to drive critical research projects in the areas of genomics, proteomics, complex systems, and medical discovery informatics. The BI Program will thus provide the mathematical and computational matrix that will unify the four programs of the institute.

QB3 is administered at UCSC through the Center for Biomolecular Science and Engineering and involves faculty from the Departments of Biomolecular Engineering; Computer Science; Computer Engineering; Applied Mathematics and Statistics; Molecular, Cell, and Developmental Biology; and Chemistry and Biochemistry. More information on CISI and QB3 can be found at www.qb3.org and www.ucsc.edu/news_events/press_releases/archive/00-01/12-00/institute.html.

Institute of Geophysics and Planetary Physics

UC's Institute of Geophysics and Planetary Physics (IGPP), a multicampus research unit, includes a branch at UCSC. The IGPP supports a wide range of basic research on the origin, structure, and evolution of Earth, the solar system, and the universe. One of the goals of this research is to predict future changes in global systems that may affect human life. The UCSC branch of the institute addresses fundamental questions relating to Earth’s environment, global change, and planetary sciences. The UCSC branch includes four interdisciplinary research centers: the Center for Origin, Dynamics, and Evolution of Planets (CODEP), the Center for Dynamics and Evolution of the Land-Sea Interface (CDELSI), the Center for the Study of Imaging and Dynamics of the Earth (CSIDE), and the Center for Remote Sensing (CRS). These interdisciplinary centers serve to create bridges between different departments and heighten the focus on collaborative research efforts. A Massive Computer Simulation Facility (MCSF) has been established with a large parallel supercomputer for conducting geophysical and atmospheric modeling. CDELSI brings together faculty from six Departments: Ecology and Evolutionary Biology, Earth Sciences, Ocean Sciences, Environmental Toxicology, Anthropology, and Environmental Studies. Researchers in these departments are at the forefront of efforts to understand the complex processes and interactions occurring at the continental margin. A primary concern is the impact of global and regional climate change on key processes in the coastal environment, such as atmospheric circulation, ocean temperature and currents, nutrient cycling, and the geological processes that shape the continental margin.

CODEP brings together faculty from the Departments of Astronomy and Astrogeophysics, Applied Mathematics and Statistics, Earth Sciences, and Physics. The interests of CODEP researchers include Earth’s internal dynamics, the formation of planets, how planetary systems evolve, and the discovery of new planets outside the solar system. This is a joint effort to understand as much as possible about planets in general, both in our own solar system and around other stars. The center encourages Earth scientists and astronomers to bring their different perspectives to bear on planetary issues.

CSIDE coordinates research in seismology, geodynamics, geomagnetism, hydrology, geomorphology, active tectonics, and mineral physics addressing structure and dynamics of the Earth's interior. Thermal, chemical, and dynamic processes are studied in six affiliated research laboratories. CSIDE hosts a major industrial consortium focused on development of new seismic-imaging technologies.

CRS coordinates research efforts of faculty in the Departments of Earth Sciences, Ocean Sciences, Ecology and Evolutionary Biology, Electrical Engineering, and Computer Engineering for the use of satellite and airborne remote sensing in studying processes occurring on the surfaces of the Earth and other planets. Specific interests include astrogeology; plant ecology; coral reef health; volcanic, geothermal, and earthquake processes; climate change; submarine and coastal geology; ocean surface processes and marine habitats; and engineering development.

The IGPP was established in 1946 at UCLA. Other branches are located at UC San Diego, UC Riverside, UC Irvine, UC Berkeley, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory. A key objective of the IGPP is to encourage and support cooperative projects that bring together researchers from different disciplines and institutional laboratories. The UCSC branch was established in 1999. Web: igpp.ucsc.edu.

Institute of Marine Sciences

With the dynamic combination of university marine scientists, state-of-the-art facilities and
analytical equipment, collaborative research, and an overriding commitment to quality, UC Santa Cruz is on the forefront of marine sciences research, education, and outreach. Set in the biologically rich environment of Monterey Bay and the nation’s largest national marine sanctuary, the campus provides students and scientists who seek to study the ocean and its life a unique opportunity to pursue their dreams.

Established in 1972, the Institute of Marine Sciences (IMS) is composed of 46 affiliated faculty, 120 researchers and research associates, and 32 support staff. Marine scientists from the Departments of Ocean Sciences, Ecology and Evolutionary Biology, Earth Sciences, Environmental Toxicology, Chemistry and Biochemistry, Environmental Studies, and Physics conduct their research within the shared focus of the institute. The institute provides facilities and administrative and technical support for faculty, researchers, and graduate and undergraduate students involved in marine sciences. Faculty and researchers work independently and collaboratively within seven clusters:

- Coastal marine biology
- Marine vertebrate biology
- Ocean processes/oceanography
- Paleoclimatology and climate change
- Marine and coastal geology/geophysics
- Environmental toxicology
- Fisheries and fisheries management

An undergraduate major leading to a B.S. in marine biology is described on page 135; a two-year graduate program leading to an M.S. in ocean sciences is described on page 322. Doctoral students pursue marine research through the Ph.D. programs in ecology and evolutionary biology, Earth sciences, environmental toxicology, or ocean sciences.

Facilities
The institute’s on-campus complex includes the IMS administrative office; research laboratories; offices for visiting scientists; state-of-the-art analytical labs for marine chemistry, biology, and geology, including a coastal imaging/Geographic Information Systems laboratory; a computer laboratory; culture rooms for invertebrates and algae; portable seagoing analytical labs; and support facilities for cruise staging.

The Joseph M. Long Marine Laboratory, an onshore site three miles from campus on the shoreline of the nation’s largest national marine sanctuary, has running seawater capabilities that increase opportunities for research and instruction. Facilities include research laboratory buildings; outdoor tanks for research involving marine mammals (dolphins, seals, sea lions, and otters), seabirds, and fish; and teaching laboratories. Specialized laboratories and facilities for marine physiology, ecology, and marine mammal bioacoustics studies are available. Adjacent to the lab is 55 acres of land now being planned for expanded marine-related research and education facilities, a protected lagoon, a sandy beach, and rocky intertidal platforms for field research. Because Long Marine Lab is close to the campus, work there is easily incorporated into daily campus activities. A campus-LML shuttle operates regularly.

Each year, 50,000 people—including 10,000 schoolchildren—tour Long Marine Lab. Trained volunteer docents welcome visitors, guide groups through the laboratory, and provide information on research in progress. The Seymour Marine Discovery Center at Long Marine Laboratory houses an aquarium, exhibits that interpret the research under way within the institute, and an auditorium. All are open to the public—including K-12 classes—for a modest fee. In addition, a Center for Ocean Health at Long Marine Lab, completed in 2001, houses offices and labs for marine sciences faculty and their research programs, as well as two nonprofits: the Nature Conservancy’s Coastal Waters Program and the Island Conservation and Ecology Group.

IMS maintains a number of small vessels equipped for nearshore coastal research, several small craft for inshore work, and a scientific diving program. In addition, IMS-associated faculty, researchers, and students work around the world aboard larger oceanographic vessels.

IMS has scientific control over use of Ano Nuevo Island, the largest elephant seal rookery on the Pacific coast (see page 68).

IMS maintains active cooperative research agreements with both the Biological Resources Division and the Coastal and Marine Group of the U.S. Geological Survey that have 40 agency scientists now housed adjacent to Long Marine Laboratory. A plan is under way to develop a larger USGS facility, the Pacific Science Center, at the Long Marine Lab site.

The institute maintains a cooperative agreement with the National Marine Fisheries Service (NMFS). In 2000, this agency completed a fisheries laboratory at Long Marine Lab, which houses 55 scientists and staff working on salmon, bottom fish, and fishery-management issues. NMFS scientists study causes of variability in abundance and health of fish populations and the economics of exploiting and protecting natural resources. The National Oceanic and Atmospheric Administration (NOAA) has also located an Institute for Marine Protected Area Science within this federal building. The California Department of Fish and Game operates a Marine Wildlife Veterinary Care and Research Center at Long Marine Lab, which provides interior lab space and outdoor pool space for research on sea otters and the effects of oil and other contaminants on marine mammals and seabirds.

Additional collaboration also takes place with scientists at the Monterey Bay Aquarium Research Institute, Moss Landing Marine Laboratories, Hopkins Marine Station, the Monterey Bay Aquarium, the Naval Postgraduate School, and the Monterey Bay National Marine Sanctuary.

IMS web sites: imsi.ucsc.edu and www2.ucsc.edu/seymourcenter.

Santa Cruz Predatory Bird Research Group
The Santa Cruz Predatory Bird Research Group (SCPBRG) was formed in 1975 to restore an endangered peregrine falcon population in California. SCPBRG researchers advise students on their senior theses, direct interns in individual studies, and hire biologists in entry-level field-biologist positions for wildlife management and field research on birds.

SCPBRG has become a resource to agency biologists, industry, and university researchers who require expertise with problem solving and management of avian species, especially raptors. Having accomplished most of its goals with peregrine falcon management, the group now applies its expertise to a wider range of species. Current studies involve international bald eagle satellite telemetry studies, helping restore the delicate ecology of California’s Channel Islands, research to mitigate impacts to endangered birds by raptors, and research on solutions for avian electrocutions and wire strikes along California’s power transmissions network. SCPBRG is also expanding its activities to increase educational outreach through school assemblies and training for professionals. SCPBRG is located at the Long Marine Laboratory. For more information, review the web site at www.scpbrg.org.

Scientific Diving and Boating Safety
The university’s Diving Safety Program (DSP) is housed within the Institute of Marine Sciences, with offices at Long Marine Lab. Scuba diving and small boats are tools used in science classes and by UCSC faculty, staff, and student researchers in Monterey Bay and at study sites worldwide. In order to ensure safe scuba diving and scientific boating practices, DSP provides training and oversight for all scuba diving (scientific and recreational) and scientific boating activities conducted under UCSC auspices. The diving safety officer teaches Biology 75, Scientific Diving Certification (see page 137) which is a prerequisite for all UCSC
courses and research using scuba diving as a tool. DSP maintains a fleet of boats and diving equipment for researchers to use. DSP assists faculty, staff, and student researchers in complying with federal OSHA standards for scientific scuba diving. Anyone who needs to use scuba diving or small boats for scientific purposes should contact the DSP Office at srclabnet@ucsc.edu. The web address is www2.ucsc.edu/sci-diving.

Recreational diving opportunities offered by the Office of Physical Education, Recreation, and Sports (OPERS) include numerous scuba courses and the Scuba Club. The web address is www.ucsc.edu/opers/scuba.

Linguistics Research Center

The Linguistics Research Center supports and facilitates research on the phonology, morphology, syntax, semantics, and pragmatics of languages, particularly those that differ significantly from English in structure. It publishes a working-paper series, sponsors research colloquia, and hosts longer visits to the campus by international scholars. The work of previous visitors has focused on various languages and more general topics (e.g., languages of South America and Australia, Japanese, Hungarian, Irish, Hebrew syntax, phonological theory). Founded in 1981, the center is housed in Stevenson College and fully integrated into the Department of Linguistics. Current research projects include the clause structure and subjectionhood, the syntax and semantics of indefinites, the phonological structure of the lexicon, morphosyntactic markedness and typology in optimality theory, the phonetic bases of phonology, and morphological parsing. For further information, call (831) 459-2386, e-mail lre@ling.ucsc.edu; or see the web: ling.ucsc.edu.

Monterey Bay Education, Science, and Technology Center at Fort Ord

UCSC has played a leading role in the development of a multi-institutional center for science, technology, education, and policy—called the Monterey Bay Education, Science, and Technology (MBEST) Center—as a cornerstone of the Fort Ord defense conversion redevelopment plan. In 1994, about 1,100 acres at the closed Fort Ord Military Reservation were conveyed to the University of California. Of that land, 479 acres are planned for development into the research and technology center, and 605 acres of adjacent natural habitat are now part of the UC Natural Reserve System.

The mission of the MBEST Center is to promote collaborative interaction among private businesses, government research agencies, public and private education and research institutions, and policy makers in strategic alliances to address the environmental opportunities and challenges of the new millennium. MBEST Center activities will focus initially on environmental science and technology, biotechnology and bioresources, information science and technology, and multimedia. And, by leveraging the strengths of over 20 public and private research and training assets of the Monterey Bay Research Center, the UC MBEST Center is anticipated to be a key stimulus for sustainable economic development and job generation.

The first base reuse activity began in January 1995 at the MBEST Center when UCSC Extension started offering technical training classes there in environmental remediation. Since then, several tenants have occupied existing facilities at MBEST, including an office of the U.S. Geological Survey, an organic farming operation, and a recycling plant. In partnership with the Golden Capital Network and the Marina Small Business Incubator, MBEST has launched a micro enterprise training initiative, the Monterey Bay V3 Training Program. The V3 program provides entrepreneurs with business mentor expertise and connections to capital. Investments in roadway and utilities infrastructure have been completed, making 55 acres of real estate available for development. In addition, the UC MBEST Center Headquarters and a high-technology business incubator were completed in 2001.

Information about the center is available from the UC MBEST Center Office, 3180 Imjin Road, Marina, CA 93933, (831) 582-1020; via e-mail: info@ucmbest.org; web: www.ucmbest.org.

Natural Reserve System

The purpose of the Natural Reserve System (NRS) is to establish and maintain for teaching and research a system of natural areas that encompasses diverse and undisturbed examples of California’s terrain, both aquatic and terrestrial. The reserves are open to all qualified individuals and institutions for scholarly work concerned with the natural environment. Such work usually deals with ecological topics or experimental studies in a natural setting.

The University of California administers 34 natural reserves throughout the state. Santa Cruz has responsibility for four—the Landels-Hill Big Creek Reserve, Fort Ord, Año Nuevo Island, and Younger Lagoon—in addition to the campus’s own reserve. Information about the system’s holdings and management is available from the director, NRS, University of California, 300 Lakeside Drive, Oakland, CA 94612-3560, (510) 987-0150. Web: nrs.ucop.edu. You may also contact the UCSC natural reserve director, c/o Environmental Studies Department, 467 Natural Sciences 2 Building, (831) 459-4971, fasiri@ucsc.edu. Web: ucreserve.ucsc.edu.

Campus Natural Reserve

About 400 acres of campus wildlands were designated by the Regents in the 1988 Long-Range Development Plan as a Campus Natural Reserve. This reserve contains redwood forest, springs, a stream, vernal pools, secondary madrone, Douglas fir forest, chaparral, and many soil types and geological formations and structures. Supported by a modest field-studies center, the reserve is used for research and teaching and is operated by the UCSC natural reserve director, c/o Environmental Studies Department, 467 Natural Sciences 2 Building, (831) 459-4971, fasiri@ucsc.edu. Web: ucreserve.ucsc.edu.

Landels-Hill Big Creek Reserve

This 4,000-acre NRS reserve is located in the Santa Lucia Mountains on the Big Sur coast, about two hours by car from the campus. The reserve includes the lower portions of an undisturbed watershed containing numerous terrestrial and aquatic habitats and several geological formations and associated fault systems. The watershed is protected by the Ventana Wilderness of the Los Padres National Forest. The reserve’s four miles of rocky coastline, located within the California Sea Otter Refuge area and the Monterey Bay National Marine Sanctuary, is now a California Department of Fish and Game Research Area and provides opportunities for marine research. There are campsites, a modest field-laboratory facility, a cabin for long-term researchers, a trailer that allows workers to locate anywhere on the road system, and a small storage facility. The Big Creek Reserve is operated by the UCSC natural reserve director. Access is controlled, and applications for use should be made to the resident reserve manager, Big Creek Reserve, Big Sur, CA 93920, (831) 667-2543, bigcreek@ucsc.edu. Web: www.redshift.com/~bigcreek/

Fort Ord Natural Reserve

This 600-acre NRS reserve was added to the system in 1996. It contains Monterey Bay maritime chaparral, an endemic plant community, and coast live oak woodland, grassland, and coastal scrub, including nine species of plants and animals that are listed as endangered, threatened, or of special status. The reserve was part of the former Fort Ord army base and its habitats are relatively intact. The reserve specializes in studies of rare species management and habitat restoration.
It is a 45-minute drive from campus. For information, contact the UCSC natural reserve director, c/o Environmental Studies Department, 467 Natural Sciences 2 Building, (831) 459-4971, fisarly@ucsc.edu. Web: ucreserve.ucsc.edu.

Younger Lagoon Reserve
A 26-acre coastal lagoon and beach next to UCSC’s Long Marine Laboratory is part of the NRS. Its waters are a haven for many species of migratory birds, and many small mammals, birds, reptiles, and invertebrates live in its marsh and bank vegetation. Younger Lagoon is managed by the UCSC natural reserve director, c/o Environmental Studies Department, 467 Natural Sciences 2 Building, (831) 459-4971, fisarly@ucsc.edu. Web: ucreserve.ucsc.edu.

Año Nuevo Island Reserve
This 25-acre island, part of the 4,000-acre Año Nuevo State Reserve 20 miles north of Santa Cruz, is a university research reserve of the NRS. Its rich variety of resident and migratory wildlife and proximity to campus makes it an ideal location for research. Northern elephant seals, California sea lions, northern sea lions, and harbor seal breed and haul out at different seasons. The reserve’s breeding colony of elephant seals has been the subject of a remarkable 30-year study by UCSC scientists. More than 300 species of land, shore, and sea birds reside in or migrate through the area, which also has a diversity of fish and intertidal organisms. Access to the island is restricted, and UCSC’s research use is managed by the UCSC Institute of Marine Sciences (see page 66). An annual use agreement with California State Parks allows research and field work throughout Año Nuevo State Reserve. A small research facility is located on the island, and a day-use facility is available in the state reserve. For further information, call (831) 459-2883, e-mail panorris@ucsc.edu, or visit the web: nrs.ucop.edu/reserves/nuevo.html.

New Teacher Center
The New Teacher Center (NTC) is a national resource focused on new teacher and new administrator development. The center works in the areas of teacher preparation, teacher induction, teacher leadership, and school administrator training and support, and conducts research addressing these topics. It is supported by the University of California, National Science Foundation, California Postsecondary Education Commission, and contributions from 20 foundations, corporations, and individuals. Staff members consult with county offices of education and school districts throughout California and in 25 other states. The New Teacher Center is located at 725 Front Street, Suite 400, in downtown Santa Cruz, (831) 459-4323, e-mail ntc@ucsc.edu. Web: www.newteachercenter.org.

Physical and Biological Sciences Division
Research Programs/Centers
Biomedical Research. The Division of Physical and Biological Sciences supports a broad range of biomedical research in the Departments of Chemistry and Biochemistry; Environmental Toxicology; and Molecular, Cell, and Developmental Biology. Structural biology, the molecular biology of RNA, genetics, bioinformatics, neurobiology, and developmental biology are areas of particular strength. Small faculty-led teams conduct their research in state-of-the-art laboratories, with additional access to shared facilities, equipment, and computational tools. Collaborative research is frequent, both among investigators within the division as well as with faculty in the Baskin School of Engineering, which is internationally recognized for its expertise in computational biology. These collaborative efforts are facilitated by the university’s Center for Biomolecular Science and Engineering. There are excellent training opportunities for postdoctoral fellows and graduate and undergraduate degree programs in areas of biomedical research and the health sciences. Web: biomedical.ucsc.edu.

Center for Tropical Research in Ecology, Agriculture, and Development. CenTREAD is a coalition of faculty and students spanning several departments and centers at UC Santa Cruz. The center fosters interdisciplinary research and training to understand tropical environmental issues and develop ecologically based, economically viable, culturally respectful, nonexploitative solutions that serve as a foundation for future generations. The center offers a variety of undergraduate and graduate courses at UC, and strives to provide educational opportunities to U.S. citizens who work in tropical countries and to students from tropical countries. Web: centread.ucsc.edu.

Scientific Discovery through Advanced Computer (SciDAC) and the Supernova Science Center. The center is a partnership among UCSC, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and the University of Arizona. This group strives for a full understanding, through numerical computation, of how supernovae of all types explode and how the elements have been created in nature. Web: www.supersci.org.

Research Facilities
Crustal Imaging Laboratory (CIL). The lab provides researchers with the sophisticated hardware and software resources necessary to perform high-resolution studies of the Earth’s outer layers. Although still under development, CIL facilities will consist of a state-of-the-art network of Sun and Solbourne Sparc workstations, a variety of input/output and mass-storage devices, and both commercial and academic multichannel seismic processing packages. Web: www.es.ucsc.edu/grad/research/crustal.html.

Earth System Modeling Laboratory. The lab is home to the Paleoclimate and Climate Change Research Group, which is presently focused on climatic and environmental change in the past and in the future. This research takes many forms and involves the use of various kinds of models and observations, as well as a wealth of paleoclimate proxy data from many marine and terrestrial locations. The laboratory’s computing resources are used for global and regional climate modeling efforts and data analysis. Web: www.es.ucsc.edu/grad/research/ear_sys.html.

Electron Spin Resonance Facility. The facility, which currently houses two instruments, is used to examine the structure and properties of metal-containing inorganic complexes, peptides, proteins, enzymes, nanoparticles, and biological membranes. The facility’s Bruker ElexSys 580 X-band spectrometer operates in either continuous-wave or pulsed mode, with variable temperature control. A high-sensitivity Bruker ElexSys 500 is especially useful for the limited sample sizes often encountered in biological studies. Web: biomedical.ucsc.edu/ESR.html.

Groundwater Hydrology Laboratory. The lab, in collaboration with a joint Surface Processes Lab and other general access labs, includes a wide variety of field, laboratory, and numerical tools. Standing analytical facilities are also available throughout the Earth Sciences and Ocean Sciences Departments, the Institute of Marine Sciences, and the Institute of Geophysics and Planetary Physics. Web: www.es.ucsc.edu/grad/research/ground.html.

W. M. Keck High-Intensity X-ray Facility. The ThermoFinnigan Neptune, a state-of-the-art multiple collector inductively coupled plasma mass spectrometer (MC-ICP-MS), was acquired through a generous donation from the
W. M. Keck Foundation. This new generation of mass spectrometers has enabled the examination of previously unstudied isotope systems to give us insights into many avenues of science. Studies of novel isotopes can now be applied in diverse fields such as anthropology, archaeology, astrobiology, Earth sciences, ecology, environmental studies, forensic science, human nutrition, oceanography, planetology, and toxicology.

W. M. Keck Seismological Laboratory. The Earth Sciences Department and the Institute of Geophysics and Planetary Physics manage a large seismological research program, much of which is located in the W. M. Keck Seismological Laboratory. This facility includes three observatory-quality broadband seismological systems deployed in central California in Chualar, Kaiser Creek, and Parkhill. These systems are operated in collaboration with Project Geoscope (France), UC Berkeley, and Caltech, respectively. Broadband portable seismometers and recording systems, as well as transportable Global Positioning System receivers provided by the W. M. Keck Foundation, are currently deployed in Costa Rica and Papua New Guinea. Many Sun computer workstations and several servers are operated in the facility to provide data-acquisition and analysis capabilities.

Macromolecular X-ray Crystallography Facility. The facility houses state-of-the-art technology for crystallography data collection and computation, molecular visualization, and model building. UCSC scientists have used the facility to investigate the structure of the ribosome, catalytic RNA (“ribozymes”), and a variety of protein structures, including systems that diffract to subatomic resolution. Users of the facility also collaborate with the Lawrence Berkeley National Laboratory’s Advanced Light Source synchrotron radiation facility. Web: biomedical.ucsc.edu/Xray.html.

Marine Analytical Laboratories. The Marine Analytical Labs are a part of the Institute of Marine Sciences at UC Santa Cruz. They are a general access analytical facility for the support of research in the marine sciences. Scientific instruments and other equipment to aid research in marine chemistry, biology, geology, and environmental toxicology are housed in a central lab complex within the Earth and Marine Sciences Building. Access is provided to all qualified users. Analytical instrumentation; instruction in use of the equipment; consultation in experimental design, sampling, analysis, and data interpretation; and general assistance in all aspects of analytical science are provided by the lab manager. Web: ims.ucsc.edu/final.html.

Microarray Laboratory. Used for genome-wide splicing and expression analyses of diverse organisms, from microbes to humans, the facility supports both spotted microscope slide and Affymetrix microarray research. The staff offer wet lab expertise to investigators, with bioinformatics specialists from the School of Engineering providing computational support. Web: biomedical.ucsc.edu/Microarray.html.

Microscopy and Imaging Laboratory. The lab has scanning and transmission electron microscopes, light microscopes equipped for photography, image analysis computers, photographic equipment for copying, and a complete black-and-white darkroom for printing. The scanning electron microscope is equipped with secondary and backscattered electron detectors and an energy dispersive X-ray spectrometer for the analysis of minerals. In addition, the lab has specimen preparation equipment for many types of samples including a vacuum evaporator, sputter coater, and ion thinner. The lab is staffed by a full-time scientist who will train and assist users in most techniques. Web: www.es.ucsc.edu/grad/research/micro.html.

Mineral Physics Laboratory. Experiments to determine the thermochemical and elastic properties of planetary materials at ultrahigh pressure and temperature are conducted in this lab. High P-T conditions are generated using the diamond anvil cell coupled with laser heating. Presently, both Raman and infrared spectroscopic facilities are available for characterization of the structural and bonding properties of minerals and fluids in situ at pressures and temperatures characteristic of planetary interiors. In addition, a high-intensity x-ray generator is used to determine the equations of state and phase equilibria of mineral assemblages relevant to the Earth’s mantle and core. Finally, a transmission electron microscope is used to analyze crystal defects and for microphase identification. Web: www.es.ucsc.edu/grad/research/miner.html.

Molecular Ecology and Evolutionary Genetics Facility. The MEEG facility provides molecular technologies for analyses of the structure and dynamics of genetic diversity found in animal, plant, and microbial populations. Technology offered in the laboratory allows for analysis of DNA sequences and DNA fragments, DNA preparation facilities, immunophenotyping, analyses of cellular plodiy level, absolute cell counting, and cell sorting. The facility is capable of assessing hundreds of samples each week for differences in the DNA sequence of individual genes, specific genetic markers, and overall DNA content. Web: biomedical.ucsc.edu/MEEG.html.

Nuclear Magnetic Resonance/Mass Spectroscopy Facilities. The NMR facility brings together an interdisciplinary group of researchers comprising faculty from chemistry and biochemistry, biology, and environmental toxicology. At present, the facility manages two high-resolution 500 MHz NMR spectrometers. Initial funding was from the Lucille P. Markey Charitable Trust and the W. M. Keck Foundation, as well as individual research grants from the National Institutes of Health, the National Science Foundation, and other sources available to UCSC. A new 600 MHz NMR spectrometer was delivered in 2004. The Department of Chemistry and Biochemistry and the Department of Molecular, Cell, and Developmental Biology are engaged in NMR structural elucidation of anticancer natural product isolation from marine organisms, organic intermediates for drug synthesis, specially designed peptide intermediates, and oligonucleotide derivatives that remain attached to solid supports. Web: www.nmr.ucsc.edu.

Paleomagnetism Laboratory. The Paleomagnetism Laboratory is located in a remote building specially constructed with nonmagnetic materials and isolated from major sources of man-made magnetic noise. Inside this building, a magnetically shielded room houses a state-of-the-art superconducting magnetometer, a sensitive spinner magnetometer, thermal and alternating field demagnetizers, and paleointensity equipment. A second lab devoted to the study of rock and mineral magnetic properties is housed in the Earth and Marine Sciences Building. It contains another spinner magnetometer, devices for measuring Curie temperatures, magnetic susceptibility and its anisotropy, hysteresis loops, and computer facilities for data analysis and graphics. Web: www.emerald.ucsc.edu/grad/research/group/paleomagfacility.html.

Plant Growth Facility. The facility provides core support for plants used in the instructional and research programs of the Departments of Ecology and Evolutionary Biology; Molecular, Cell, and Developmental Biology; and Environmental Studies. Three separate growth areas are located on Science Hill to maximize exposure to sunlight as well as provide convenient access for the research and instructional labs housed in the buildings below. Web: greenhouse.ucsc.edu.
Process Geomorphology Laboratory. The Process Geomorphology Laboratory was established in 1993. Facilities include computational workstations, which are available for use by geomorphology graduate students. The lab is also used for development of field instrumentation. Web: gis.ucsc.edu/index.html.

Proteomics Facility. Designed to perform large-scale comparisons in protein expression, the facility houses an Amersham Ettan Proteomics Lab with Differential Gel Electrophoresis (DIGE) technology. School of Engineering computer scientists will assist in processing the large amounts of protein data generated. Web: biomedical.ucsc.edu/Proteomics.html.

Rock Preparation Facility. The facility is fully equipped to aid researchers in petrographic section making, rock crushing, sample sieving, and mineral separation. A full-time technical staff member oversees the facility. Web: www.es.ucsc.edu/grad/research/rock.html.

Stable Isotope Laboratory. This facility has two mass spectrometers, devices used to determine elemental composition, a Fisons Optima, and a Fisons prism. Both are equipped with automatic carbonate devices. In addition, the Prism is fitted with the VG “Multi-prep” autosampling system for carbonates and oxygen analyses of waters. Web: es.ucsc.edu/~silab.

Strongly Correlated Electron Physics Laboratory. The SCEPL includes UV, visible, and infrared spectrometers and interferometers, infrared lasers, various low-temperature cryostats, and a 140 kiloGauss superconducting magnet. Graduate students and postdocs participate in the selection of topics, measurement of relevant samples, and analysis of data in the context of related work. The group maintains close contact and collaboration with theoretical physicists and materials scientists at various academic, industrial, and government labs, whose respective inputs regarding what is significant and what is possible help shape the course of research. Web: physics.ucsc.edu/group/electron.

Time-resolved Laser Spectroscopy. The Department of Chemistry and Biochemistry maintains several laser spectroscopy systems capable of measuring time-resolved spectra from the far UV to the near IR regions. Various systems are optimized to measure time-resolved absorption spectra, linear dichroism spectra, circular dichroism spectra, magnetic circular dichroism spectra, optical rotatory dispersion, or magnetic optical rotatory dispersion. Software is available to collect and analyze data to obtain kinetics and spectra of reaction intermediates from nanosecond to second timescales. These facilities are used in a wide variety of research, including photochemical and photobiological studies, examination of folding and unfolding mechanisms of peptides and proteins, and investigation of fast electron and proton transfer in proteins involved in mitochondrial and bacterial respiration. Web: biomedical.ucsc.edu/Kliger.html.

Ray Film and Study Collection

The Ray Film and Study Collection preserves the films, drawings, and documentation of Satyajit Ray, one of the greatest filmmakers of our time.

Santa Cruz Center for International Economics

The Santa Cruz Center for International Economics (SCCIE) was established as a UCSC research center in 2000, funded by campus and external sources. The objective of SCCIE is to broaden our understanding of international economic issues by sponsoring research, conferences, and undergraduate studies, and the exchange of scholars. Areas of study include international finance, open-economy macroeconomics, international trade, and international political economy. The center also supports and participates in activities designed to bring greater public awareness and understanding to policy issues involving international economics, SCCIE sponsors research conferences and workshops, a working-paper series, and occasional public lectures and policy forums. To support undergraduate study and research in international economics, SCCIE sponsors 10 annual research awards to students wishing to work on a project involving international economics and/or global economic issues. For more information, call (831) 459-1553. E-mail sccie@ucsc.edu; web: sccie.ucsc.edu.

Santa Cruz Institute for Particle Physics (SCIPP) was established on the Santa Cruz campus by the Regents in 1980 to coordinate research and instruction in elementary particle physics. Its staff members, as well as visiting scientists, are engaged in both theoretical and experimental projects that concern the fundamental interactions of matter. They are also involved in graduate and undergraduate instruction as regular faculty or adjunct professors, usually with the Department of Physics. Experimental work such as the design, testing and construction of large-scale particle detectors, as well as associated electronics, takes place in the development laboratories on campus. The experiments are ultimately performed at large facilities—notably the federally funded electron-positron storage rings and electron linear accelerator at the Stanford Linear Accelerator Center (SLAC), in Palo Alto, and hour’s drive from Santa Cruz. SCIPP experimentalists also use other national and international laboratories as well as participate in detectors based in space. At present the institute’s principal experimental projects include the following:
W.M Keck Foundation. This new generation of mass spectrometers has enabled the examination of previously unstudied isotopic systems to give us insights into many avenues of science. Studies of novel isotopes can now be applied in diverse fields such as anthropological, archaeology, astrobiology, Earth sciences, ecology, environmental studies, forensic science, human nutrition, oceanography, planetology, and toxicology.

W.M. Keck Seismological Laboratory. The Earth Sciences Department and the Institute of Geophysics and Planetary Physics manage a large seismological research program, much of which is located in the W.M. Keck Seismological Laboratory. This facility includes three observatory-quality broadband seismological systems deployed in central California in Chualar, Kaiser Creek, and Parkhill. These systems are operated in collaboration with Project Geoscope (France), UC Berkeley, and Caltech, respectively. Broadband portable seismometers and recording systems, as well as transportable Global Positioning System receivers provided by the W.M. Keck Foundation, are currently deployed in Costa Rica and Papua New Guinea. Many Sun computer workstations and several servers are operated in the facility to provide data-acquisition and analysis capabilities.

Macromolecular X-ray Crystallography Facility. The facility houses state-of-the-art technology for crystallography data collection and computation, molecular visualization, and model building. UCSC scientists have used the facility to investigate the structure of the ribosome, catalytic RNA (“ribozymes”), and a variety of protein structures, including systems that daffract to subatomic resolution. Users of the facility also collaborate with the Lawrence Berkeley National Laboratory’s Advanced Light Source synchrotron radiation facility. Web: biomedical.ucsc.edu/Xray.html.

Marine Analytical Laboratories. The Marine Analytical Labs are a part of the Institute of Marine Sciences at UC Santa Cruz. They are a general access analytical facility for the support of research in the marine sciences. Scientific instruments and other equipment to aid research in marine chemistry, biology, geology, and environmental toxicology are housed in a central lab complex with the Earth and Marine Sciences Building. Access is provided to all qualified users. Analytical instrumentation; instruction in use of the equipment; consultation in experimental design, sampling, analysis, and data interpretation; and general assistance in all aspects of analytical science are provided by the lab manager. Web: imls.ucsc.edu/rrmlab.html.

Microarray Laboratory. Used for genome-wide splicing and expression analyses of diverse organisms, from microbes to humans, the facility supports both spotted microscope slide and Affymetrix microarray research. The staff offer wet lab expertise to investigators, with bioinformatics specialists from the School of Engineering providing computational support. Web: biomedical.ucsc.edu/Microarray.html.

Microscopy and Imaging Laboratory. The lab has scanning and transmission electron microscopes, light microscopes equipped for photography, image analysis computers, photographic equipment for copying, and a complete black-and-white darkroom for printing. The scanning electron microscope is equipped with secondary and backscattered electron detectors and an energy dispersive X-ray spectrometer for the analysis of minerals. In addition, the lab has specimen preparation equipment for many types of samples including a vacuum evaporator, sputter coater, and ion thinner. The lab is staffed by a full-time scientist who will train and assist users in most techniques. Web: www.es.ucsc.edu/grad/research/ele_micro.html.

Mineral Physics Laboratory. Experiments to determine the thermochemical and elastic properties of planetary materials at ultrahigh pressure and temperature are conducted in this lab. High P-T conditions are generated using the diamond anvil cell coupled with laser heating. Presently, both Raman and infrared spectroscopic facilities are available for characterization of the structural and bonding properties of minerals and fluids in situ at pressures and temperatures characteristic of planetary interiors. In addition, a high-intensity x-ray generator is used to determine the equations of state and phase equilibria of mineral assemblages relevant to the Earth’s mantle and core. Finally, a transmission electron microscope is used to analyze crystal defects and for microphase identification. Web: www.es.ucsc.edu/grad/research/miner.html.

Molecular Ecology and Evolutionary Genetics Facility. The MEEG facility provides molecular technologies for analyses of the structure and dynamics of genetic diversity found in animal, plant, and microbial populations. Technology offered in the laboratory allows for analysis of DNA sequences and DNA fragments, DNA preparation facilitation, immunophenotyping, analyses of cellular ploidy level, absolute cell counting, and cell sorting. The facility is capable of assessing hundreds of samples each week for differences in the DNA sequence of individual genes, specific genetic markers, and overall DNA content. Web: biomedical.ucsc.edu/MEEG.html.

Nuclear Magnetic Resonance/Mass Spectroscopy Facilities. The NMR facility brings together an interdisciplinary group of researchers comprising faculty from chemistry and biochemistry, biology, and environmental toxicology. At present, the facility manages two high-resolution 500 MHz spectrometers. Initial funding was from the Lucille P. Markey Charitable Trust and the W.M. Keck Foundation, as well as individual research grants from the National Institutes of Health, the National Science Foundation, and other sources available to UCSC. A new 600 MHz NMR spectrometer was delivered in 2004. The Department of Chemistry and Biochemistry and the Department of Molecular, Cell, and Developmental Biology are engaged in NMR structural elucidation of anticancer natural product isolation from marine organisms, organic intermediates for drug synthesis, specially designed peptide intermediates, and oligonucleotide derivatives that remain attached to solid supports. Web: www.nmr.ucsc.edu.

Paleomagnetism Laboratory. The Paleomagnetism Laboratory is located in a remote building specially constructed with nonmagnetic materials and isolated from major sources of man-made magnetic noise. Inside this building, a magnetically shielded room houses a state-of-the-art superconducting magnetometer, a sensitive spinner magnetometer, thermal and alternating field demagnetizers, and paleointensity equipment. A second lab devoted to the study of rock and mineral magnetic properties is housed in the Earth and Marine Sciences Building. It contains another spinner magnetometer, devices for measuring Curie temperatures, magnetic susceptibility and its anisotropy, hysteresis loops, and computer facilities for data analysis and graphics. Web: www.emerald.ucsc.edu/grad/research/groups/paleomag/facility.html.

Plant Growth Facility. The facility provides core support for plants used in the instructional and research programs of the Departments of Ecology and Evolutionary Biology, Molecular, Cell, and Developmental Biology, and Environmental Studies. Three separate growth areas are located on Science Hill to maximize exposure to sunlight as well as provide convenient access for the research and instructional labs housed in the buildings below. Web: greenhouse.ucsc.edu.
NASA-UC Santa Cruz center will conduct applied research that furthers those technologies and helps build this important market. NASA and Ames will benefit by having expanded access to the UC system, its world-class scientists, and emerging student population and applying those research strengths to the needs of NASA's most advanced and critical missions. The UARC's program activities will extend from fundamental investigations through development and field testing of prototype systems demonstrating new science and technological advances.

The goal of the UARC within UC is to provide expanded opportunities for its scientists, researchers, and students, and from its physical presence in Silicon Valley help enable and expand its educational mission. The UARC will provide for educational interaction among university faculty, students, and Ames researchers to develop future human resources in technology and science through a Systems Teaching Institute. The Systems Teaching Institute will draw on students from UC Santa Cruz, San Jose State University, and Foothill-DeAnza Community College District, and will be a pilot for global change in science and engineering education.

University of California Observatories/Lick Observatory

Lick Observatory was established on Mt. Hamilton in the 1880s as a result of the gift of James Lick, a Pennsylvania piano maker who came to San Francisco in 1848 and amassed a fortune through investment in California real estate. The observatory has been part of the University of California since 1888, when the Lick Trustees conveyed the just completed original installation to the Regents.

As resident members of the Santa Cruz faculty, the UCO/Lick staff are members of UCSC's Department of Astronomy and Astrophysics, which offers the graduate program in astronomy and astrophysics and an undergraduate minor (see page 126). A B.S. degree in astrophysics is offered through the Physics Department (see page 334). The astronomy library and laboratories are located on campus, as are optical, electronics, engineering, programming, and detector and instrument-development groups. There are resources for measurement, analysis, and computation of data on campus as well.

The telescopes and accompanying facilities on the 3,762-acre reservation on Mt. Hamilton east of San Jose are operated as an observatory, with faculty, research, and student observers commuting to the facility. Telescopes include the Lick 36-inch refractor, the Carnegie 20-inch twin astrophotograph, and the CAT 24-inch, Crossley 36-inch, and Nickel 40-inch reflectors. The newest telescope is the Katzman 30-inch robotic reflector, dedicated to searching for supernovas. The largest and most powerful of the Lick instruments is the Shane 120-inch reflector, which was completed in 1959 and is one of the world's most effective telescopes. The observatory's equipment also includes a variety of auxiliary instruments used in connection with observations at the 120-inch telescope.

Among the most recent is the Hamilton echelle spectrograph, judged to be on of the world's most efficient instruments for high-resolution analysis of the light of stars and galaxies and the instrument by which astronomers have discovered new planets outside our solar system. Other instruments include the East double spectrograph, a pioneering example of UCO/Lick's innovative instrumentation capabilities; the multiple-object spectrograph, which gives astronomers the opportunity to look at the spectra of 100 objects simultaneously; and the new prime-focus Wide Field Camera, capable of taking digital images of large areas of the sky. One of the most exciting new technological innovations developed at Lick Observatory, in conjunction with Lawrence Livermore National Laboratory, is the use of an adaptive optics system with an artificial laser-produced guide star to correct distortions to incoming light caused by the blurring effects of the atmosphere. The observatory is a systemwide facility used extensively by observers and students from other UC campuses and the national laboratories.

UCSC's courses in astronomy and astrophysics are taught on campus. Advanced students gain observing experience with the Mt. Hamilton telescopes and conduct research directed by the staff. Visiting astronomers use the equipment to investigate special problems.

UCO/Lick astronomers work on a wide variety of astrophysical problems, including solar system and star formation, stellar evolution, the origin and evolution of the Galaxy and external galaxies, abundances of the chemical elements, and the size, structure and evolution of the universe. In many summers, UCO/Lick and the department host a conference on topics in astronomy and astrophysics, which brings international scholars and students to UCSC.

UCO/Lick astronomers are engaged in a joint project with California Institute of Technology astronomers to operate and provide instruments for the W.M. Keck Observatory, located at the summit of Mauna Kea in Hawaii. The two Keck 10-meter telescopes began operating in 1993 and 1996.

In 1988 the Regents established an organization to manage the university's ground-based optical and infrared observatories as a single unit. Known as the University of California Observatories (UCO), the organization includes Lick Observatory and UC's component of the Keck Observatory. UCO is headquartered at UCSC; the Lick director serves also as the director of UCO. UCO/Lick plays a large role in the Keck enterprise: both of the Keck telescopes' secondary mirrors were polished in the optical laboratory at Santa Cruz, and the high-resolution echelle spectrometer (HIRES), designed and constructed in the instrument-development laboratories here, was the first Keck instrument to become fully operational. The laboratories are also deeply involved in many projects for the second Keck telescope, including the design and construction of a powerful new optical instrument to aid in the search for dark matter (DEIMOS) and a new medium-resolution echelle spectrometer and imager (ESI). Web: www.ucolick.org.

Center for Adaptive Optics

The Center for Adaptive Optics (CfAO) is a Science and Technology Center funded by the National Science Foundation. The center's mission is to advance the technology of adaptive optics (AO) in service to science, health care, industry, and education. Its goal within the next decade is to lead the revolution in AO by developing and demonstrating the technology, creating major improvements in AO systems, and catalyzing advances nationwide. The CfAO has also implemented a major education and outreach program to attract and retain a new generation of scientists, particularly among women and underrepresented minorities. It is aimed at students attending high school through graduate school. Public outreach includes exhibits, talks, and demonstrations. At its inception in 1999, the nationwide center comprised 10 research universities, the Lawrence Livermore National Laboratory, and several industrial partners. Headquartered at UCSC, it was funded for five years and in 2003 was renewed for a final five years. The new CfAO building opened in 2002. Center faculty are particularly interested in AO applications for giant telescopes, planet searches, and vision science. As an outgrowth of the center, a Laboratory for Adaptive Optics within UC Observatories has been funded by a $9 million grant from the Moore Foundation. This laboratory will explore various AO techniques and components. E-mail: cfao@ucolick.org. Web: cfao.ucolick.org.
Campus Life

The Colleges 75
Cowell College 75
Stevenson College 77
Crown College 79
Merrill College 81
Porter College 83
Kresge College 84
Oakes College 86
College Eight 87
College Nine 89
College Ten 91

Student Life 94
Santa Cruz Community 94
Housing 94
Student-Run Cooperatives 95
Transportation and Parking Services 96
Student Health Services 96
Counseling and Psychological Services 97
Rape Prevention Education Program 97
Resource Centers 97
Physical Education, Recreation, Sports, and Wellness 98
Student Union 99
Student Activities 99
Campus Cultural Programs 101
Bay Tree Bookstore 102
Child Care and Youth Programs 102
UCSC Alumni Association 102
The Colleges

The University of California, Santa Cruz, is a collegiate university. All undergraduate students and most faculty are affiliated with one of the colleges, their home within the larger university. All the colleges are committed to fostering a nurturing and academically thriving environment for students of all backgrounds. Each college strives to promote the attributes of a diverse and multicultural community in its own unique way. In order of founding, the colleges are Cowell, Stevenson, Crown, Merrill, Porter, Kresge, Oakes, College Eight, College Nine, and College Ten.

Self-contained and architecturally distinct, each college is a relatively small community of 20 to 90 faculty members and between 750 and 1,550 students, about half of whom live on campus. Each college has its own housing, academic, and recreational facilities, and each is an integral part of the larger campus. The colleges have their own academic emphases and cultural traditions, although each seeks faculty and students from a variety of disciplines to foster broad intellectual interests. The colleges play a primary role in academic advising and are the center of student life. Students graduate from their college. At the same time, all university academic programs, resources, and student services are open to students of every college.

The information students need to rank their college preferences can come from a variety of sources—personal acquaintance, a campus visit, literature available from the colleges, and the descriptions in this section of the catalog. Entering students are asked to list several colleges in order of preference; whenever possible, students are assigned to the college of their choice.

Similarities and Differences

Each college is residential and able to house close to half of its students. Most freshmen choose to live on campus, as do a number of sophomores, juniors, and seniors. The particular style of housing varies among the colleges, ranging from fairly traditional residence halls, with a mix of single, double, and triple rooms, to apartment-style housing, where students live together in small groups and may do some of their own cooking. Faculty, staff, or graduate students, along with undergraduate resident assistants, reside in college housing units.

The faculty, or fellows, of each college come from a variety of academic disciplines. Some of the colleges have faculty from nearly all the liberal arts and sciences, while the faculty in other colleges are more concentrated in particular disciplinary interests. Many faculty have their offices in the colleges.

Each college offers its own distinctive academic program for entering freshmen. Taught in the college during the fall quarter, the required course or seminar provides a significant bridge between academic and residential life, since all freshmen, regardless of major, will be in the course, and most will be in residence as well. Stevenson’s core course extends over three quarters, while the other colleges offer one-quarter courses. College core course requirements for transfer students vary (see page 33). The colleges also offer selected courses in their area of interdisciplinary emphasis and host events and speakers that enhance this focus.

All the colleges provide academic advising and academic and general campus orientations to help you plan your academic program. In addition, each college has academic preceptors who can provide advice on academic matters. (See pages 37–40 for further information on academic advising.) Psychological and personal counseling is also available in each college, and many colleges have well-developed peer advising and tutoring.

The colleges differ in architecture; each was planned by a different architect, who was encouraged to convey the distinct personality of that college through the design of its buildings and their placement in the natural environment. Above all, the colleges differ in subtle ways having to do with their intellectual and social traditions, the different designs of their student governments, and the predominant interests of their students and faculty.

Changing Colleges

Most students, having affiliated with a particular college, develop friendships and intellectual attachments there, and they remain members of that college throughout their undergraduate years. Some students find that changing academic interests draw them to a different college. During the specified filing period, students may request a change of college with the approval of both college administrations.

Cowell College

Cowell College inaugurated the Santa Cruz campus when it opened with a pioneer class of 600 students in 1965. The founding faculty shaped an educational program that challenged and enriched students through wide-ranging inquiry and disciplined study. Today, Cowell has nearly 1,500 affiliated students and 80 faculty fellows. Its motto—The Pursuit of Truth in the Company of Friends—expresses a continuing commitment to create a serious academic environment within a humane and broadly inclusive community. The college is named for the S. H. Cowell Foundation, which endowed the college at its founding.

Academic Emphases

The academic theme of the college encourages students to pursue their general and disciplinary study with attention to the values of liberal arts education: understanding one’s individual perspective by exploration of its historical background and world context. Students affiliated with the college pursue majors from all departments on campus.

The faculty fellows affiliated with the college represent all academic divisions (arts, engineering, humanities, physical and biological sciences, and social sciences). The faculty fellows guide the college academic programs and serve as academic mentors to the students, supplementing the advising provided by the college academic advisers and departmental advising.

In satisfying their general education requirements, first-year Cowell students are required to take the Cowell Core Course in the fall term. The core course (Cowell 80, see page 161), taught in small seminar sections, seeks to develop critical reading, analytical writing, and seminar discussion skills by reading a selection of classic and contemporary texts. In addition, Cowell students are required to raise their level of proficiency in information technology during their UCSC career.

The college academic buildings house humanities faculty, with notable concentrations in philosophy, classics (study of ancient Greek and Latin language and civilization), and modern foreign languages, especially Chinese, French, Italian, and Japanese. The interdisciplinary faculty group in pre- and early modern studies is centered at Cowell College.

Students who develop ideas for research, creative projects, community service, or internship experiences may apply to the college provost for financial support. The college sponsors prizes for outstanding academic work and acknowledges students who graduate with overall academic excellence in a breadth of study with College Honors.

The college enriches the intellectual and cultural life of the campus by sponsoring events of...
various kinds: lectures and presentations by local faculty and visiting scholars, theatrical and musical performances, and forums and debates on topics of current interest.

College Community and Facilities

Cowell’s seven residence halls and three apartment buildings are arranged in three quadrangles on a hillside overlooking the city of Santa Cruz and Monterey Bay. About 650 students are housed in the college. Each residence hall houses from 40 to 60 students and is divided into two wings, with seven to 11 residents on each floor. Most floors are coed, with men and women sharing common lounges and other facilities, but single-gender floors are provided for those who prefer this arrangement.

Apartments house 185 continuing students in six-person units. The residential staff facilitate diverse educational, social, and recreational programming to enhance the living and learning environment.

Arranged around the college’s central plaza are the dining hall, Page Smith study library, the fireside lounge, the coffee shop, and conference rooms and classrooms. Unique to Cowell College are the Eloise Pickard Smith Gallery, which regularly mounts exhibits, and the Cowell Press, where students can learn the fine techniques of hand printing. The college is also home to a French-speaking living-learning community, Maison Francophone, which studies French-speaking communities around the world and plans events for the college.

Since the college’s founding, regularly scheduled College Nights in the dining hall have offered students, staff, and faculty a special meal and a rich mix of after-dinner programs presented by students and professional artists.

Community life is enlivened by many other scheduled and impromptu intellectual, cultural, and social events.

The Student Senate meets weekly to discuss campus issues and student government. The Senate advises the college on the allocation of funds for student activities and programs. Members of the Senate are selected each year by lot, but any student may become a voting member by steady attendance at meetings. The college’s multicultural advisory board works with staff to create a supportive community for students of color affiliated with the college and to increase awareness of the many dimensions of diversity in the community.

For more information on the college, see www2.ucsc.edu/cowell or call (831) 459-2253.

Cowell Faculty and Staff

Provost
STANLEY M. WILLIAMSON, Chemistry and Biochemistry, Emeritus (through 12/04)
TYRUS H. MILLER, Literature (beginning 1/05)
DEANNA SHEMEK, Italian Literature (beginning 1/05)

Fellows
MARGARITA AZMITIA, Psychology
KAREN BASSI, Classics
JAMES H. BIERMAN, Theater Arts (Drama)
DONALD BRENNIES, Anthropology
JEAN P. BRODIE, Astronomy and Astrophysics
MARGARET R. BROSE, Italian and Comparative Literature
GIULIA CENTINEO, Italian Language
SANDRA CHUNG, Linguistics
PHILLIP CREWS, Chemistry
MARIA (TONIA) DE CHICCHIO, Italian Language
JOHN M. DORIS, Philosophy
CAROL M. FREEMAN, Writing
EMERITI FELLOWS

W. Emmanuel Abraham, Philosophy, Emeritus
George T. Aims, English Literature, Emeritus
Harry Berger Jr., English Literature and Art History, Emeritus
Ralph J. Berger, Ecology and Evolutionary Biology, Emeritus
Gabriel Berns, Spanish Literature, Emeritus
Charles W. Daniel, Molecular, Cell, and Developmental Biology, Emeritus
John Deuzes, American Studies, Emeritus
Robert M. Durling, Italian and English Literature, Emeritus
Miriam Ellis, French Language, Emerita
Patricia Fitchen, French Language, Emerita
Theodore Foster, Marine Sciences, Emeritus
Bert Kaplan, Psychology, Emeritus
S. Paul Kasha, Philosophy, Emeritus
Richard Mathey, History, Emeritus
Melanie J. Mayer, Psychology, Emerita
Gary B. Miles, History, Emeritus
Peggy Miles, Writing, Emerita
Andrew Todd Newberry, Ecology and Evolutionary Biology, Emeritus
David A. Orlando, French Language, Emeritus
Richard R. Randolph, Anthropology, Emeritus
Audrey E. Stanley, Theater Arts, Emerita
Thomas A. Vogler, English and American Literature, Emeritus
Michael J. Warren, English Literature, Emeritus

STEVENSonn College

We are Stevensonians; we are free agents of history and masters of our own destinies. Every one of us is important, and we cherish our differences as much as we cherish our shared values of love, chastity, honesty, hard work, and responsibility.

—Seung Kyun Joseph Mok, Stevenson Alumnus/Regents Scholar

Stevenson College is named after former statesman and U.S. Ambassador to the United Nations Adlai E. Stevenson. Our faculty, students, and staff take pride in intellectual inquiry, academic and civic leadership, and respect for students' concerns about shared student governance, human rights, and social justice. Stevenson College has a long-standing reputation for excellence in liberal education. The college strives to provide an academically, culturally, and socially supportive environment for all its members, emphasizing accessibility and fostering social responsibility and academic achievement. Students who seek an interdisciplinary learning environment will appreciate the college's emphasis on intellectual rigor. As part of the college's academic and cultural life, the Stevenson Fellows-in-Residence Program has brought to the campus distinguished individuals such as Senator George McGovern, Congresswoman Bella Abzug, Nobel Laureate Elie Wiesel, Chief of the Miwok Tribe Greg Sarris, Producer Lourdes Portillo, the Reverend Jesse Jackson, and Associate Director-Counsel Theodore M. Shaw of the NAACP Legal Defense and Educational Fund.

The college's faculty and academic and administrative staff offer professional and personal service for the diverse needs of students. These individuals, among the most accessible, friendly, and diverse staff at the university, assist students in all areas of their academic and social experience at Stevenson College. Most important, these individuals are committed to instilling respect for the college's diverse ethnic, racial, religious, and sexual backgrounds.

Academic Emphases

- Faculty drawn from social sciences, humanities, natural sciences
- Yearlong frosh writing seminar
- Tutors and Advisers Program
- Academic Support Center
- Junior Fellows Program

Stevenson College distinguishes itself as the only college with a two-quarter frosh seminar intended to provide all first-year students with a common academic experience. The seminar allows for more rigorous development of students' critical, written, and analytical skills, the fostering of a unique learning environment, and a supportive intellectual community. It is not unusual to find Stevenson alumni in the legal, political, engineering, medical, computer and information sciences, business, and public administration fields. The faculty at Stevenson, drawn from a variety of disciplines in the social sciences, humanities, and physical and biological sciences, share a common concern for the study of social processes that shape modern society and determine the quality of our individual lives throughout various
global regions and periods of world history. Linguistics, sociology, history, politics, psychology, biology, chemistry, and computer science are strongly represented in the college.

**Self and Society** (see page 369) is intended to provide intellectual and research preparation for students’ future academic endeavors. The seminar addresses the college’s intellectual and pedagogical aims through a holistic inquiry into academic research that explores the question: What is the relationship between “self and society?” In addition, the course fosters an intellectual commitment to the general philosophy which has helped to define Stevenson College since its inception (articulated in the idea of the preservation of human dignity, the social cultivation of individual creativity and citizenship, and a belief in ethical responsibility). The seminar reflects the college’s long-standing commitment to interdisciplinary and culturally diverse readings, while at the same time it affords students an opportunity to develop research interests, to acquire greater understanding of the role of research universities in contemporary societies, and to acquire the requisite skills to engage in increasingly more sophisticated intellectual work while at UCSC.

Because of a conviction on the part of both faculty and students that such a sequence is fundamental to any university education, both quarters are required of all beginning Stevenson students. Students transferring to UCSC with the equivalent of nine courses (45 quarter credits) or more are exempt from the core course.

The Stevenson College Junior Fellows Program offers juniors and seniors an opportunity to serve as teachers and research assistants for **Self and Society**. Junior fellows, who must have completed outstanding work in **Self and Society** during their freshman year, undergo a rigorous application and selection process. Junior fellows (enrolled in Stevenson 120, **Teaching Practicum**) earn 5 course credits.

Stevenson provides writing and math tutoring for all of its students. Stevenson academic tutors are paid student positions open to juniors and seniors with excellent academic records.

**College Community**

- **College Nights**
- **Stevenson Student Council**
- **Multicultural Advisory Council**
- Fellows-in-Residence Program
- **Multicultural Programs/Activities**

Stevenson holds regular College Nights, when a served dinner presents an opportunity for Stevenson fellows and students to get together in a purely social situation. College Nights—Cinco de Mayo, Chinese New Year, Vietnamese College Night—provide the opportunity to celebrate many different cultures. Dinner is followed by entertainment.

The Stevenson Student Council meets on Thursday evenings. This group of 16 elected representatives (eight resident students, eight living off campus) is responsible for allocating college membership fees to student activities. The council also serves as a forum for the discussion of college and campuswide issues and appoints student representatives to college and campuswide committees.

**Facilities**

- Eight small residence halls
- Three apartment buildings
- Theme floors: Substance Free, Multicultural
- Coffee house
- WagaStaff Fireside Lounge
- Writers’ Center
- Stevenson Library
- Art gallery
- Silverman Conference Room
- The Knoll
- Recreation room

Stevenson College has a wide variety of facilities and activities to appeal to many tastes. The college, designed by San Francisco architect Joseph Esherick, has won many architectural awards. The buildings are situated amid redwood trees and sprawling lawns, and the main quad overlooks Monterey Bay. There are eight small residence houses at the college providing a choice of single-sex or coed floors; each house accommodates about 60 undergraduates. The apartments provide space for 132 continuing students. Nearby are a picnic area, playing fields, and a garden.

The Stevenson Coffee House, which has become the gathering place in the college, is a friendly and inviting spot to enjoy lunch or an espresso and pastry—indoors or out on the patio. It is the scene of lively conversation, occasional musical entertainment, and chess matches. Adjoining the coffee house is a recreational wing, with Ping-Pong, foosball, pool tables, and color television. This area is also the site of much socializing and spontaneous group activity.

In contrast, the Stevenson Library is a striking building designed for quiet reading and study. The WagaStaff Fireside Lounge, a retreat for relaxed discussion, is also used for recitals, special lectures, meetings, and residence house activities. Art exhibits (both student and professional) are on display throughout the year in the lounge, library, and coffee house.

For more information, call (831) 459-4930 or visit the web site: stevenson.ucsc.edu.

**Stevenson Faculty and Staff**

**Provost**

**ELLEN KAPPY SUCKIEL, Philosophy**

**Fellows**

- **JUDITH ASSEN, Linguistics**
- **ROBERT S. ANDERSON, Earth Sciences**
- **DANE ARCHER, Sociology**
- **ELLIOT ARONSON, Psychology, Emeritus**
- **JONATHAN F. BERCHER, History**
- **ILAN BENJAMIN, Chemistry and Biochemistry**
- **PETER H. BODENHEIMER, Astronomy and Astrophysics**
- **REBECCA BRASLAV, Chemistry and Biochemistry**
- **FRANK G. BRIDGES, Physics**
- **MONICA CASPER, Sociology**
- **MARK CIOPC, History**
- **CATHERINE R. COOPER, Psychology and Education**
- **W. JACKSON DAVIS, Ecology and Evolutionary Biology**
- **MICHAEL DINE, Physics**
- **G. WILLIAM DOMHOFF, Psychology, Emeritus**
- **DUNKA FARRAS, Linguistics**
- **HIROSHI FUKUARI, Sociology**
- **ROBERT E. GARRISON, Earth Sciences, Emeritus**
- **MARVIN J. GREENBERG, Mathematics, Emeritus**
- **ISABEL V. GRUHN, Politics, Emerita**
- **HOWARD E. HABER, Physics**
- **CRAG W. HANEY, Psychology**
- **JORGE HANKAMER, Linguistics**
- **DAVID M. HARRINGTON, Psychology**
- **AIDA HURTADO, Psychology**
- **JUNKO ITO, Linguistics**
- **MICHAEL KAHN, Psychology, Emeritus**
- **AL KELLEY, Mathematics, Emeritus**
- **PETER KENEZ, History**
- **JOHN I. KITUSE, Sociology, Emeritus**
- **KENNETH KLETZER, Economics**
- **JOSEPH P. KONOPIELSKI, Chemistry and Biochemistry**
- **ROBERT P. KRAFT, Astronomy and Astrophysics, Emeritus**
- **JEAN H. LANGENHEIM, Ecology and Evolutionary Biology, Emerita**
- **ROBERT A. LEVINSON, Computer Science**
- **DANIEL T. LINGER, Anthropology**
- **RONNIE D. LIPSCHUTZ, Politics**
- **MARC S. MANGEL, Environmental Studies**
- **JAMES MCCLOSKEY, Linguistics**
- **DENNIS C. MCELHRATH, Sociology, Emeritus**
- **R. ARDAIN MESTER, Linguistics**
- **CARLOS G. MORENO, Philosophy, Emeritus**
- **JAYE PADGETT, Linguistics**
- **THOMAS F. PETTIGREW, Psychology, Emeritus**
- **IRA POHL, Computer Science**
- **CYNTHIA POLECHRITTI, History**
College Administrative Officer

JAMES CARTER

Staff

MARY ALVAREZ, Academic Adviser
MARTA ELENA CORONA, Counseling Psychologist
ELIZABETH CUWAN, Financial/Budget Specialist
GREG FLORES, Coordinator for Residential Education
CANDACE FREIWALD, Academic Services Supervisor
JOHN HAIDLEY, Coffee House Manager
RACHEL JARBON, Associate College Administrative Officer for Student Life
DAVE LAJOIE, Maintenance Officer
KRISTHA LIMA, College Programs Coordinator
GUSTAVO NOLAZCO, College Assistant/Records Coordinator/Mail Services Supervisor
GABRIEL PEREZ, Groundskeeper
JUANITA REYES, Housing Coordinator
RALPH RIVERA, Assistant College Administrative Officer for Facilities
IMANI RUPERT, Assistant College Programs Coordinator
TCHAD SANGER, Chief Academic Preceptor
AVA SNYDER, Police Sergeant/Liaison
GREGORY SPEED, Senior Proctor
MICHELLE TAYLOR, Academic Programs Coordinator/Academic Adviser
AMY WEAVER, Writing Program Coordinator
SARMA WILLIAMS, Coordinator for Residential Education

Honorary Fellows

JACK BAUSIN
BORIS KOSER
NORMAN LEZIN
ELEANOR MCGOVERN
CHARLES NEIDER
CHARLES H. PAGE
WILLIAM M. ROTH
ALMA SIFUENTES
F. M. GLENN WILLSON

Stevenson Fellows-in-Residence

GEORGE MCGOVERN (1982)
BELLA ARZUG (1983)
PAUL SARBANES (1983)
ARTHUR S. FLEMMING (1984)
CAROLE KING (1985)
CLARK KERR (1987)
PETER SHAFFER (1987)
DONALD M. HENRY (1988)
PAT CONROY (1990)
MOCTESUMA ESPARZA (1992)
LOURDES PORTILLO (1992)
GREG SARRIS (1997)
JESSE JACKSON (1998)
AMIRI BARAKA (1999)
RON DELLUMS (1999)
THEODORE M. SHAW (2002)

Crown College

Crown College faculty (the college fellows) and students represent a wide variety of academic disciplines. The majority of fellows are in the physical and biological sciences and the social sciences. There are more science and engineering students at Crown than at any other college. However, the majority of Crown students major in the social sciences, humanities, and arts. This diversity of interests and thinking enriches our intellectual environment.

An important goal of the college is to foster an appreciation for the contributions of diverse cultural groups and to provide an atmosphere in which issues of both diversity and common social purpose are integrated into a wide range of programs and discussions.

From the time of its founding in 1967, issues pertaining to the role of science and technology in society have been a focus of special interest at Crown College. Recently, we have approached these issues from an interdisciplinary perspective that recognizes the influence of social and cultural factors on scientific enterprise, as well as the ways in which science and technology influence society.

Crown is located on a hilltop surrounded by a redwood forest. The core buildings consist of an administration office, dining commons, lounge spaces, recreation facilities, study spaces, faculty offices, and classrooms built around a large patio and central fountain. The award-winning architecture with its white walls and high-pitched tiled roofs suggests a hillside Mediterranean village. The college’s residential facilities are made up of eight traditional residence hall buildings and eight apartment buildings housing approximately 700 students. The facilities at Crown College were built through a partnership of public funds and a gift from the Crown Zellerbach Foundation.

Academic Emphases

Ethical Issues in Emerging Technologies: Transgenics, Clones, Cyborgs, and Artificial Intelligence is an interdisciplinary seminar concerning the effects of these world-changing technologies and encourages students to develop decision-making strategies to ethically steer these technologies. The course examines these debates using a variety of disciplinary approaches that engage the perspectives of both humanists and scientists. The fall-quarter core course is required of all first-year students with fewer than 45 transferable quarter credits. (See page 162 for the course description.)

The Crown-Merrill Science and Technology Learning Community is an innovative program to support first-year students who are interested in pursuing a major in the sciences. Students enrolled in this program live together, forming a supportive community that promotes collaborative learning and group problem solving. To facilitate this process, students are placed in a special section of Chemistry 1A and participate in a residentially based study group. The program is designed especially for students who have a strong interest in the sciences but feel slightly underprepared for university-level coursework. It often acts as a bridge to the ACE Program in the physical and biological sciences and engineering (see page 39). Participation—limited to first-year students at Crown and Merrill Colleges—requires a commitment to succeed, a willingness to work hard, and a positive attitude.

The Crown Undergraduate Seminar in Science, Technology, and Society provides highly motivated students the opportunity to work closely with ladder-rank research faculty in a small seminar environment. Topics have included California Climate Change: Past, Present, and Future; Food Matters: Science, Technology,
and Society; and an honors seminar on introductory computer architecture.

Juniors and seniors can participate in the college’s new Undergraduate Research Fellowship Program, which awards $800 fellowships to student-faculty teams and encourages their interaction through undergraduate research.

College Community and Facilities

Crown sponsors a wide variety of cocurricular events spanning cultural, educational, and social areas of interest. One popular series is the Science/Public Affairs Tables, informal dinners at the Provost’s House that offer students an opportunity to socialize with a faculty member outside the classroom and hear about his or her research.

Students become involved in Crown life by both initiating and participating in a wide range of activities. Social activities vary each year according to the interests of students. At the monthly College Night in the dining commons, a special dinner is followed by entertainment, both often sharing a common cultural theme. Some major events have become traditional. For example: Karaoke College Night; Hypnotist; Crown Formal; and Regression Night. Crown activities and dances draw students from all over campus. Outdoor activities organized by the student government, College Programs Office, or residential staff range from whale watching on the Monterey Bay to atomic bowling, and from backpacking to stargazing.

The Crown Student Senate (CSS), the elected student government at Crown, holds open weekly meetings to recommend fund allocations for student activities and to discuss issues of concern to students and the college. CSS also sponsors events to enhance the college experience, including the very popular pelagic shark lecture and Casino Night.

Crown offers two types of residential facilities: residence halls and apartments. Eight traditional residence halls each house 60 students in single, double, and triple rooms and include a kitchen, living room, dining room, bathroom, and outside deck.

Other facilities in the college include the Crown Library study space; a modern computer laboratory housing Sun workstations, which provides students with access to several kinds of systems and an array of applications and instructional software selected to support academic course work; the Fireside Lounge with widescreen television; the Music Practice Room; and the Crown-Merrill Community Room, which has a television, pool table, foosball, and ping-pong table, and provides an informal place to study, hold meetings, or just visit with friends. Recently renovated dining facilities boast continuous dining, late-night dining, and Banana Joe’s coffee shop.

For general information, call the college assistant at (831) 459-2665 or visit the web site: www2.ucsc.edu/crown/. For residential or college programs information, call the Student Life Office manager at (831) 459-4656.

Crown Faculty and Staff

Provost
F. Joel Ferguson, Computer Engineering

Fellows
Robert F. Adams, Economics, Emeritus
Namera Akhtar, Psychology
Scott Brandt, Computer Science
Kenneth W. Bruland, Ocean Sciences
Joseph F. Bunnell, Chemistry and Biochemistry, Emeritus
Maureen Callanan, Psychology
Kenneth L. Cameron, Earth Sciences
Sue A. Carter, Physics
Nancy N. Chen, Anthropology
Yin-Wong Cheung, Economics
Menze Chinn, Economics
Eugene H. Kota-Robles, Molecular, Cell, and Developmental Biology, Emeritus
Margaret L. Delaney, Ocean Sciences
Chongting Dong, Mathematics
Michael P. Dooley, Economics
William T. Doyle, Ecology and Evolutionary Biology, Emeritus
E. Melanie DuPuis, Sociology
Robert S. Edgar, Molecular, Cell, and Developmental Biology, Emeritus
Ölof Einarsdóttir, Chemistry and Biochemistry
John M. Ellis, German Literature, Emeritus
Sandra M. Faber, Astronomy and Astrophysics
John Faulkner, Astronomy and Astrophysics
Jerry F. Feldman, Molecular, Cell, and Developmental Biology
Anthony L. Fink, Chemistry and Biochemistry
Arthur E. Fischer, Mathematics
Timothy Fitzmaurice, Writing

Stanley M. Flatté, Physics, Emeritus
A. Russell Flegal, Environmental Toxicology
Laurel R. Fox, Ecology and Evolutionary Biology
Maria Cecilia Freeman, Writing
Daniel Friedman, Economics
Kwok-Chiu Fung, Economics
Alison Galloway, Anthropology
J. J. Garcia-Luna-Aceves, Computer Engineering
Lynda J. Goff, Ecology and Evolutionary Biology
Ronald E. Grieson, Economics
Judith A. Habicht-Malouche, Anthropology
David Haussler, Computer Science
Ralph T. Hinegardner, Ecology and Evolutionary Biology, Emeritus
Richard P. Hughes, Computer Engineering
Harold A. Hyde, Vice Chancellor, Emeritus
Garth D. Illingworth, Astronomy and Astrophysics
Burton F. Jones, Astronomy and Astrophysics
David E. Kaun, Economics
Alan H. Kawamoto, Psychology
Paul L. Koch, Earth Sciences
Jonathan M. Krupt, Biology, Coordinator, Microscopy and Imaging Laboratory
Edward M. Landesman, Mathematics, Emeritus
Jean H. Langenheim, Ecology and Evolutionary Biology, Emerita
Leo F. Laporte, Earth Sciences, Emeritus
Burney J. Le Bœuf, Ecology and Evolutionary Biology, Emeritus
Max M. Levin, Psychology, Emeritus
Debra Lewis, Mathematics
Douglas N. E. Lin, Astronomy and Astrophysics
Darrell D. E. Long, Information Systems Management
Robert A. Ludwig, Molecular, Cell, and Developmental Biology
Phillip McCalman, Economics
Margaret McManus, Ocean Sciences
Jacob B. Michelsen, Economics, Emeritus
Ethan Miller, Computer Science
Joseph S. Miller, Astronomy and Astrophysics
Richard Montgomery, Mathematics
J. Casey Moore, Earth Sciences
Judith N. Moschkovich, Education
Richard Murphy, German Literature
Peggy B. Musgrave, Economics, Emerita
Richard A. Musgrave, Economics, Emeritus
Michael Naumenberg, Physics, Emeritus
Harry F. Noller, Molecular, Cell, and Developmental Biology
Loisa Nygaard, German Literature
Donald E. Osterbrock, Astronomy and Astrophysics, Emeritus
Karen Ottemann, Environmental Toxicology
Triloki N. Pandey, Anthropology
Grant H. Pogson, Ecology and Evolutionary Biology
Donald C. Potts, Ecology and Evolutionary Biology
Joel R. Primack, Physics
Jie Qing, Mathematics
Tudor S. Rattu, Mathematics, Emeritus
Gertrud Reutter, German Language, Emerita
Merrill College

Merrill College seeks to expand its students’ awareness of their own heritage and of the diversity of cultures around the world, past and present. Drawn largely from history as well as the social sciences, literature, and foreign languages, many Merrill faculty specialize in social theory, international affairs, and social change. The college makes a special effort to be a home for students from different cultural backgrounds and for international students; it presents unusual opportunities to those who value multicultural perspectives. Merrill is a center for Spanish language and Latin American and Latino studies and has been active in sponsoring American Indian cultural and academic activities.

Academic Emphases

Merrill College has as its theme Cultural Identities and Global Consciousness. In Merrill’s core course, with this same title, students read books by Alexie, Hayslip, Hochschild, Hurston, Rodriguez, and Ibsen. These histories, novels, and autobiographies increase students’ awareness of cultural and ethnic diversity and of women’s concerns in different cultural settings. More specifically, these volumes deepen students’ appreciation of the complexities involved in cultural struggles for the right to live, with respect, in peace and harmony in one’s own community. In addition, the course presents the crisis of world poverty and proposes theoretical solutions, while also investigating the fundamental international forces of imperialism and nationalism. (For the course description, see page 309.) Transfer students with fewer than 45 transferable quarter credits are required to take the core course.

Merrill is in the seventh year of its Freshman Scholars Program, in which students take a course together in each of the three quarters: a section of the core course in the fall, a seminar on “First Peoples” (Indigenous cultures) in the winter, and a seminar on ethics in the spring. Interested high school seniors apply by writing directly to the Merrill provost, after admission.

Now in its third year, the winter Merrill American Indian Colloquium Series hosts public and class presentations by noted American Indian professionals and cultural practitioners, from a variety of tribes and pursuits. Merrill also sponsors a variety of 2- and 5-credit courses on topics that change from year to year, recently ranging from the benefits of reevaluation counseling, to personal empowerment, to white racial identity in a multicultural society. All are kept to a size that facilitates discussion, and many are designed for first-year students. In addition, students can participate in a variety of service-learning opportunities in the surrounding community. Students may volunteer in local elementary school classrooms, mentor high school students, help in an adult literacy program, or work in a Santa Cruz Public Library-sponsored project, assisting children from migrant camps to compile their family stories for publication.

Recognizing the increasingly rigorous requirements for science majors, Merrill—in collaboration with Crown—has developed the Science and Technology Learning Community, to support students majoring in the sciences. Students participating in the program live in close proximity to each other and are encouraged to develop a collaborative learning approach.

Merrill serves as the administrative home for the Departments of History and Politics, in addition to Latin American and Latino Studies. Merrill is also the home of a Peace Corps Satellite Office. The office helps the many UCSC students who are interested in working overseas with the Peace Corps after graduation.

College Community and Facilities

Located on a hilltop, Merrill’s dramatic and award-winning buildings thread upward through the edge of a redwood forest. The brick patios, gardens, outdoor cafe, and mission bell tower suggest California’s Latin heritage, while the striking architecture of the residence halls is modern. Merrill has four residence halls offering students both coed and single-sex floors. Two
high-rise structures house 361 students, and two smaller buildings provide housing for about 70 students. In the residence halls, small groups of about 14 students share common bathroom and lounge facilities. Residents eat their meals in the Crown-Merrill Dining Hall.

Apartments, which are located a short distance from the central part of the college, house 160 continuing Merrill students. Grouped amid winding pathways and redwood trees, these three-story buildings have three apartments per floor. Each apartment houses six students and comes fully equipped with kitchen and bath, large living area, and outside deck. Facilities at the apartment complex include common lounges, a large multipurpose room, and a laundry room.

With the help of the Merrill coordinators for residential education, an enthusiastic residential staff plans recreational activities that include potluck dinners, intramural sports competitions, dances, musical events, film series, and a yearly outdoor mural-painting party. Many of these social and residential activities focus on building a multicultural community. Informal discussions, to which faculty are invited, take place throughout the year. In addition to the dining hall, the college has an attractive outdoor/indoor taqueria. For the artistically inclined, Merrill is the only college which has a student-run pottery co-op. Students can throw, fire, and glaze their works in the workshop student-run pottery co-op. Students can bring computers from home and connect directly into the Internet from their rooms without the use of a modem.

The physical facilities of Merrill College were provided through a partnership of public funds and gifts from the Charles E. Merrill Trust and the family of Ming Ong. Charles E. Merrill also funds the Chicano Scholarship Program, which makes awards to promising high school and junior college students entering Merrill. Other Merrill scholarships include the Joel Frankel Fund, which supports students pursuing fieldwork in Latin America.

For more information, call (831) 459-2144 or visit the web site: www2.ucsc.edu/merrill.

Merrill Faculty and Staff

Provost
John M. Schechter, Music

Fellows
Jorge Aladro Font, Spanish Literature
Sonja E. Alvarez, Politics
Frank C. Andrews, Chemistry and Biochemistry
Gabriela Arredondo, Latin American and Latino Studies
Nobuko Aso, History
Brenda Barcelo, Spanish Language
Dilip K. Basu, History
Robert F. Berkhof Jr., History, Emeritus
Claude F. Bernascioni, Chemistry and Biochemistry
John G. Borrego, Latin American and Latino Studies
Michael K. Brown, Politics
Wayne B. Brumbach, Physical Education, Emeritus
Edmund Burke III, History
Julianne Burton-Carvajal, Literature
Carlos Caliereno, Spanish Language
Max Camarillo, Counseling and Psychological Services
Benjamin Carson, Music
Pedro G. Castillo, History
Alan S. Christy, History
Rena V. Cochlin, Physical Education
Guillermo Delgado-P., Latin American and Latino Studies
Joshua M. Deutsch, Physics
María Elena Díaz, History
May N. Díaz, Anthropology, Emeritus
Bernard L. Elbaum, Economics
Jeremy Elkins, Legal Studies and Politics
Jonathan Fox, Latin American and Latino Studies
Dana Frank, History
Rosa Linda Fregoso, Latin American and Latino Studies
William H. Friedland, Community Studies and Sociology, Emeritus
Hardy T. Frye, Sociology
Margaret (Greta) A. Gibson, Education
Diane P. Gifford-Gonzalez, Anthropology
Walter L. Goldfrank, Sociology
María Victoria González-Pagani, Spanish Language
M. Lisbet Haas, History
Judith Harris-Frisk, German Language and Core Course
Ellen Louise Hart, Writing
Gail B. Hershatter, History
Karlton E. Hester, Music
John W. Isbister, Economics
Robert P. Johnson, Physics
Susanne Jonas, Latin American and Latino Studies
Noel Q. King, History and Comparative Religion, Emeritus
Norma Klahn, Latin American Literature
Lori G. Kletzer, Economics
Gary L. Lease, History of Consciousness
Paul M. Lubeck, Sociology
Patrick E. Mantey, Computer Engineering
Lourdes Martínez-Echázabal, Latin American Literature
Dean Mathiowitz, Politics
Maria Eugenia Matute-Bianchi, Education, Emeritus
Barry McLaughlin, Psychology, Emeritus
María Morello-Frosch, Literature, Emeritus
Martha Morris, Spanish Language
Olga Najera-Ramírez, Anthropology
Ellen Newberry, Writing
Eleonara Pasotti, Politics
Alex T. Pang, Computer Science
Sherri Paris, Writing
Sarah-Hope Parmet, Writing
Manuel Pastor Jr., Latin American and Latino Studies
Juan Poblete, Literature
Clifton A. Poodry, Molecular, Cell, and Developmental Biology, Emeritus
Alan R. Richards, Economics
Pamela A. Roby, Sociology
Stuart A. Schlegel, Anthropology, Emeritus
Ana María Seara, Portuguese Language
Bakhtan Singaram, Chemistry and Biochemistry
Graham H. Smith, Astronomy and Astrophysics
David G. Sweet, History, Emeritus
Megan Thomas, Politics
Larry Trujillo, Community Studies
George E. Von der Muhll, Politics, Emeritus
Marilyn J. Westerkamp, History
Daniel J. Wirks, Politics
Donald A. Wittman, Economics
Alice Yang Murray, History
Patricia Zavella, Latin American Studies
Martha C. Zúñiga, Molecular, Cell, and Developmental Biology

Honorary Fellows
Zina Jacque
Clark Kerr (deceased)
John Laird
Alice Lytle
Charles E. Merrill Jr.
John Vasconcellos
Yori Wada
Rev. Cecil Williams
Marin Wormhoudt

Class Honorary Fellows
Lesani Farm, 1994
Michael Paul Wong, 1995
David Silvera, 1996
Ziesel Saunders, 1997
Víctor Hernandez, 1998
Maria Mata, 1999
Wendy Baxter, 2000
Larry Trujillo, 2001
Gina Díaz, 2002
Maria Mata, 2003
Porter College

he Porter College theme, Arts in a Multicultural Society, reflects the consensus among Porter College fellows that the creative process is an inseparable aspect of a broad-minded and rigorous education. The seminars, cocurricular activities, and cultural environment at Porter encourage creativity in all fields—from composition, to community studies, to computer programming.

Academic Emphases

Porter’s faculty includes most of the campus’s practicing artists and art scholars, though some of the college’s faculty (and half of its students) specialize in the humanities or in the physical and biological or social sciences. The college is the administrative home of the Division of the Arts and the History of Art and Visual Culture Department. The Institute for Humanities Research also has offices here.

The Porter core course (see page 347) focuses on arts in a multicultural society, with concentration on literature and arts of California and the Pacific Rim. Students who enter the college with fewer than 30 quarter credits (or the equivalent) are required to participate in the core course. Students meet with their faculty member in a seminar, attend regular lecture/performance, and participate in writing groups, advising, and other sessions that introduce some of the academic issues they will confront at the university. The course emphasizes critical reading, writing, and close intellectual contact with faculty and other students.

In their second quarter of residency, students are encouraged to take the next course in the core sequence, which focuses on ways of knowing. Students are introduced to the ways in which different disciplines define “literacy” in their own terms: visual literacy, musical literacy, and the scientific method will be introduced as alternative ways of understanding.

The college also offers 2-credit courses in a variety of areas connected to the arts. These are small classes in the practice or theory of the arts; they may include investigation of a particular style of music or dance, visits to Bay Area theaters and museums, working in the arts, or creation of a show in one of the college galleries. These diverse offerings allow Porter students to understand the significance of creativity in a university education.

In addition to faculty advising, writing assistants have regular office hours in the college to offer help to on- and off-campus students. Special lectures give students the opportunity to meet with important artists and thinkers in an informal environment.

The college provides fellowship funds each year to talented students pursuing original research and creative projects.

Porter Community and Facilities

The residence halls play an important role in bringing the college community together. Students are encouraged to spend their residence years in residence in the college, where housing is available for 610 students. The residence halls are divided into smaller units, with from 14 to 40 students sharing common lounges and other facilities. Theme halls include Performing Arts, Film and Digital Media, Visual Arts, and Outdoors Experiences. Porter students have established a Multicultural Lounge, a Lavender Lounge, and a Women’s Hall, with affiliating student organizations offering thematic support. Students also have a choice of smoke-free or substance-free halls.

In addition to traditional classrooms, Porter has many specialized facilities such as a fireside lounge, darkroom, galleries, and a dining hall that converts to a theater space.

Porter Faculty and Staff

Provost

DAVID EVAN JONES, Music

Fellows

EIZABETH S. ABRAMS, Writing
KEN ALLEY, Art
ELLIOT ANDERSON, Art
ROGER W. ANDERSON, Chemistry and Biochemistry
LAWRENCE ANDREWS, Film and Digital Media
MANUEL ARES JR., Molecular, Cell, and Developmental Biology
DORIS ASH, Education
CHARLES ATKINSON, Writing
AMY C. BEAL, Music
TADDY BEAL, Theater Arts
JAMES H. BIERMAN, Theater Arts
ROBERTO A. BOGOMOLNI, Chemistry and Biochemistry
JOYCE BRODSKY, Art
GEORGE BROWN, Physics

Instructional Computing Laboratories, located at Porter College, consist of two high-end labs oriented toward the arts (see page 57). Porter also has a Study Center with an adjoining Computer Lab for Porter students only. This lab has six workstations for word processing, graphics production, Internet capabilities, and printing.

Adjacent to the college are the campus’s Theater Arts Center (see page 371), the Elena Baskin Visual Arts Center (see page 120), and the Music Center (see page 312).

Porter provides constructive opportunities for relaxation and recreation to balance the intellectual demands of a university education. The Student Activities Office, in conjunction with the Porter Student Senate, organizes formal and informal events, including dances, recreational activities, and field trips, which augment campuswide activities in these areas. For relaxing, Porter students and faculty gather at the college’s coffeehouse—the Hungry Slug.

Many students and faculty perform or exhibit their work at Porter, and cultural events are a constant feature of life at the college. The dining commons has been the site of performances by artists such as El Teatro Campesino, readings by contemporary authors such as Andrew X. Pham and Alice McGrath, and speakers such as Auschwitz survivor Renee Firestone.

Porter College facilities were constructed through a partnership of public funds and a gift from the Porter-Sesnon family of Santa Cruz. Part of the gift was used to establish an endowment for the college.

For more information, call (831) 459-2273 or visit the web site: www2.ucsc.edu/porter.
CAMPUS LIFE

Linda Burman-Hall, Music
Elizabeth Cameron, History of Art and Visual Culture
Benjamin Carson, Music
Martin M. Chemers, Psychology
Robert C. C. Co, Earth Sciences
Ray T. Collett, UCSC Arboretum, Emeritus
David H. Coop, Music
William D. Coulter, Music
Donald Coyne, Physics
David Crank, Film and Digital Media

E. G. Crichton, Art
Faye J. Crosby, Psychology
David Cuthbert, Theater Arts
Sharon Daniel, Film and Digital Media
Carolyn S. Dean, History of Art and Visual Culture

Sherwood Dudley, Music, Emeritus
Peter Q. Elsea, Music
Harland W. Epps, Astronomy and Astrophysics
Shelly E. Errington, Anthropology
Maria V. Ezraova, Music
M. Kathleen Foeley, Theater Arts
Doyle Foreman, Art, Emeritus
Jean Fox Tree, Psycholinguistics
Mark Franko, Theater Arts
Susan Freedman, Art
Gregory Fritsch, Theater Arts
Frank Galuska, Art
Ingeborg Gerdes, Art
Robert Giges, Core Course
Jennifer A. Gonzalez, History of Art and Visual Culture

Irene Gustafson, Film and Digital Media
Melissa Gwyn, Art
James B. Hall, Literature, Emeritus
Susan Harding, Anthropology
Amelie Hastie, Film and Digital Media
John Hay, History of Art and Visual Culture
Irene Herrmann, Music
Karlton Hester, Music
Clemens H. Heusche, Physics
Ellie J. Hollander, Film and Digital Media
Edward F. Houghton, Music
Donna Hunter, History of Art and Visual Culture
Kimberly Jannarone, Theater Arts

Hi Kyung Kim, Music
L. S. Kim, Film and Digital Media
Constance Kreemer, Theater Arts
Thorne Lay, Earth Sciences
Jimin Lee, Art
Anatole Leirkin, Music
Fredric Lieberman, Music
Peter Limbrick, Film and Digital Media
Norman Locks, Art

Suresh Lodha, Computer Science
Charles (Chip) L. Lord, Film and Digital Media
Pavel Machotka, Psychology, Emeritus
Dominic W. Massaro, Psychology
William G. Mathews, Astronomy and Astrophysics
Jennielle Lind McCabe, Art
Charles E. McDowell, Computer Science
Letia E. Miller, Music
Margaret Morse, Film and Digital Media
Peter Moskoff, Theater Arts
Paul Nauert, Music
Nicole A. Paremten, Music
Jennifer Parker, Art
Kenneth Peidro, Electrical Engineering
Paul Rangell, Art
Barbara Rodgoff, Psychology and Education
Elaine Yokoyama Roos, Theater Arts
Norvid J. Roos, Theater Arts, Emeritus
Bruce Rosenblum, Physics
Warren Sack, Film and Digital Media
John M. Schecter, Music
Catherine M. Sousloff, History of Art and Visual Culture
Shelley Stamey, Film and Digital Media
Audrey E. Stanley, Theater Arts, Emerita
Brian J. Staufenbiel, Music
Elizabeth Stephens, Art
Undang Sumarna, Music
David Swanger, Education and Creative Writing
John W. Tamarkin, Molecular, Cell, and Developmental Biology

Kresge College

Kresge is an experience that will allow you to learn a lot about yourself, be independent and learn to take responsibility for yourself.
—Yvette Keller, Psychology and Modern Literature (double major)

Academic Emphases

Kresge faculty are primarily from the humanities, but they include anthropologists, artists, writers, dramatists, journalists, and political theorists. The college houses the Departments of Literature and Women’s Studies, the Writing Program, the journalism minor, and the Dickens Project.

Kresge’s core course, Power and Representation (see page 273), invites active participation in the creation of new social possibilities. The Kresge core course is an examination of key moments at the middle and end of the 20th century. The class focuses on Hiroshima and the dawn of the atomic age, and the social movements of the late 1950s, 1960s, and early 1970s, including civil rights, the Vietnam War, the women’s movement, and the gay and lesbian movement. Each instructor has a special two-week period to examine topics the instructor is well versed in, and which reflect the overall focus of the core curriculum. The last part of the course deals with the economic downturn of the 1990s. In addition to section meetings, on several nights all students come together to watch core-related films or listen to lectures.

The core course is a time where as a first-year student, you have a small class where your voice counts. It is a place to challenge your ideas and the way you think about things [by] introducing new ideas in a very open atmosphere that is safe and comfortable.
—Angela Phipps, Literature

The core course seeks to open avenues to new ways of thinking and to various academic disciplines at the university, as it integrates the student’s intellectual, social, and personal lives in a stimulating and supportive environment. The core course develops critical writing and thinking skills that prepare students for the rapidly changing multicultural world of the year 2000 and beyond. Special sections of the core course are designed specifically for transfer students, who can enroll in this course as an elective. These sections emphasize the same issues and skills development within a context that explores a transfer student’s particular concerns on entering the university.
In addition to the core course, Kresge offers a series of courses taught by faculty affiliated with the college. These courses give students a chance to study in small groups with faculty on topics close to faculty research interests and provide training in skills helpful to students as they begin their majors. A new array of classes is offered each year. Some of the courses in the past have been taught by senior faculty in mathematics, anthropology, history, literature, and journalism.

Advising

Academic advising at Kresge is done by two professional academic advisers and staff through a well-developed peer advising system that is designed to support four-year undergraduate programs as well as the concerns of transfer students. Student peer advisers, writing tutors, and a mathematics computer tutor offer students extensive individual academic guidance and support as a resource provided by the college without additional charge.

I see a lot of new freshmen and new transfer students who aren’t sure about where the process starts. I can talk with them and together we can solve their problems and suddenly the university doesn’t seem so big.

—Kevin Tresham, Politics; Student Peer Adviser

Residential Life

Kresge was the sixth college to be built on the UCSC campus. The college was founded on the principle of participatory democracy as a means of encouraging a strong sense of community. Architecturally renowned, Kresge has apartments rather than residence halls.

The Kresge apartments attract students with a strong sense of independence and community participation. Distinctively designed, the apartments are configured for four or seven people. Kitchen and living areas look out onto the street, with other rooms facing the surrounding redwood forest. At Kresge East, apartments are folded into the forest for greater quiet. These apartments with four single bedrooms are typically reserved for continuing upper-division students.

The residential staff at Kresge work to bring students of similar interests and diverse backgrounds together academically and socially by designing special programming based on student interest. The programs focus on celebrating the diversity of the residential community, on multicultural community-building, and on enhancing academic success, through film series, music events, career and graduate school advising, mural painting, food-centered events, field trips, and other creative programming ideas.

I see a lot of new freshmen and new transfer students who aren’t sure about where the process starts. I can talk with them and together we can solve their problems and suddenly the university doesn’t seem so big.

—Kevin Tresham, Politics; Student Peer Adviser

Community Life

There are a wide variety of events and activities at the college that shape community life: Lectures, workshops, trips, plays, dances, concerts, and films are a regular part of student life at the college. The nature and tenor of these events are a reflection of the interests and dedication of students and staff, who are committed to providing voice and opportunity for all community members.

Students actively shape the college community through participation in Kresge Parliament, an openly structured student organization responsible for voting the allocation of all college membership fees in support of activities and events. Parliament and monthly Town Meetings also serve as a forum for the discussion of college and campuswide issues with college staff and faculty.

Community Life

Transfer Students

In recognition of the wealth of diversity that transfer students bring to the community—in terms of culture and experience—Kresge is the home of the Transfer Center for campuswide transfer students regardless of college affiliation. This is a staffed facility where students can gather to relax, socialize, hold meetings, and obtain campus information and resource support in a central location. The resource center offers workshops, social evenings, and special events that are tailored to meet the needs of transfer students.

Kresge also offers special advising workshops and 2- and 3-credit courses designed to help transfers in the process of entering the university and moving forward in their careers from here.

Facilities

Kresge’s unique style is also evident in its physical structures. At the entrance to the college is the restful Piazza with its “un-fountain.” Spinning off from the Piazza are the Transfer Center, the Commuter Lounge, and the Student Lounge, equipped with television and VCR. In addition to the Transfer Center, as a unique facility on the campus, the Commuter Lounge is a place for off-campus students who want to use a kitchen, shower, or lockers while on campus. The Photo Lab Co-op is above the Piazza and offers 24-hour accessibility to darkroom equipment. Adjacent to the nearby meadow are the Recreation Room, a racquetball court, and an outdoor basketball court. The center of the college includes the beautiful Study Center with its soaring ceilings and walls of glass overlooking the forest. College facilities include a computer lab equipped with PCs for student use. Kresge also has the student-run Food Co-op, where healthful and organic produce is sold and working memberships are available. At the top of the college are the Town Hall performance facility, the Music Co-op, and a restaurant.

If people are looking for an atmosphere that is accepting to different personalities and mindframes, and want the independence to work with other students, Kresge offers that. Kresge really strives to have a community of people, but leaves space to assert your independence.

—Diem Do, Community Studies

For more information, call (831) 459-2071 or visit the web site: www2.ucsc.edu/kresge.

Kresge Faculty and Staff

Provost

PAUL N. SKENAZY, American Literature

Members

RALPH H. ABRAHAM, Mathematics, Emeritus
BETTINA APThERER, Women’s Studies and History
MURRAY BAUMGARTEN, English and Comparative Literature
RAOUl BIRNBAUM, History of Art and Visual Culture
TINA CAMPT, Women’s Studies
SHELLEY E. ERRINGTON, Anthropology
J. PETER EUBEN, Politics, Emeritus
Oakes College

Oakes was founded in 1972 to provide high-quality education to students from diverse cultural and social backgrounds. Students, staff, and faculty associated with the college believe that learning takes place not only in the classroom but also in residential settings. For that reason, they work hard to create a multicultural community whose members strive together toward certain universal goals—including equal access to educational opportunity and freedom from oppression—while simultaneously affirming and celebrating some of the distinctive aspects of the different backgrounds from which they come.

Academic Emphases

Oakes faculty members represent a variety of disciplines in the humanities, social sciences, and physical and biological sciences. Since its founding, Oakes has made a special effort to provide academic programs and experiences for underrepresented groups, including women. These programs and experiences are enriched by the presence of core faculty from disciplines housed in the college: American studies, American literature, writing, world literature, and history of consciousness. Oakes graduates have gone on to successful careers in fields such as medicine, law, education, medical research, and community service.

The Oakes core course, Values and Change in a Diverse Society, is required of all first-year students. The course is writing intensive and examines individual and collective responses to issues of culture, gender, sexuality, race, and class. (See page 320 for a description of the course.) Transfer students with fewer than 45 transferrable quarter credits are required to take the core course.

Students at Oakes are challenged in many ways. Not only do they have the opportunity to live and work with people from different backgrounds, but they are also expected to demonstrate academic excellence in their chosen fields of study. To enable all students to do well—regardless of their level of high school preparation—a variety of services are available:

- The Learning Center at Oakes College offers a study center as well as tutoring and advising. Special assistance in writing and tutoring in a variety of subjects are offered to Oakes students and EOP students.
- The Oakes Computer Lab provides access to 20 PC computers for Oakes students.
- Oakes Community Service provides students with information about and assistance in making contact with a wide variety of community service organizations. All Oakes students are encouraged to contribute service to public agencies, schools, and community organizations in the city of Santa Cruz and in economically deprived areas of Santa Cruz and Monterey Counties. Oakes students serve as tutors, teachers, mentors, and community builders. Academic credit is available through the Oakes Community Service course.

- Academic and psychological counselors work with students to help them overcome obstacles to learning and realize their full potential.

College Community and Facilities

Oakes College, located on the west side of the UCSC campus, commands a sweeping view of Monterey Bay. Students may choose between apartment and residence hall living. The residence halls have lounges on each floor, attractive courtyards, and views of the ocean and the city of Santa Cruz. The college’s residence halls and apartments are arranged into “blocks.” Five students share an apartment, along with the responsibilities for maintaining it and cooking their own meals. Residence halls are coed and provide space for students in double and single rooms. Rest-room facilities for each gender are located on each floor.

Full-time coordinators for residential education and neighborhood assistants help residents develop cooperative ways of living together. As one student put it, “Oakes is a community where people of many different colors, backgrounds, interests, and goals form a friendly neighborhood. We share our cultures and adapt to the different lifestyles of our neighbors.” The residential program is designed to assist all students in integrating their academic and social needs. The residential staff hosts activities such as brunches, study breaks, and block dinners, each with a different theme and often reflecting the various cultures represented by Oakes students. Other events include once-a-month College Night programs in the dining hall, weekend videos, TGIFs, and community service organizations. All students are encouraged to participate in these activities.

The college staff seeks to nurture and sustain a community in which mutual respect, understanding, and concern for others are the norm. Within that atmosphere of community expectations, students are also supported and encour-
College Eight

The theme of College Eight—Environment and Society—is concern for social, political, scientific, and ethical issues, recognizing the essential interconnections among human beings and between humans and all other forms of life. College Eight faculty are drawn primarily from the Environmental Studies, Sociology, and Community Studies Departments, but also include faculty from other disciplines, such as Biology, Computer Engineering, Computer Science, Earth Sciences, Mathematics, Physics, and Psychology.

The students who come to College Eight bring with them a wide variety of life, work, and educational experiences. They represent all the disciplines in their choices of major. They also represent a rich diversity of cultural backgrounds. A large number of transfer students attend College Eight and tend to have a clear sense of their educational and professional objectives. For first-year students, the college fosters an exciting, interdisciplinary intellectual atmosphere in which to explore their academic interests and potential. This mix of ages and backgrounds creates a refreshingly easy fellowship among faculty, staff, and students.

Academic Emphases

The College Eight core course, Environment and Society, examines different perspectives on environment and community in the contemporary world. (See page 154 for the course description.) Through a series of lectures, films, readings, and small-group discussions, the course provides an opportunity for first-year students to study issues of vital importance, to share their diverse backgrounds, cultural heritage, and points of view. The course, which is required of all first-year students, features guidance and practice in the critical reading and writing skills necessary for successful study at the university level.

College Eight students and faculty are encouraged to develop courses, conferences, and field projects. Internships and field studies offer an opportunity to link classroom theory with action in the community.

College Community and Facilities

College Eight is located on a sunny, terraced hillside on the west side of the UCSC campus, a site that offers a spectacular view of Monterey Bay and the California coastline. The college is designed to encourage interaction among resident and commuter students, faculty, and staff. Outdoor spaces allow for relaxing, informal

Oakes Faculty and Staff

Provost
PEDRO G. CASTILLO, History

Fellows
DAVID H. ANTHONY III, History
GEORGE R. BLUMENTHAL, Astronomy and Astrophysics
BARRY BOWMAN, Molecular, Cell, and Developmental Biology
VICTOR BURGIN, History of Consciousness, Emeritus
MAX CAMARILLO, Counseling and Psychological Services
JAMES T. CLIFFORD, History of Consciousness
CHRISTOPHER CONNERY, Chinese Literature
MICHAEL H. COWAN, Literature and American Studies
ANGELA Y. DAVIS, History of Consciousness
TERESA DE LAURETIS, History of Consciousness
DAVID E. DORFAN, Physics
BARBARA L. EPESTEIN, History of Consciousness
JAMES B. GILL, Earth Sciences
SUSAN GILLMAN, American Literature
KIRSTEN GRUESZ, Literature
DONNA J. HARAWAY, History of Consciousness
YVETTE HUGGINS, American Studies
SHARON KINOSHITA, Literature and Language Studies
DAVID S. KLAGER, Chemistry and Biochemistry
ANN M. LANE, American Studies
DIANE K. LEWIS, Anthropology, Emerita
GEORGE LIPSITZ, American Studies

Pradeep K. Mascharak, Chemistry and Biochemistry
ERIC PORTER, American Studies
CATHERINE RAMIREZ, American Studies
RENYA RAMIREZ, American Studies
A. CHRISTINA RAVELLO, Ocean Sciences
FORREST G. ROBINSON, American Studies
TRICIA ROSE, American Studies
DONALD L. ROTHMAN, Writing
DANIEL SELDEN, Literature
MARY W. SILVER, Ocean Sciences
NEFERTI TADIR, History of Consciousness
FRANK J. TALAMANDES, Molecular, Cell, and Developmental Biology
HAYDEN WHITE, History of Consciousness, Emeritus
YUSUOB WILSON, Literature
STEPHEN C. WRIGHT, Psychology
JUDY YUNG, American Studies
ADRIENNE L. ZILHLMAN, Anthropology

Honorary Associates
J. HERMAN BLAKE
BRUCE N. COOPERSTEIN
DAVID DODSON
ALLEN B. FIELDS
DOLORES HUERTA
ELBA R. SÁNCHEZ

College Administrative Officer
SUSAN WELTE

Staff
MICHAEL BARTEE, Counseling Psychologist
CHER BERGSEN, Academic Preceptor
IRA BELYAH, Relief Preceptor
ANTOINE BRACY, Coordinator for Residential Education
LOWELL BURTON, Maintenance Supervisor
THOMAS CASEY, Community Service Coordinator
TERRY COHELAN, Senior Maintenance Assistant
STEPHANIE COULTER, Assistant to Provost and to College Administrative Officer
KATHY DURCAN, Academic Services Assistant
BILL HEINRICH, Coordinator for Residential Education
ELAINE KIBEA, Academic Preceptor
ROBIN KIRKSEY, Financial Coordinator
C. J. LESLIE, Groundskeeper
ADRIANA LOPEZ, Coordinator for Residential Education
GWENDOLYN MATHIEU, Housing Coordinator
LAURA MCHANE, Academic Services Assistant
MARIE MORONES, College Assistant
EMILIO NAVARRO, Maintenance Assistant
OSRID ORTIZ, College Programs Assistant
MARY ORTIZ-MCGUIRE, Associate College Administrative Officer
KELLI RIGGS, College Programs Coordinator
PEGGY ROSE, EOP Academic Counselor
PATTY TRAUGOTT, Advising and Records Coordinator
NICK YUKICH, Senior Proctor
opportunities to converse and socialize; they include small residence hall patios, grass quadrangles, and a large plaza—the heart of the college—where pedestrian traffic converges. Adjacent to the college are recreational facilities including the West Field House, tennis courts, basketball and sand volleyball courts, and playing fields. The Theater Arts and Music Centers, McHenry Library, and Porter and Oakes Colleges are a short distance from the college.

College Eight’s facilities include an academic building that accommodates the college office, the Sociology and Community Studies Departments and associated research centers, a computer lab with printers, five classrooms, and faculty offices. Approximately 390 students live in a community of three- and four-story residence halls with single and double rooms and suites. The residence halls include designated study lounges, laundry facilities, and lounges that serve as living rooms—favorite places where residents gather to relax, watch television, and catch up on the news of the day. Another 260 students are housed in College Eight’s two-, three-, and four-bedroom apartments, which are generally reserved for students at the sophomore level and above.

The college’s enthusiastic residential staff is composed of coordinators for residential education, who are full-time live-in professionals, along with undergraduate resident assistants. The residential staff plans a variety of educational and recreational events including community barbecues, outdoor movies, and a quarterly cultural festival celebrating the diversity of our community. More intimate gatherings include study breaks, coffee talks, brunches, and potlucks. The residential staff is available to ease the transition to college life, making the college a comfortable new home for our residents.

The Student Commons building contains the office of College Eight’s college programs coordinator as well as two conference rooms and a study center for student use. The lively College Eight Café features a pool table and a quiet, comfortable corner with couches. The café is a favorite haven and gathering place for students, faculty, staff, and other members of the campus community.

The College Eight Student Programs Office, in conjunction with the student government and student organizations, plans social, multicultural, and educational events for the college community. Weekly Café Nights—featuring open mikes, music, art shows, and guest speakers—accommodate the diverse spectra of cultural and artistic interests of the students. College Night, a monthly cultural event, provides an opportunity for students to learn about a variety of cultures through entertainment and delicious cuisine. In addition, the College Eight Student Programs Office works closely with the Student Environmental Center to bring programs that educate and build long-lasting networks, which aim to address the environmental issues affecting our world today.

Above all, College Eight seeks to create a community of inclusion, in which each person is encouraged to share and explore beliefs, worldviews, values, and ideas in an atmosphere of mutual support and trust.

For more information, contact the college at (831) 459-2361, e-mail housing@ucsc.edu or crneusel@ucsc.edu, or visit the web site: www2.ucsc.edu/eight/

College Eight Faculty and Staff

Provost
Roswell (Roz) Stafford, Writing

Fellows
Jennifer K. Anderson, Environmental Studies
David P. Bellanger, Physics
Julie Bettie, Sociology
John G. Borrego, Latin American and Latino Studies
Bruce Bridgeman, Psychology
David T. Brundage, Community Studies
Monica J. Casper, Sociology
Bruce N. Cooperstein, Mathematics
Daniel P. Costa, Ecology and Evolutionary Biology
Ben Crow, Sociology
Robert R. Curry, Environmental Studies, Emeritus
Daniel F. Donak, Environmental Studies
Bryan H. Farrell, Environmental Studies, Emeritus
F. Joel Ferguson, Computer Engineering
Andrew Fisher, Earth Sciences
William H. Friedland, Community Studies and Sociology, Emeritus
Hirosi Furuhashi, Sociology
Margaret H. Fusari, Environmental Studies; Natural Reserve Director
Joaquín García-Luna, Computer Engineering
Viktor Ginzburg, Mathematics
Stephen R. Gleissman, Environmental Studies
Walter L. Goldfrank, Sociology
David Goodman, Environmental Studies
Gary B. Griggs, Earth Sciences; Director, Institute of Marine Sciences
Brent Haddad, Environmental Studies
David P. Helmbold, Computer Science
Phokion G. Kolatis, Computer Science
David C. Koo, Astronomy and Astrophysics
Tracy Larrabee, Computer Engineering
Deborah Letourneau, Environmental Studies
Paul M. Lubbeck, Sociology
Patrick McKeeher, Writing
Paul Nierbanck, Environmental Planning, Emeritus

James R. O’Connor, Sociology, Emeritus
Art Pearl, Education, Emeritus
John S. Pearse, Ecology and Evolutionary Biology, Emeritus
James E. Pepper, Environmental Planning, Emeritus
Daniel M. Press, Environmental Studies
Mary Beth Pudup, Community Studies
Peter T. Raymond, Ecology and Evolutionary Biology
David M. Rank, Astronomy and Astrophysics, Emeritus
Craig Reinarman, Sociology
Michael Rotkin, Community Studies
Martine D. F. Schlag, Computer Engineering
Daniel Scripture, Writing
Michael Soule, Environmental Studies, Emeritus
Nancy Stoller, Community Studies
Andrew Szasz, Sociology
Anujan Varma, Computer Engineering
Candace West, Sociology
Terrie M. Williams, Ecology and Evolutionary Biology
Deborah A. Woo, Community Studies

Affiliate Fellows
William Jackson (Jack) Davis, Ecology and Evolutionary Biology
Sylvia Jenkins, Music
Burney Le Bouef, Ecology and Evolutionary Biology, Emeritus
Joel R. Primack, Physics
Brian Walton, Environmental Studies; Coordinator, Predatory Bird Research Group

College Administrative Officer
Susan Welte

Staff
David Barry, Senior Provost
Theresa Beasley, Housing Coordinator
Paul Bianchini, Facilities/Maintenance Supervisor
Jan Burroughs, Academic Preceptor
Jody Croce, Café Manager
Travis Douglas, Coordinator for Residential Education
Wendy Gittings, Café Assistant Manager
Heidi Lewin, College Programs Coordinator
Sandra Lord-Crack, Financial Coordinator
Mary McKinnon, Associate College Administrative Officer
Charles Meusel, College Assistant
A. Patrice Monsour, Counseling Psychologist
Lauren Reed, Academic Preceptor
Sara Walsh, Assistant to the Provost and Coordinator of Advising and Records
Nate Westrup, Coordinator for Residential Education
Paul Willis, Coordinator for Residential Education
Baldo Zaragoza, Maintenance Assistant
College Nine

At College Nine, we introduce students to our increasingly interconnected world. Students can learn about the impact of economic globalization. We also expect them to come to appreciate the diversity of cultural traditions.

—Campbell Leaper, College Nine Provost

Academic Emphases

College Nine’s theme of International and Global Perspectives emphasizes the importance of both diversity and unity in understanding individuals and societies. The academic and cocurricular programs are designed to explore the wide diversity found in the world based on people’s economic opportunities, political power, and cultural traditions. At the same time, we consider how people across the world are becoming interconnected through global economies, education, mass media, jet travel, and computers. Students interested in these issues either as their major focus or as part of their general education are invited to join the College Nine community.

Writing Seminar

In the first-quarter frosh course, International and Global Perspectives: A Writing and Discussion Seminar (see page 154), students examine current issues pertinent to the college’s intellectual theme. Topics address issues such as globalization, inequities in wealth and poverty across the world, human rights, and regional conflicts.

The seminar emphasizes the development of students’ writing skills. Being able to write well is a valuable asset for success in college and later in most careers. Students write several reflective and analytical papers during the quarter. Each paper undergoes at least one revision after the student receives constructive feedback from the instructor. Thus, the instructors work closely with each student throughout the quarter.

Special Academic Programs

Optional programs are available to involve College Nine students in academic and cocurricular activities beyond the first-quarter course. They are designed to promote students’ academic achievement and success by connecting them with faculty mentors and helping them pursue leadership experiences in particular contexts.

Exploring A World of Possibilities Workshop

College Nine students have the option of enrolling in Exploring A World of Possibilities Workshop. This 2-credit course meets once per week and can be taken in addition to the regular 15-credit academic load. The workshop emphasizes small-group experiential learning. Students examine social, cultural, political, and environmental issues. These explorations involve examining one’s own life experiences and identity development in relation to multicultural and global perspectives. The course includes discussions, group activities, film presentations, and guest speakers.

Service Learning

Students can extend their learning beyond the classroom by getting practical experience and course credit working as an intern for a community or business organization. This type of practical experience is known as service learning or field study. Examples include assisting in a classroom or at a homeless shelter. College Nine has its own service-learning program. In addition, there are a variety of service-learning programs in the academic Departments in the social sciences, including Community Studies, Environmental Studies, Sociology, Economics, Latin American and Latino Studies, and Psychology. Whether through their major or College Nine, students enrolled in one of these programs work with both a field supervisor and a faculty sponsor. The field supervisor guides the student at the practicum site, while the faculty sponsor helps the student develop a reading list and paper topic related to the placement. The College Nine advisers will help direct students to possible practicum programs at the college or in academic departments.

Students as Teachers and Mentors

College Nine students have special opportunities to become course assistants, tutors, and student mentors. By enrolling in Teaching a World of Possibilities, students gain independent experience as teachers leading their own discussion sections of a College Nine course. They receive close supervision that emphasizes a collaborative approach to developing and enhancing teaching, communication, and leadership skills. The College Nine academic advisers can also direct students to other opportunities for student-teaching and peer-mentoring programs on campus. These are excellent opportunities to work closely with a faculty member and to develop one’s own skills as a teacher and a leader.

Education Abroad

The UC Education Abroad Program (see pages 40–41) places students at a university in another country for one or more quarters. Studying abroad can be a valuable way to expand one’s understanding of the world. Given the international focus at College Nine, students are encouraged (but not required) to develop a second language or to study abroad.

Global Information Internship Program

The Global Information Internship Program (GIIP) places highly motivated students—trained in social science and information technology—in internships with nongovernmental organizations and community groups. Students in GIIP help these organizations and groups in the use of Internet-based information and communications technologies. Interns acquire leadership and organizational skills through the “learning-by-doing” method. For more information, see page 42 and visit the web site at www2.ucsc.edu/giip/.

Research Opportunities

The faculty at UC Santa Cruz are ranked high in their quality of research. College Nine students are encouraged to take advantage of the many excellent opportunities available to work closely with faculty as research apprentices. Students will find many internship, independent study, or senior thesis programs in the departments of most majors. The College Nine academic advisers will help link students with these programs. College Nine students will also have connections to faculty affiliated with various research institutes concerned with international and global issues. They include the following:

- The Center for Agroecology & Sustainable Food Systems (see page 59)
- The Center for Global, International and Regional Studies (see page 60)
- The Center for Justice, Tolerance, and Community (see page 61)
- The Chicano/Latino Research Center (see page 62)
- The Santa Cruz Center for International Economics (see page 70)

College Nine Scholars Program

Eligible College Nine frosh may apply to the Scholars Program. This includes enrolling in an honors section of the frosh writing seminar in the fall quarter, the 2-credit workshop in the winter, and a special seminar in the spring.
College Nine Pathways to Distinction
Another feature of College Nine is that qualified students may graduate with College Nine Distinction. This recognition is intended to serve as an incentive for students to pursue activities that are especially apt to help them succeed in college and beyond. Two pathways are possible:

Research and scholarship. In this pathway, students pursue research with faculty by completing three quarters (15 credits) of work on a senior thesis or a research internship. Students may be recognized with College Nine Distinction if they do a thesis or a research internship in their major on a topic related to international or global issues.

Language and culture. Students who enroll in at least three quarters (15 credits) in either Education Abroad or a foreign language (or a combination) may qualify for College Nine Distinction.

College Community and Facilities
Founded in fall 2000, College Nine is one of the newest colleges at UCSC. Consistent with UCSC’s founding vision, College Nine creates an integrated living and learning environment through engaging academic and extracurricular programs. The college motto, “Celebrating A World of Possibilities,” describes exciting cocurricular opportunities to learn more about the world in which we live.

Theme Programming
The College Nine theme of International and Global Perspectives forms a central foundation of our programming. Each month, students and staff work together to develop programs and provide opportunities to learn about and enjoy different aspects of the world around us. Festivals of food and dance, hands-on arts programs, faculty presentations, field trips, film series, and other programs are offered. Some past programs have included European Craft Workshop, Exploring Acupuncture and Chinese Medicine, Rhythm and Soul Food Café, and Field Trips to Chinatown, Japantown, and the Asian Art Museum in San Francisco.

College Nights
Each month, the college community comes together to plan a College Night, which is a large-scale community celebration, held in the dining commons and open to all College Nine students whether or not they live on campus. These events are planned by students and focus on particular regions of the world. College Nights include food, entertainment, and educational materials related to the theme. Some past College Nights have been Winter Holidays from Around the World, Carnival, and Asian Traditions.

Intercultural Communication Retreat
This two-day retreat provides international and American students from diverse backgrounds the opportunity to explore various components of intercultural communication. Through a series of structured exercises and small-group discussions, students share perspectives on issues such as multiculturalism, values orientation, and diversity. The goal of the workshop is to build community and friendship among international and American students as well as to increase students’ understanding of the complexity of communicating across cultures. The Intercultural Communication Retreat is optional; students apply for this opportunity in the fall.

International Living Center
The International Living Center (ILC) at College Nine offers a unique living environment fostering understanding, cooperation, and friendship among upper-division students from different nations, cultures, and backgrounds. Half of the residents are students from the United States, and the other half are students from various countries around the world. Students reside in the College Nine Apartments.

Model United Nations
Students have the opportunity to explore a multitude of international issues through interactive methods that include role playing, a mock UN session, and faculty presentations.

Intergroup Dialogue
Through this program, students are given opportunities to learn, experience, and work constructively with one another through structured dialogues and experimental activities across social-group boundaries and through social conflict. The Intergroup Dialogue program initiates links between formal academic course work and students’ individual experiences of intergroup conflict and relations.

CREATE
CREATE (Cultural Resources to Educate and to Empower) offers a community at College Nine for students of color to find support and empowerment through mentorship and friendship.

Rainbow Club
The Rainbow Club provides opportunities for gay, lesbian, bisexual, transgender, intersex, queer, and questioning students and their allies to join together for self-awareness and social activities in a fun, relaxed atmosphere.

Fall Leadership Institute
Student leadership and involvement are key to successfully building the new College Nine community. The Fall Leadership Institute offers students the opportunity to develop leadership skills and to develop efficacy as world citizens and leaders at College Nine. The institute meets weekly throughout fall quarter, providing a wide range of exercises, guest speakers, discussions, and debates.

Other Cocurricular Opportunities
Getting involved in cocurricular activities is a predictor of college success. Not only do college activities help students make friends, they foster leadership and group cooperation skills. There are many opportunities at College Nine for student involvement, including the College Nine Student Government Association and Programming International Events (PIE). These organizations are responsible for many of the programs previously described. Additionally, there are social and recreational programs such as dances, ski trips, and intramural sports. There are also specialized groups such as Cloud Nine (the a cappella singing group) and the Book Club.

Physical Surroundings
College Nine is situated in a redwood grove next to the Social Sciences 1 and 2 Buildings near the heart of campus. Peabody’s Coffee Cart, located on the ground floor of Social Sciences 2, serves espresso drinks, pastries, and sandwiches. Also, one of the campus’s Instructional Computing Labs is conveniently located in the Social Sciences 2 Building. A nature preserve serves as College Nine’s “backyard.” College Nine students have immediate access to hiking, running, and mountain bike trails in the adjacent forest.

Newly constructed residence halls with 400 single and double bedrooms opened in fall 2002. These fully furnished residence halls include student lounges, recreational spaces, and Internet connections. In addition, a state-of-the-art dining hall with an adjoining game room and student lounge for both Colleges Nine and Ten opened in fall 2002.

Colleges Nine and Ten also house approximately 300 upper-division students in newly
constructed apartments, with 190 students in single bedrooms and the balance in double and triple rooms. All apartments have full kitchens, living rooms, bathrooms, and Internet connections. Ground-floor apartments have decks, and most upper apartments have private balconies.

For more information about academic or general college programs, call (831) 459-5034, e-mail dslater@ucsc.edu, or visit the web site: collegenine.ucsc.edu.

College Nine Faculty and Staff

Provost
CAMPBELL LEAPER,* Division of Social Sciences; Psychology

Fellows
Charter Fellows*
JOSHUA AZENMAN,* Economics
DILIP BASU,* History
DONALD BRENNER,* Anthropology
EILEEN BROOKS,* Economics
EDMUND BURKE III,* History
NANCY CHEN,* Anthropology
WEXIN CHENG,* Environmental Studies
MARK CROC,* History
ANNETTE CLEAR,* Politics
CATHERINE R. COOPER,* Psychology and Education
BEN CROW,* Sociology
JONATHAN A. FOX,* Latin American and Latino Studies

K. C. FENG,* Economics
MARGARET (GREGA) A. GIBSON,* Education and Anthropology
PER F. GIERIE,* Psychology
STEPHEN R. GLEISSMAN,* Environmental Studies
WALTER L. GOLDFRANK,* Sociology
JUNE A. GORDON,* Education
ISEBIL V. GROHN,* Politics
JULIE GUTHMAN, Community Studies
MICHAEL M. HUTCHISON,* Division of Social Sciences; Economics

DAVID E. KAUN,* Economics
KENNETH KLETZER,* Economics
DANIEL T. LINGER,* Anthropology
RONNIE D. LIPSCUTZ,* Politics
SURESH LODHA,* Computer Science
PAUL M. LUBECK,* Sociology
JAYE PAGGETT,* Linguistics
HUGH RAFFLES,* Anthropology
Helen Shapiro,* Sociology
JEROME SHAW, Education
NIRVIKAR SINGH,* Economics
MICHAEL E. URBAN,* Politics
CARTER WILSON,* Community Studies, Emeritus

College Administrative Officer
DEANA SLATER

Senior Academic Preceptor
ROBERT TAYLOR

Staff
ABBEY ASHER, Special Projects Coordinator
RACHEL BAUMAN, Associate College Administrative Officer
WENDY BAXTER, Manager of Curricular Programs
NANCY CHA, Coordinator of Residential Education
OLIVIA CHAN, Assistant to the Provost
NISH CHANANI, Assistant College Programs Coordinator
JANE HARTMAN, Assistant to the Provost and the College Administrative Officer

AMY HYLER-ESSIG, Housing Coordinator
JAY JOHNSON, Proctor
AUDREY KIM, Psychologist
VICTOR KIMURA, Financial Analyst
MARCA LEVITSKY, Academic Advisor
MATT LOZANO, Housing Assistant
ED MACHADO, Proctor
ANDREA MONROE, Manager of Curricular Programs
SIMON O’SHEA, Coordinator of Residential Education, International Living Center
ERIN RAMSDEN, Curricular Programs Coordinator
BRETT RIALE, Senior Building Maintenance Supervisor
CYNTHIA WELLE, Coordinator of Residential Education
SARAH WOODSIDE, College Programs Coordinator

College Ten

Our goal at College Ten is to foster students’ concerns for social justice and their respect for diversity. This appreciation develops through both understanding and practice. Students can study the roots of social problems such as prejudice, ethnic hatreds, poverty, and political oppression. Another form of learning can occur through involvement in community organizations and other agencies. In these ways, we hope our students can contribute to the makings of a better world.

—Campbell Leaper, College Ten Provost

Academic Emphases

College Ten’s theme of Social Justice and Community addresses a range of social problems and their impact on all members of society. In particular, the academic and cocurricular programs consider the injustices that many people confront in their lives. Possible community and governmental policies for addressing social, political, and economic inequalities are also examined. In addition, the college provides students with opportunities to make their own positive contributions to social change through community involvement or scholarly research.

The college curriculum will explore the causes and consequences of social injustice in several ways. Students will examine the roots of prejudice, discrimination, and violence directed toward groups based on their ethnicity, skin color, gender, sexual orientation, religious beliefs, or political views. They will also consider the causes and consequences of poverty both within the United States and across the world.

Writing Seminar

In the first-quarter frosh course, Social Justice and Community: A Writing and Discussion Seminar (see page 155), students examine current issues pertinent to the college’s intellectual theme. Topics address issues such as poverty, discrimination, and economic injustice. Ways that communities, governments, and businesses can address inequities in society are also examined.

The seminar emphasizes the development of students’ writing skills. Being able to write well is a valuable asset for success in college and later in most careers. Students write several reflective and analytical papers during the quarter. Each paper undergoes at least one revision after the student receives constructive feedback from the instructor. Thus, the instructors work closely with each student throughout the quarter.

Special Academic Programs

Optional programs are available to involve College Ten students in academic and cocurricular activities beyond the first-quarter core course. They are designed to promote students’ academic achievement and success by connecting them with faculty mentors and helping them pursue leadership experiences in particular contexts.

Social Justice Issues Workshop

College Ten students have the option of enrolling in the Social Justice Issues Workshop in winter quarter. This 2-credit course meets once per week and can be taken in addition to a regular 15-credit academic load. The workshop offers a small, dynamic learning community in which members explore important issues of personal and cultural identity; social, political, and environmental concerns; and community-mindedness. The class emphasizes small-group experiential learning through structured exercises and group activities, and also includes discus-
tions, film presentations, and guest speakers. The course is offered to both first-year and upper-division students.

Service Learning
Students can extend their learning beyond the classroom by getting practical experience and course credit working as an intern for a community organization or a school. This type of practical experience is known as service learning or field study. Examples include assisting in a classroom or a homeless shelter. College Ten has its own service-learning program. In addition, there are a variety of service-learning programs in the academic departments in the social sciences, including Community Studies, Economics, Environmental Studies, Latin American and Latino Studies, Psychology, and Sociology. Whether through College Ten or their major, students enrolled in one of these programs work with both a field supervisor and a faculty sponsor. The field supervisor guides the student at the practicum site, while the faculty sponsor helps the student develop a reading list and paper topic related to the placement. The College Ten advising staff will help students find possible practicum programs at the college or in academic departments.

Practical Activism: Lessons in Local and Global Change
This annual one-day conference focuses on international social justice concerns in the local context. Students gain valuable leadership skills in developing and implementing this exceptional program, which involves collaboration among faculty, staff, and the local community.

Students as Teachers and Mentors
College Ten students have special opportunities to become course assistants, tutors, and student mentors. By enrolling in Teaching Social Justice, students gain experience as teachers leading their own discussion sections of a College Ten course. They receive close supervision that emphasizes a collaborative approach to developing and enhancing teaching, communication, and leadership skills. The College Ten academic advisers can also direct students to other opportunities for student-teaching and peer-mentoring programs on campus. These are excellent opportunities to work closely with a faculty member and to develop one’s own skills as a teacher and a leader.

Research Opportunities
The UC Santa Cruz faculty are ranked high in their quality of research. College Ten students are encouraged to take advantage of the many excellent opportunities available to work closely with faculty as research apprentices. Students will find many internship, independent study, or senior thesis programs in the departments of most majors. The College Ten academic advisers will help link students with these programs. College Ten students will also have connections to faculty affiliated with various research institutes concerned with international and global issues. These institutes are affiliated with the Social Sciences Division and include the following:

- The Center for Agroecology & Sustainable Food Systems (see page 59)
- The Center for Global, International and Regional Studies (see page 60)
- The Center for Justice, Tolerance, and Community (see page 61)
- The Chicano/Latino Research Center (see page 62)
- The Santa Cruz Center for International Economics (see page 70)

College Ten Scholars Program
Eligible College Ten frosh may apply to the Scholars Program. This includes enrolling in an honors section of the frosh writing seminar in the fall, the 2-credit workshop in the winter, and a special seminar in the spring.

College Community and Facilities
Founded in fall 2002, College Ten is the newest college at UCSC. Consistent with UCSC’s founding vision, College Ten creates an integrated living and learning environment through engaging academic and extracurricular programs focusing on the theme of Social Justice and Community.

Monthly Theme Programming
The College Ten theme of Social Justice and Community forms a central foundation of our programming. Each month, we focus on a different aspect of social justice, and students and staff work together to develop programs, providing opportunities to learn about and enjoy different aspects of the topic. Theme events may include faculty presentations, open microphones, field trips, film series, and hands-on arts programs.

College Nights
Every quarter, students and staff work together to plan College Nights, which are large-scale community celebrations, held in the dining commons and open to all College Ten students whether or not they live on campus. College Nights include food, entertainment, and educational materials related to a theme.

Multicultural Community Weekend
This two-day retreat provides students from diverse backgrounds the opportunity to explore various components of multicultural communication. Through a series of structured exercises and small-group discussions, students share perspectives on issues such as multiculturalism, values orientation, and diversity. The goal of the workshop is to build community and friendship among students as well as to increase students’ understanding of the complexity of communicating across diverse backgrounds. The Multicultural Community Weekend is optional; students apply for this opportunity in the fall.

CREATE
The purpose of CREATE (Cultural Resources to Educate and to Empower) is to facilitate the ongoing discussion of diversity issues at College Ten and in our living communities, learn about and promote multiculturalism, plan activities, and help students and staff have a resource for inclusiveness and training.
Rainbow Club
The Rainbow Club provides opportunities for gay, lesbian, bisexual, transgender, intersex, queer, and questioning students and their allies to join together for self-awareness and social activities in a fun, relaxed atmosphere.

ENGAGE
(Explore New Growth and Gain Experience)
ENGAGE offers students the opportunity to explore and develop their own beliefs, values, and feelings about current issues and social concerns through a wide range of exercises, guest speakers, discussions, and debates. Participants develop leadership skills and increase their efficacy as world citizens and leaders at College Ten. ENGAGE meets weekly throughout fall quarter.

Other Cocurricular Opportunities
Getting involved in cocurricular activities is a predictor of college success. Not only do college activities help students make friends, they foster leadership and group cooperation skills. There are opportunities at College Ten for student involvement, including the College Ten Student Government Association. These organizations are responsible for many of the programs previously described. Additionally, there are social and recreational opportunities such as dances, ski trips, and intramural sports for College Ten students. There are more specialized groups, such as Cloud Nine (the a cappella singing group), the Praxis Student Volunteer Community, and the Book Club.

Physical Surroundings
College Ten is situated in a redwood grove next to the Social Sciences 1 and 2 Buildings near the heart of campus. Peabody’s Coffee Cart, located on the ground floor of Social Sciences 2, serves espresso drinks, pastries, and sandwiches. Also, one of the campus’s Instructional Computing Labs is conveniently located in Social Sciences 2.

A nature preserve serves as College Ten’s “backyard.” College Ten students have immediate access to hiking, running, and mountain bike trails in the adjacent forest.

Newly constructed residence halls with 400 single and double bedrooms opened in fall 2002. These fully furnished residence halls include student lounges, recreational spaces, and Internet connections. In addition, a state-of-the-art dining hall with an adjoining game room and student lounge for both Colleges Nine and Ten opened in fall 2002.

Colleges Ten and Nine also house approximately 300 upper-division students in newly constructed apartments, with 190 students in single bedrooms and the balance in double and triple rooms. All apartments have full kitchens, living rooms, bathrooms, and Internet connections. Ground-floor apartments have decks, and most upper apartments have private balconies.

For more information about academic or general college programs, call (831) 459-5034, e-mail dlater@cats.ucsc.edu, or visit the College Ten web site: collegeten.ucsc.edu

College Ten Faculty and Staff
Provost
CAMPBELL LEAPER,* Division of Social Sciences; Psychology

Fellows
Charter Fellows*
NAMEERA AKHTAR,* Psychology
JENNIFER ANDERSON,* Environmental Studies

BETTINA APTHEKER, Women’s Studies and History
MARGARET AZMITA, Psychology
HEATHER BULLOCK,* Psychology
MAUREEN CALLANAN, Psychology
MARTIN M. CHEMERS,* Acting Chancellor; Psychology
JOHN BROWN CHILDS,* Sociology
FAYE CROSBY,* Psychology
ROBERT FAIRLIE,* Economics
JOHN ISBISTER,* Economics
LORI KLETZER,* Economics
COLIN LEACH,* Psychology
PAUL ORTIZ,* Community Studies
MANUEL PASTOR JR.,* Latin American and Latino Studies
PAMELA PERRY,* Community Studies
DANIEL PRESS,* Environmental Studies
RAVI RAAN,* Environmental Studies
 CRAIG REINARMAN,* Sociology
MICHAEL ROTKIN,* Community Studies
NANCY STOLLER,* Community Studies
DANA TAKAGI,* Sociology
EILEEN ZURBRIGGEN,* Psychology

Senior Academic Preceptor
ROBERT TAYLOR

Staf
EEMAN AGRAMA, Coordinator of Residential Education
LUPE ALLEN, Academic Advisor
ABBIE ASHER, Service-Learning Coordinator
RACHEL BAUMAN, Associate College Administrative Officer
WENDY BAXTER, Manager of Cocurricular Programs
NANCY CHA, Coordinator of Residential Education
OLIVIA CHAN, Assistant to the Provost
JANE HARTMAN, Assistant to the Provost and the College Administrative Officer
AMY HYLER-ESSIG, Housing Coordinator
JAY JOHNSON, Proctor
AUDREY KIM, Psychologist
VICTOR KIMURA, Financial Analyst
MATT LOZANO, Housing Assistant
ED MACHADO, Proctor
SIMON O’SHEA, Coordinator of Residential Education
JOSÉ REYES-OLIVAS, Cocurricular Programs Coordinator
CYNTHIA WELLE, Coordinator of Residential Education
SARAH WOODSIDE, College Programs Coordinator

* In Focus}

College residents enjoying an outdoor study session
CAMPUS LIFE

Student Life

Campus life is all about learning, discussion, and debate; meeting people from diverse backgrounds; making new and lasting friendships; attending cultural celebrations and artistic and musical performances; and getting involved with student organizations and clubs. UCSC provides a wealth of opportunity for personal growth within the context of a rich and meaningful academic experience. You will live, study, and socialize with other students in your college. You will also meet students from the other colleges—in your classes and at the many campuswide events that take place throughout the year. The colleges (described in the previous section) and the various campuswide units provide a wide range of student services to respond to individual needs, interests, and levels of personal development. In addition, students can take advantage of the campus's stunning natural setting, the friendly and engaging local community, and easy access to the Monterey and San Francisco Bay Areas.

Santa Cruz Community

Located on the northern tip of Monterey Bay, Santa Cruz is famous for its Mediterranean climate, forested state parks, and miles of scenic beaches. Recreational opportunities abound—hiking through redwood forests, bicycling along mountain roads, and surfing, sailing, and scuba diving. The Santa Cruz Mountains are minutes away; the majestic Sierra Nevada is a four-hour drive to the east.

The metropolitan centers of the San Francisco Bay Area are easily accessible. By car, Berkeley and San Francisco are less than two hours from campus. San Jose, Monterey, and Carmel are one hour away.

The city of Santa Cruz, with a population of about 56,000, was originally founded as a Spanish mission. Santa Cruz is a small community with cosmopolitan appeal and a strong awareness of environmental and political issues. Art exhibits, local theater companies, a symphony orchestra, fine restaurants, and a lively contemporary music scene combine to make Santa Cruz an enviable place to live.

Housing

College Residences

All undergraduate students, whether they live on campus or not, are affiliated with one of ten residential colleges at UC Santa Cruz. Each college provides academic support, organizes student activities, and sponsors events that enhance the intellectual and social life of the campus in addition to housing students in small-scale residential communities. About 45 percent of single undergraduate students live in university housing.

Freshmen entering in fall quarter are guaranteed university-sponsored housing for their first two years at UCSC. Transfer students entering in fall quarter have a one-year guarantee. All deadlines must be met to qualify for guarantees.

You must be admitted as a full-time student before applying for housing. All new single students who request on-campus accommodations on their Request for University Housing form will be mailed application information after college assignments are complete. This form and the required advance housing fee must be submitted to the Office of Admissions by the stated deadline to assure guaranteed housing.

The room and board rates for the 2004–05 academic year range from $8,109 to $11,724, depending upon the type of accommodation and meal plan (see pages 19–20 for more detailed information on rates).

The colleges at UCSC offer two kinds of accommodations—residence halls and apartments, both with access to common dining facilities. Kresge houses students in apartments; all of the other colleges offer both options. Except at Kresge and Oakes, most new first-year students live in residence halls; residence halls and apartments are available to continuing students and students transferring in at the junior level. (See pages 73–93 for more detailed descriptions of college housing facilities.)

The residence halls have shared rooms and a limited number of private rooms, as well as common lounge areas and bathrooms. The colleges offer coeducational and single-sex floors.

All residents of single-student housing are required to be on a meal plan. You may use your meal card at any of the seven college dining halls on campus, as well as at the UCSC Inn dining hall in downtown Santa Cruz. Some of the meal plans include Flexi Dollars that can be used at other campus dining locations. Additional Flexi Dollars may be added to any meal plan.

College apartments also have various combinations of shared and private bedrooms, along with kitchen, bathroom, and living spaces. They are furnished except for bedding and kitchen utensils. A minimum meal plan is required for apartment residents. You may also prepare some of your own meals along with your apartmentmates.

Each college’s residential program is a team effort. Professional staff (coordinators of residential education) work with students trained as resident assistants. They help organize activities and events, provide referral information about academic or personal concerns, and assist with roommate problems.

For more information on the colleges, refer to The University of California, Santa Cruz, Communities of Learning brochure, or contact the Campus Housing Office.

Campus Housing Office

This office is responsible for the application and contract records for all single students living in college residence halls and apartments, the Village, University Town Center, UCSC Inn, and Graduate Student Housing. Staff are available to advise students about room and board billing, payment plans, and contractual responsibilities. Students can purchase meal plans or Flexi Dollars online at www.student-housing.ucsc.edu. Centrally located at 104 Hahn Student Services Building, Campus Housing is open 9 A.M. to 4 P.M. Monday through Friday, (831) 459-2394, e-mail: housing@ucsc.edu. Web: www.housing.ucsc.edu.

The Village

Located in the Lower Quarry, the Village houses a mix of 153 continuing undergraduates, new transfer undergraduates, and graduate students. Each of the 17 houses has nine single bedrooms with Internet connection, three bathrooms, and a kitchenette. A meal plan is required. A manager’s apartment, office, laundry facility, community kitchen, and community lounge are located on site. The live-in manager and residential assistants are available to assist students. The Village housing fee for academic year 2004–05 is $8,508. Call (831) 459-2394 or e-mail housing@ucsc.edu for more information.

University Town Center

The University Town Center (UTC), located at the corner of Pacific and Cathcart in downtown Santa Cruz, provides housing in two- and three-person efficiency apartments. A meal plan is not required. UCSC students live cooperatively with students enrolled in University Extension’s English Language and International (ELI) Programs. Contact the Campus Housing Office for more information, (831) 459-2394 or housing@ucsc.edu.

University Inn and Conference Center

The Inn, located at 611 Ocean Street in downtown Santa Cruz, provides housing for about 200 UCSC students (new freshmen are not eligible for this housing option) during the academic year. Students living at the University Inn have a required minimum meal plan that may be used at any dining hall on campus, in addition to the inn dining hall. There are also
some guest rooms for short-term use by faculty, staff, and university visitors and for year-round conference services. Contact the Campus Housing Office for more information, (831) 459-2394 or housing@ucsc.edu.

Family Student Housing

Family Student Housing, located on the west side of campus, has 197 apartments for students and their families (see page 102 for information on child care and youth programs).

The apartments are unfurnished, and each has two bedrooms, a bathroom, a small study, a combined living-dining area, and an electric kitchen. Several apartments are accessible to people with mobility impairments. For 2004-05 the monthly rent is $1,019, not including utilities and phone. There is a $500 refundable security deposit and a $25 nonrefundable application fee.

If you are interested in an apartment, contact the Family Student Housing Office directly to secure an application form and put your name on a waiting list. Early application is advisable, as these apartments are in great demand. There is a year or more waiting list. Students with children are given priority. The office is in the Community Building, Family Student Housing, (831) 459-2549, fsh@ucsc.edu.

Camper Park

A 42-space camper park on the north side of campus is available to students who own recreational vehicles. Spaces rent for $361 per month. All have water and electrical hookups; eight also have sewer hookups, for $401 per month. The community includes a small central facility with rest rooms, showers, a meeting room, and a laundry room. For more information about the park and the vehicle requirements, contact the Office of Student Housing, (831) 459-5712, roomrent@ucsc.edu.

Graduate Student Housing

Twenty-four-bedroom apartments for single graduate students are located on the west side of campus, between Kresge College and the Baskin Engineering Building. See page 48 for a more detailed description; for applications and additional information, contact the Campus Housing Office, (831) 459-2394, or housing@ucsc.edu.

Community Rentals Office

To assist students, the Community Rentals Office (CRO) maintains current rental listings and names of students who want to share living accommodations. Currently enrolled students can access the listings via the CRO web site and do not pay a fee to access services. Concurrent Enrollment students, Summer Session students, and alumni pay a small user fee to access listings, and can visit the Community Rentals Office to be verified and receive a temporary search pass. Be sure to bring some form of picture identification such as a driver’s license or passport.

Other services include renters’ workshops, rental forms, other resource information, and basic advising about tenants’ rights and responsibilities. You are encouraged to visit the office and learn about the resources available to you.

The Santa Cruz area offers a variety of housing options, including Victorian houses, mountain cottages, downtown apartments, rooms in private residences, and rooms in local motels. Located suitable housing can take from one to six weeks, depending upon your specific needs. Generally, students are able to locate housing within the service area of Santa Cruz public transportation.

The cost of housing varies according to individual lifestyle and preferences. For example, in fall 2003, a room in a shared household averaged $568 per month, while separate units averaged $786 for a studio apartment to $2,012 for a three-bedroom house.

The Community Rentals Office, located at 125 Hahn Student Services, is open 9 A.M. to 4:30 P.M., Monday through Friday. For further information, call (831) 459-4455, e-mail comrent@ucsc.edu, or visit the web: communityrentals.ucsc.edu.

Program In Community and Agroecology

The Program In Community and Agroecology (PICA) is a living/learning community in the Village. The proximity to our internationally renowned organic Farm and Center for Agroecology & Sustainable Food Systems (see page 59) provides an unusual opportunity to focus on the link between healthy communities and healthy food systems. Sophomores, juniors, and seniors from a wide range of majors live, study, and prepare food together in housing modules dedicated to PICA or in cooperative housing situations off campus. Through seminars, gardens in the Village, and project days, PICA faculty and students work in both the classroom and the field to address such questions:

- How do issues of environmental quality and social justice interact in sustainable communities?
- How does an understanding of ecology inform decisions about farming/gardening practices?
- What impact can consumer choice have on how farmers design and manage their farming systems?
- What roles do imagination, persuasion, and creativity play in shaping social change and in sustaining communities?

Students and faculty explore the contributions of agroecology, art, literature, photography, writing, computer science, and philosophy to achieving sustainability. Practical training in agroecology and organic gardening occurs through courses, workshops, and student involvement in Village gardens, composting activities, and food programs. For further information, e-mail gliez@ucsc.edu.

Student-Run Cooperatives

Co-ops are an alternative form of organizing a group of people or a business. Here at UCSC, the co-ops are entirely student run and operated. Although memberships in the Bike and Kresge Food Co-ops are available, anyone, student or otherwise, is welcome to use them.

Kresge Food Co-op

The Kresge Food Co-op is a student-run non-profit natural food store located in Kresge College. It sells bulk food, produce, sandwiches, ice cream, snacks, and other groceries. Under the student-run collective, the purpose is not just to run a store but to educate people toward personal and social change.

Students are trained to run the business in an economically feasible but nonhierarchical manner (there is no manager). The co-op makes information available to customers about the social and environmental consequences related to food consumption, and it tries to carry products that do not have adverse effects on the society and environment. You can be involved in the Kresge Food Co-op in a number of ways, such as by becoming a working member and receiving 10 percent off your groceries. Come by or call (831) 426-1506 for more information.

Bike Co-op

The co-op is student owned and operated, run cooperatively, and nonprofit. Whether you need to purchase a bike, repair a bike, or want to learn, the co-op can accommodate your needs. People are encouraged to attend meetings, learn more about cooperatives, and get involved. The Bike Co-op is located at the Student Union. For information, come by or call (831) 457-8281.

Housing Co-ops

The Santa Cruz Student Housing Cooperative is committed to providing affordable housing, a supportive community, and student empowerment. There are two democratically owned and operated houses where a diverse group of people come together, learn how to communicate, cooperate, and live well. The houses have communal dinners six nights a week, weekly meetings with agreements by consensus, and nice rooms in big Victorians—and they are near the
Transportation and Parking Services

The UCSC campus strives for an academic environment disturbed as little as possible by automobile traffic. The university has chosen to reserve flatlands for future buildings, natural areas, and social and recreational spaces; as a result, parking is a limited resource on campus. UCSC requests that students not bring cars.

Comprehensive transportation systems have been developed to reduce traffic and eliminate the need for a car. Movement on the spacious campus is made easier by the care with which buildings have been located, a network of foot and bicycle paths, and an extensive intracampus shuttle system that links the colleges, central core facilities, and the two remote parking lots.

Shuttle buses operate on 10- to 12-minute frequencies from 7:30 A.M. to 6 P.M. weekdays (except on academic holidays). During summer and quarter breaks, day shuttle service is provided at 12- to 15-minute intervals. In addition, a night shuttle service, operating at 10- to 20-minute intervals, runs seven nights a week between 6 P.M. and 12:30 A.M. during the academic year. The night shuttle provides curb-to-curb transportation to the colleges. Both day and night shuttles provide wheelchair-accessible services and are free of charge. Transportation and Parking Services (TAPS) also operates the Disability Van Service, which provides transportation to those with mobility impairments. A Westside Shopper Shuttle operates seven nights a week during the academic year between college circles and the west side of Santa Cruz. The shuttle serves supermarkets, alternative markets, convenience stores, and restaurants. Shuttle routes and schedules are available at the colleges and at campus Transportation Information Centers.

The Santa Cruz Metropolitan Transit District (Metro) provides regular and convenient bus transportation to campus and to outlying areas from Boulder Creek to Watsonville, as well as to the Santa Cruz community. Metro provides service to UCSC every five to eight minutes on weekdays during academic sessions. Metro “Night Owl” buses provide late-night service to campus until 2:55 A.M. on Friday and Saturday nights. Sunday-through-Thursday night service to campus operates until 1:55 A.M. This service is funded by a mandatory student fee. Students may ride any Metro bus without additional charge by showing their current UCSC identification card to the driver.

Bicycles are a popular means of transportation on campus and in Santa Cruz. UCSC offers bicycle programs including licensing, a bike trailer for commuters, and bike racks on the shuttles. Multigear bicycles are advisable because of the hilly terrain, and helmets are recommended.

Permits for on-campus parking are limited. Parking in the residential areas adjacent to the campus is restricted and strictly enforced. Due to lack of space, storage of vehicles for on-campus residents is limited, and the majority of remote-lot spaces are available to commuting students. Parking on campus for first- and second-year students living on campus is available by exception only. Parking regulations are strictly enforced; all students who bring a car to campus must purchase a permit in advance. UCSC requests that students not bring vehicles to campus if they are not eligible to purchase an on-campus parking permit.

UCSC offers a weekend shuttle between the campus and the Fremont BART Station. Use the shuttle to connect with BART, which offers rail service throughout the north bay, including stops in San Francisco, Berkeley, Pittsburg, Pleasanton, Concord, and Richmond. The UCSC Fremont BART Connector provides service on Fridays and Sundays during the academic year. Reservations are required and can be made weekdays 10 A.M. to 3 P.M. at (831) 459-3779.

Santa Cruz is served by commercial bus lines on a regularly scheduled basis. The nearest commercial airport is in San Jose, approximately 35 miles from Santa Cruz. The San Francisco Airport is about 70 miles from campus. Both airports are accessible by bus and by commercial van and limousine services.

Services can change, and it is recommended that you get up-to-date information from TAPS. Call (831) 459-2190, e-mail tapp@ucsc.edu, or visit the web: www2.ucsc.edu/tapp.

Student Health Services

Located on McLaughlin Drive across from Colleges Nine and Ten, the Student Health Center provides quality health care focused on the particular needs of students. All registered students have access to the Student Health Center regardless of their insurance plan, as services are partially supported by their university registration fee. Care is provided by board-certified physicians, nurse practitioners, and physician assistants. Services can be seen by appointment or, in cases of acute illness or injury, on the same day in Urgent Care. In case of emergencies, either during the day or after normal operating hours, please call 911.

In addition, the Student Health Center offers psychiatry services, dentistry, nutritional counseling, health promotion, x-ray, and laboratory and pharmacy services on site. The center is open daily and Saturday mornings during the regular academic year. (For summer services and hours, see the Summer Session web site: summer.ucsc.edu.) For more information regarding the Health Center and its services, call (831) 459-2780; e-mail healthcenter@ucsc.edu; web: www2.ucsc.edu/healthcenter.

Health Insurance

To ensure emergencies and other health care costs do not interfere with a student’s education, all University of California students are required to carry medical insurance. A comprehensive and inexpensive program specifically designed for students is available through the university via the Undergraduate Health Insurance Plan (UHIP). All students are automatically enrolled in UHIP and billed quarterly through their student account, unless they choose to waive this coverage by providing proof of comparable insurance by the specified deadline. For detailed information regarding insurance coverage and the waiver process, see the web at www2.ucsc.edu/healthcenter. You may also contact the insurance office at insure@ucsc.edu or (831) 459-2389.

Mandatory Hepatitis B Immunization

California state law mandates that all entering students under 19 years old must be immunized against Hepatitis B. These students are required to provide the Health Center with documentation proving their compliance with this law. Those not in compliance at the beginning of the quarter may be dropped from their classes. For more information, see the web at www2.ucsc.edu/healthcenter or call (831) 459-2211.

UCSC Health Promotion Department

The goal of the UCSC Health Promotion Department is to help students maintain their health and wellness as they work to achieve their academic and personal goals. Located in the basement of the Health Center, our various programs provide students information, resources, and support to help them succeed at UCSC—as well as offer unique student internship and volunteer opportunities. For more information on any of our established programs or additional resources, view our various links under Health Promotion on the Health Center web at www2.ucsc.edu/healthcenter. You may also contact the insurance office at insure@ucsc.edu.

Holistic Health. To introduce students to alternative ways to achieve health and wellness, the Health Promotion Department offers “Home Remedies,” a presentation teaching simple holistic practices such as finger holds, breathwork, and tai chi. In addition, a large canvas labyrinth is available for programming around such issues as stress reduction, creativity, and meditation/reflection.
Alcohol and Other Drug Abuse Prevention Program. Part of UCSC’s systemwide effort to address problems caused by the use and abuse of alcohol and other drugs, the Alcohol and Other Drug (AOD) Abuse Prevention Program is designed to reduce substance abuse through education. The program provides formal and informal educational opportunities for students, college residential staff, and other campus personnel. With resources available for all students, the AOD Program also offers limited individual consultations to students with particular needs or concerns.

HIV Prevention Program. Helping students reduce their risk for HIV and other sexually transmitted infections (STIs), the HIV Prevention Program offers free and anonymous HIV testing run by highly trained student test counselors; the Condom Co-op, selling safer-sex supplies at reduced cost; SLUG LOVE workshops and other presentations addressing STI transmission, safer sex, values clarification, and communication; and academic classes. We also cosponsor special events such as the annual Santa Cruz AIDS Walk and the Safer Sexcapades.

Student Health Advisory Committee. The Student Health Advisory Committee (SHAC) is composed of students interested in health care at UCSC. The group serves as the liaison between students and Health Center staff, creates and supports health initiatives and other educational opportunities for the campus, and creates a fun, practical way to get involved and make connections with other students and health care practitioners.

Counseling and Psychological Services

Psychological counseling is available from professional staff located in each college and at the central counseling office in the Cowell Student Health Center. Counseling psychologists come from a variety of backgrounds and are experienced in helping students clarify their sense of direction, set realistic goals, and better understand their personal problems.

You can meet with a counseling psychologist individually, visit the stress-reduction clinic, or join one of the many counseling groups offered throughout the year. Both individual and group counseling services are aimed at helping you gain greater personal effectiveness.

Information communicated to a counseling psychologist is confidential and cannot be released without a student’s permission except in specific circumstances involving risk and safety.

Counseling psychologists are available to consult with individuals, groups, committees, and campus departments and organizations in such areas as psychological problem solving, conflict resolution, ethnic and multicultural matters, and organizational development.

You may obtain further information regarding counseling services from the central Counseling and Psychological Services Office in the Cowell Student Health Center, (831) 459-2628. Visit our web site www2.ucsc.edu/connel. (For information on academic and career advising, see pages 37–40.)

Rape Prevention Education Program

UCSC pioneered the establishment of Rape Prevention Education in 1979 to address issues of rape, and especially acquaintance rape. During their orientation to the campus, students are encouraged to attend educational presentations that use theater, video, and discussion to encourage respect, responsibility, and mutuality among students. Evening workshops are organized in the residence halls and apartments throughout the year. A wide variety of films and videos are shown campuswide to discuss the politics of gender and the causes and prevention of sexual assault. Resources are available for class papers. A peer education program is offered to both male and female students. Posters, pamphlets, newsletters, and resource booklets are distributed throughout the campus. Both male and female students take advantage of these educational resources. In addition, excellent self-defense classes for women are offered quarterly.

The coordinator of Rape Prevention Education is available for individual appointments and provides nonjudgmental support for those who have been raped as well as for their friends and loved ones. The campus also has police officers available 24 hours a day, a network of emergency phones, guards at both campus entrances from 8 P.M. until 3 A.M., and frequent shuttles and buses.

Rape Prevention Education works with other campus units to try to ensure that the physical environment is as safe as possible. Fortunately, the external UCSC environment has been relatively safe and reported rapes or attempted rapes by strangers have been rare. UCSC is similar to other campuses in that over 90 percent of student rapes that occur on campus are committed by acquaintances and are vastly underreported. For more information, contact the Rape Prevention Education Office at the Cowell Student Health Center, (831) 459-2721; e-mail: g-g@ucsc.edu; web: www2.ucsc.edu/rape-prevention.

Resource Centers

African American

The African American Resource and Cultural Center (AARCC) develops and fosters curricular initiatives that promote academic success, leadership training, and student development. Since the center’s inception in 1991, the program’s primary mission has been to serve as a key resource to acclimate students to general campus life and academic culture. In addition, the program provides advocacy and support in helping to monitor students’ academic progress and subsequent achievement of their educational goals. AARC works closely with overall campus outreach to enhance the recruitment and retention of African American students.

AARC welcomes volunteers and student interns to serve as members of TEAM AARC Outreach Program or on our Advisory Council. Academic clubs include Blacks in Science, Honors and Scholars Club, and National Society of Black Engineers. Other organizations affiliated with the center include African/Black Student Alliance, African American Theater Arts Troupe, Black Sisters United, Black Men’s Alliance, Alpha Kappa Alpha Sorority, Alpha Phi Alpha Fraternity, and Delta Sigma Theta Sorority. AARC works collaboratively with others on campus and in the surrounding community to enhance cultural and ethnic diversity initiatives on the UCSC campus. The center, located on the third floor of the Bay Tree Building in Quarry Plaza, is open Monday through Friday from 10 A.M. to 5 P.M. For more information, call (831) 459-3207, fax (831) 459-2469, e-mail african@ucsc.edu, or consult our web site at www2.ucsc.edu/aarcc.

American Indian

The American Indian Resource Center (AIRC) works in collaboration with the Student Alliance of North American Indians (SANAI), the University of California American Indian Counselors/Recruiters Association, native faculty and staff, as well as the indigenous tribal community leaders of the region to develop information, programs, and events that assist public understanding of native peoples. Invested in creating a campus climate that supports all students, the center provides mentoring and personal and academic advising. AIRC is located on the third floor of the Bay Tree Building in Quarry Plaza. For more information, call (831) 459-2881 or e-mail disibett@ucsc.edu or native@ucsc.edu.

Asian American/Pacific Islander

The Asian American/Pacific Islander Resource Center (AA/PIRC) provides and enhances
opportunities for student leadership development, builds a stronger sense of community on campus, and links students to community-service opportunities. Ultimately, AA/PIRC offers education and dialogue on issues affecting Asian Americans and Pacific Islanders toward addressing students’ multiple and diverse academic, social, cultural, and other curricular needs. At AA/PIRC, students can find information on scholarships and internships at community-based organizations, build alliances in the Asian Pacific Islander Coalition of student organizations, and browse through a collection of Asian American studies publications, student literary journals, novels, senior theses, magazines, and newspapers. The center also produces an annual resource guide and a quarterly newsletter, and maintains several e-mail listservs for connection to the AA/PI community. AA/PIRC is located on the third floor of the Bay Tree Building in Quarry Plaza. For more information, call (831) 459-5349, e-mail aspire@ucsc.edu, or visit the web: www2.ucsc.edu/aspire.

Chicano Latino
The Chicano Latino Resource Center (El Centro) offers programs and activities designed to enhance students’ transition to university life, academic success and advancement, leadership development, community-service opportunities, and preparation for graduate studies. The programs offered through El Centro focus on retention, graduation, and academic advancement of Chicano Latino undergraduate students. These programs and activities include workshops, a Chicana Latina Pipeline Project, Academic Culture courses, a Chicano Latino Leadership Conference, collaborations with Chicano Latino student organizations, and a Senior Thesis Support Group. El Centro offers education and dialogue on academic, social, cultural, and personal issues that affect the Chicano Latino community. Students are welcome to stop by and find out more about El Centro events and activities or for individual consultation. El Centro also offers student internships to help with organizing events and activities. For more information or to make an appointment, call (831) 459-5608 or e-mail cab@ucsc.edu.

Gay, Lesbian, Bisexual, Transgender, Intersex
The Lionel Cantú Gay, Lesbian, Bi, Trans, Intersex (GLBTI) Resource Center, located in a beautiful redwood building next to Crown and Merrill Colleges, is a friendly, welcoming place to the entire community. The center’s mission is to provide educational, social, and support services to students, staff, and faculty on GLBTI issues. The GLBTI Resource Center is home to several student organizations that meet weekly; a host of exciting programs; and a library offering books, magazines, and videos. AIDS information, safer-sex supplies, and other GLBTI-related materials are also on hand. Information and referral to campus and community GLBTI resources is available by phone or in person. Throughout the year, the GLBTI Resource Center coordinates student programming with a queer focus. Education of the nongay campus population is another function of the resource center; volunteers offer workshops for groups, classes, and dorms about unlearning heterosexism. Everyone is welcome to use the center’s cozy lounge, full kitchen, and study center to relax, study, socialize, and become involved in the campus’s queer community. The center is open Monday–Friday; usual hours are 10 A.M. to 5 P.M. Stop by and meet the center’s friendly staff and find out about internships and volunteer opportunities. You can reach the GLBTI Resource Center at (831) 459-2468 or via e-mail at glbticenter@ucsc.edu. The center’s web site, www2.ucsc.edu/glbticenter, features an extensive Queer Calendar. To get on the listserv for latest updates, e-mail the center with your name and e-mail address.

Women’s Center
Located in Cardiff House, a historic farmhouse near the main entrance to campus, the Women’s Center is devoted to helping students maximize their success at UCSC. Resource referrals and informal advising are always available from center staff, and weekly events include films, readings, and talks. The center also sponsors student-oriented workshops on topics ranging from money management and car care to assertiveness and stress reduction. The Women’s Center is home base for a variety of student groups and student-run community-service efforts. Other opportunities for involvement include internships, field and independent study, and work-study jobs. Students can help organize projects like the V-Day College Initiative, Take Back The Night, and Women’s Ensemble Theater—or create their own programs with advice and support from staff. The center’s meeting rooms, kitchen, and garden are ideal places to study, relax, or connect with students, staff, faculty, and community members. Rotating art exhibits bring the center’s walls to life, and students are encouraged to inquire about showing their work. For more information, check the center’s weekly calendar, visit the center’s web site at www2.ucsc.edu/wmcenter, e-mail women@ucsc.edu, or call (831) 459-2072.

Physical Education, Recreation, Sports, and Wellness
The physical education, recreation, wellness, and sports programs provide a variety of interesting and challenging activities intended to attract you to becoming an active participant. The emphasis is on giving you an opportunity to develop knowledge, skills, and habits related to wellness to last through a lifetime of enjoyable physical and recreational activity.

Obtain further information about the programs described below from the Office of Physical Education, Recreation, and Sports, located at the East Field House, (831) 459-2531. The web address is www.ucsc.edu/opers.

Physical Education Courses
Regularly scheduled courses, which carry no academic credit but are recorded on your transcript, are available in a broad range of physical activities (see pages 330–332). Many classes are small, and all offer expert instruction and carefully designed practice periods, so that you can accomplish much in sessions of two to three hours per week. Most activities have intermediate and advanced sections as well as courses for beginners. Web: www.ucsc.edu/opers/indexpagefp.e.html.

Intramurals and Club Sports
The intramural sports program includes competitive leagues, tournaments, and special one-day events. Many of the activities are coeducational. The leagues feature basketball, flag football, floor hockey, indoor and outdoor soccer, softball, ultimate frisbee, and volleyball. Some of the leagues are divided into different skill levels. There are tournaments in basketball, racquetball, and tennis. Special events include biannual “cardiac pacers” runs, an annual triathlon. Prospective participants are encouraged to form their own teams. Individuals looking to be placed on a team are also welcome Web: www.ucsc.edu/opers/intrl.

The sports club program offers a variety of sports. Teams compete against other universities in men’s and women’s rugby, lacrosse, and ultimate frisbee; men’s soccer, baseball, cross-country, and track and field; and coed Special Olympics, cheerleading, dance, equestrian, cycling, sailing, water polo, golf, badminton, fencing, table tennis, and diving.

Intercollegiate Teams
UC Santa Cruz offers the only National Collegiate Athletic Association (NCAA) Division III program in the UC system. As a Division III member, the program offers no athletic scholarships or grants in aid. Intercollegiate teams, known as the Fighting Banana Slugs, are provided for those who want
the opportunity to compete against rival institutions in an official format, with set practice schedules, regular road trips, and rigorous training. Both men’s and women’s NCAA intercollegiate teams compete in the following sports: basketball, soccer, swimming and diving, tennis, water polo, and volleyball. Women’s teams compete in golf and cross-country. Web: www.goslugs.com.

Wellness Center
Located within the East Field House complex and overlooking Monterey Bay, the Wellness Center offers two floors of state-of-the-art cardiovascular and strength-training equipment. Classes, workshops, fitness testing, and personal training are available to assist everyone in reaching their fitness goals. Web: www.ucsc.edu/opers/wellness/pages/.

Recreation
The Recreation Program is designed to fulfill the diverse needs and interests of all members of the UCSC community. A full range of activities, workshops, classes, off-campus outings, and special events are scheduled quarterly. In addition, the program offers a 10-day Wilderness Orientation prior to the start of school. Wilderness Orientation (WO) is an invaluable experience for incoming college students, serving as an introduction to mountain travel and the “journey” of college education. The beautiful settings of the Sierra Nevada provide students an opportunity to form new friendships and discuss their hopes and fears about entering college, while learning outdoor skills. No previous back-packing experience is necessary.

The Outdoor Equipment Rental Center offers recreational equipment including surfboards, wetsuits, and high-quality backpacking and camping gear. If you are interested in planning your own outing, contact the Recreation Program Office for assistance. The office has extensive files, and staff members act as consultants, planning with people as well as for them. The office sells international student ID cards, provides bicycle licensing, and offers a free weekly drop-in bicycle maintenance program. Open recreation hours are scheduled quarterly; you are strongly encouraged to use the facilities. Sports equipment may be borrowed without charge. There are also recreation clubs if you are primarily interested in organized recreation and individual performance. Most clubs are coed and feature some combination of recreational participation, advanced instruction, and individual competition. Recently active clubs include aikido, fencing, jiu jitsu, ashtanga yoga warrior, creative movement, ninjitsu, scuba diving, Okinawan karate, swing dance, and tai chi. Web: www.ucsc.edu/opers/rec.

Banana Slug Mascot
The Banana Slug, a bright yellow, slimy, shellless mollusk found in the campus’s redwood forest, was the unofficial mascot for UC Santa Cruz’s coed teams since the university’s early years. In 1981, when some campus teams wanted more organized participation in extramural competition, UCSC joined Division III of the NCAA. Since the application required an official team name, UCSC’s then chancellor polled the student players, and out of this small group emerged a consensus for a new moniker—the sea lions. It was a choice that the chancellor considered more dignified and suitable to serious play than the Banana Slugs. But the new name did not find favor with the majority of students, who continued to root for the Slugs even after a sea lion was painted in the middle of the basketball floor. After five years of dealing with the two-mascot problem, an overwhelming pro-Slug straw vote by students in 1986 convinced the chancellor to make the lowly but beloved Banana Slug UCSC’s official mascot.

Facilities
To make it convenient for you to utilize campus physical education, recreation, and sports facilities, field houses are located on the east and west sides of the campus. At both the East Field House and the West Field House, you will find the following: gymnasium, tennis courts, outdoor basketball and volleyball courts, equipment center, and locker rooms. The East Field House also has a dance studio, martial arts room, handball/racquetball courts, 50-meter swimming pool, half-mile jogging track, and sports fields. A strength-training and cardiovascular-fitness court is located near the east jogging track. The UCSC Boating Center is located at the Santa Cruz Small Craft Harbor, about five miles from the campus. The boating program offers instruction and recreation using sailing and rowing vessels, such as Moore-24 sloops, Laser dinghies, C-15 dinghies, HyFly sailboards, rowing dories, and sea kayaks. Web: www.ucsc.edu/opers/boating/.

All facilities are open daily during academic terms and are available for individual recreation whenever they are not being used for classes or other scheduled activities.

Student Union
The Student Union is a student-governed facility that houses lounges, conference space, and recreational areas for dances, parties, and other social gatherings; billiards, art exhibits, musical performances, public-use computers, and television; work and office space for registered student organizations and campuswide student government; and campus information services.

Located in Quarry Plaza across from the Bay Tree Bookstore, the Union complements college facilities by providing an alternative social, recreational, and educational gathering place for all students and members of the campus community. Student-support offices located at the Union include Student Union administration, Student Life, and Student Activities.

The Union is open Monday through Friday 9 A.M. to 10:30 P.M. and has limited weekend hours. The Union is closed holidays and quarter breaks. Check the web site for up-to-date information at studentsunion.ucsc.edu or call (831) 459-3167.

Student Activities
Campuswide Student Organizations
Expand your horizons and complement your academic life by joining one of over 100 student organizations registered through the Student Activities Office. Get involved in one or more cultural, ethnic, religious, Greek, political advocacy, civic service, or social organizations. Gain valuable life experience in leadership and planning, and develop rewarding and lasting friendships. Student organization membership is open to all UCSC students. Students frequently create new organizations as their interests change and expand. You may be able to earn academic credit for an activity when your work has an academic focus and is supervised by faculty.

For more information about campuswide student organizations, call Student Activities, (831) 459-2934, e-mail soar@ucsc.edu, or visit the web: www.soar.ucsc.edu.

Students wanting to start or join sports and recreation clubs should contact OPERS: sports clubs, (831) 459-4220; recreation clubs, (831) 459-2668. Students interested in print and broadcast media organizations should contact Student Media: (831) 459-2840.

Community Service Opportunities
Community service is a vital part of the university’s mission. It is possible for individual students, as well as campuswide student organizations, to develop service projects that link the university with the broader Santa Cruz County community. With the financial support of the campus’s Community Service Project funding, students have aided local groups such as Students Toward Achievement in Writing Success, the Strange Queer Youth Conference, and renovation of the Siena House.

The Student Volunteer Connection in the office of Student Life, 245 Hahn Student Services Building, connects interested students with the community to volunteer their time to
tutor children, mentor youth, feed the homeless, and train people with developmental disabilities.

Service programs also exist through some colleges (College Eight’s core course requires volunteer efforts and the Community Studies Department offers opportunities; Oakes has its own service coordinator); check with your college office about opportunities. All the student resource centers (see pages 97–98) also coordinate volunteer efforts on and off campus.

For more information about service opportunities, contact the Student Volunteer Connection, (831) 459-3363; Office of Student Life, (831) 459-5707; the Oakes College service coordinator, (831) 459-2356; the Colleges Nine and Ten coordinator of service learning, (831) 459-1237; or your college.

UCSC Student Voice
Santa Cruz offers you a unique variety of opportunities to participate in university governance at the college, campus, and systemwide levels. Regardless of what level you choose, participating in student government will provide you with a wonderful chance to practice leadership skills, meet others who share your interests, and learn a great deal about yourself and the university.

Advisory Committees
Serving on a campus advisory committee is a recognized channel for student involvement in the university’s decision-making processes. Advisory committees, composed of faculty, staff, and student representatives, are established to develop and recommend policies on a wide range of subjects. Annually, the Student Committee on Committees (composed of one student appointed by each college and chaired by the internal vice-chair of the Student Union Assembly) nominates more than 100 students to serve on over 50 administrative and Academic Senate committees. For information about the selection process, contact Student Committee on Committees, (831) 459-5533, e-mail ssgas@ucsc.edu; or the Student Union Assembly, (831) 459-4838, e-mail suasofficers@ucsc.edu.

Leadership and Civic Engagement
The University Leadership Certificate Program (ULCP) provides emerging leaders with an opportunity to develop important skills while learning to lead with integrity and purpose. Students are asked to reflect upon and engage in dialogue regarding various social and political issues and put their new understanding into practice both on campus and in the local community. For more information on this yearlong program and various workshops provided, contact the Office of Student Life, (831) 459-5707.

The Hate/Bias Peer Response Team (HBPR) is a student program that provides peer education programming to the campus at the request of campus community members and in response to reported hate/bias incidents. In addition, HBPR organizes Hate/Bias Awareness Week, a weeklong series of lectures, workshops, and discussions designed to increase awareness of hate and bias in the local, national, and world communities. For more information on this yearlong program, contact the Office of Student Life, (831) 459-5707.

College Student Governments
Each college has its own form of student government, enabling students to gain experience in planning, budgeting, executing, and evaluating a wide range of college programs and policies. Like the colleges themselves, each college governing body has its own character, structure, and meeting times and dates. For information, inquire in your college office or talk to your college programs coordinator.

Campuswide Student Government
The Student Union Assembly (SUA) is the undergraduate advocacy organization and the official student voice of UCSC. It comprises two appointed and one elected representative from each college government; six elected officers: chair, internal vice-chair, external vice-chair, organizing director, commissioner of academic affairs, and commissioner of diversity; and one appointed representative from each of the following student organizations: African/Black Student Alliance; Asian Pacific Islander Student Alliance; Gay, Lesbian, Bisexual, Transgender, Intersex Network; Movimiento Estudiantil Chicano de Aztlán; Student Alliance of North American Indians; and Ethnic Student Organization Council. The SUA also provides internship opportunities for a limited number of students each year. These internships include but are not limited to web, business, internal and external affairs, and organizing. The SUA conducts open meetings at least eight times a quarter throughout the academic year and invites students interested in advocacy, activism, and politics to get involved. The assembly operates via issue-specific campaigns and around general campus concerns. In the past, the SUA has formed campaigns around fighting fee-hikes, defending affirmative action, saving the Narrative Evaluation System, striving for reasonable campus growth, and reforming UC Regents’ procedures. Current issues have been 24-hour parking and campus transportation, preserving Student Organization Advising and Resources (SOAR—now called Student Activities), labor solidarity, and advocating against the Classification of Race, Ethnicity, and National Origin (CRENO) initiative. The SUA also works with the UC Student Association and the U.S. Student Association on state and national issues. For more information, contact the SUA, (831) 459-4838, e-mail suasofficers@ucsc.edu; web: sua.ucsc.edu

The Graduate Student Association (GSA) provides governance and representation for graduate students, and its Steering Committee coordinates student-life programs and activities for graduate students. For more information, contact the GSA, (831) 459-3142, e-mail gsa@ucsc.edu; web: www2.ucsc.edu/gsdal.

Systemwide Student Government
The UC Student Association (UCSA) is the statewide association of graduate and undergraduate student governments from the 10 UC campuses. UCSC is the officially recognized voice of the students to the UC Board of Regents, various UC administrative offices, and the UC Office of the President. Issues covered by UCSA include UC fees and financial aid, comprehensive admissions policies, and academic policies, as well as broader issues of social responsibility such as environmental concerns and civil rights. UCSA coordinates the yearly selection of the UC Student Regent.

The UCSA campus office provides grassroots membership and support for the two main UCSA offices in Oakland and Sacramento. The campus office organizes students to run the grassroots campaigns that are adopted each summer during the UCSA Congress. At this session, delegates from the 10 UC campuses come together and choose the critical issues to be worked on for the next year. Issues in the past have included voter registration drives, letter-writing campaigns on particular UC issues, and increases in financial aid. UCSA provides a thorough introduction to UC politics and student representation. Students may also serve on systemwide committees through UCSA and gain a wide knowledge of the entire UC system through their service.

Three officers help to coordinate UCSA activities on our campus. The external vice-chair (EVC) is the official representative to the UCSA Board of Directors. This position has voting rights for UCSC and is the primary contact regarding all UCSA issues. The organizing director (OD) coordinates with the EVC and the Lobby Corps to effectively run the grassroots campaigns that are sponsored by UCSA every year. Lastly, the Lobby Corps director (LCD) coordinates all lobbying on behalf of UCSC students to the UCSC, local, state, and national governments. These positions are elected for one-year terms during spring quarter every year.

The Student Union Assembly officers in charge of UCSA activities can be reached at
Hill Press

broadcast organizations: at (831) 459-3811, or SCTV at (831) 459-

with the film and digital media major; however, and film. Many of the students are affiliated with the student-governed station that schedules and broadcasts artistic, and varied cultural opportunities. Students, faculty, and staff have the opportunity to participate as audience members, performers, or behind-the-scenes support crew.

The considerable range of offerings includes art exhibits, lectures, films, concerts, recitals, and dance and drama presentations; programs vary from single performances to weeklong cultural celebrations. The colleges host a number of events, and the departments frequently engage speakers of particular academic interest to address the campus community or present lecture-demonstrations.

Arts & Lectures (A&L), a series of public performances and residencies by artists of international stature, is presented by the Public Affairs Office during the year. Recent appearances have included the vocalist Bobby McFerrin, the Ailey II dance company, performer artist Laurie Anderson, musician Lyle Lovett, and the Guaneri String Quartet. Lecturers have included documentary filmmaker Michael Moore, NPR’s David Sedaris, and political columnist Molly Ivins. A&L collaborates with the colleges and academic units in the development of workshops, lecture-demonstrations, and seminars offered by visiting artists, with the common goal of enlarging cultural perspectives through the arts. The Arts & Lectures phone number is (831) 459-4058.

The Arts Division maintains a high profile in the community with events by faculty, student, and guest artists: music recitals are offered regularly, and several major theater, dance, and music presentations are mounted each quarter in conjunction with the academic program.

Recent full-scale productions by the Theater Arts Department have included a new translation of Victor Hugo’s Ruy Blas, Brian Friel’s Translations, Sabina Berman’s Between Panama Villa and a Naked Woman (Entre Villa y Una Mujer Desnuda), and The Emperor’s New Clothes (coproduced with Shakespeare Santa Cruz).

Recent student productions have included classic and contemporary plays such as Aloha, Say the Pretty Girls by Naomi Iizuka, In the Blood by Suzan-Lori Parks, Exit by Martin Sherman, and The Women of Troy by Sophocles, as well as the annual showcase of student choreography, Random with a Purpose.

The Music Department sponsors a variety of concerts by the University Orchestra, Wind Ensemble, Chamber Singers, and Concert Choir, as well as fully staged operas and faculty recitals. Recent performances have featured major works such as Mozart’s Requiem and The Marriage of Figaro, Lou Harrison’s Mass for St. Cecilia’s Day, Leonard Bernstein’s Chechester Psalms, and Morten Lauridsen’s Lux Aeterna. The department also sponsors concerts by the Jazz Ensembles and Big Band, Percussion Ensemble, and Electronic Music Studios, and ethnomusicology groups such as the West Javanese Gamelan Ensemble and Latin American Ensembles. In addition, the department sponsors a growing number of performances of Indian classical music, with recent appearances by violinist Sisirkana Chowdhury and sitar player Pandit Habib Khan, as well as the Pacific Rim Festival of Music in alternate years. Student recitals, class open rehearsals, and informal “Friday at Four” showings round out the calendar.

All students, not just majors, are encouraged to audition for Theater Arts Department and Music Department productions and ensembles. For information about how to get involved, call the Theater Arts Department at (831) 459-2974 and/or the Music Department at (831) 459-2292.

The Music Center, including the state-of-the-art 396-seat Recital Hall and Indonesian gamelan and electronic music studios, houses all Music Department programs, as well as performances by visiting artists.

The Theater Arts Center is the setting for a year-round program of drama, dance, and special events. The 528-seat Theater Arts Mainstage, 215-seat Second Stage, 400-seat Media Theater, and large Experimental Theater, as well as supporting studios and shops provide professional facilities for campus and visiting artists and productions. Other on-campus performance venues include the 153-seat Barn Theater, the Kresge Town Hall, the outdoor Upper Quarry Amphitheater, and the colleges’ dining commons. Ticket information is available from the UCSC Ticket Office, located at the Theater Arts Center, (831) 459-2159 (voice or TDD). For additional information about performing arts events, contact the Arts Division Events Office, (831) 459-2787.

Online calendar: events.ucsc.edu/calendar.

Shakespeare Santa Cruz

Shakespeare Santa Cruz (SSC), recognized by USA Today as one of the 10 best Shakespeare festivals nationally, is a professional theater company that unites scholarship with academic endeavor. Every July and August, SSC produces a summer festival that includes two plays by William Shakespeare as well as non-Shakespeare productions carefully chosen by the artistic director to complement the season. In late November and early December, SSC stages a holiday production, providing high-quality family entertainment. The festival also offers courses through the university Summer Session; sponsors conferences for scholars, teachers, and passionate theatergoers; and provides several opportunities for the community to get involved in the intellectual and theatrical components of Shakespeare. The acting company is composed of professional Equity actors and top nonunion talent from throughout the United States, local professionals, and university students, as well as apprentices. Production crews are made up of regional and local professionals and also include university students and apprentices. For further information, contact the Shakespeare Santa Cruz Office in the Theater Arts Center, (831) 459-2121, or visit the web site: shakespeareasantacruz.org.
Bay Tree Bookstore
UCSC’s Bay Tree Bookstore is located in the Quarry Plaza complex in the center of campus, at the intersection of Hagar Drive and Steinhardt Way. The bookstore serves as the campus resource for UCSC course materials, including new and used course books and customized faculty publications, general reading and reference books, a wide variety of school and personal supplies (including computers and computer supplies), and many other items such as backpacks, emblematic apparel, art supplies, posters, gifts, greeting cards, and academic regalia. Services include online reservations for course materials, student debit accounts, special ordering of books, discounted magazine subscriptions, a film-processing drop, book buyback services, fax services, and limited check cashing. The bookstore also houses the campus’s convenience store (the Express Store), Student ID Card Services, and UCSC’s Digital Copy Services. For more information, call (831) 459-4544 or visit the web: slugstore.ucsc.edu.

Child Care and Youth Programs
Child Care Services offers several campus child care programs for children of students, faculty, and staff. Enrollment is limited and early application is encouraged since most programs have waiting lists. Free or reduced rates are available to low-income students who qualify.

All programs reflect the belief that the best child care occurs in nurturing, homelike environments that are safe and developmentally appropriate. The programs stress the importance of meeting children’s needs in all areas of development: social, emotional, physical, cognitive, and creative. The curriculum emphasizes play as a learning process and provides environments that are rich and challenging.

Programs are open to all children without regard to religion, color, ethnicity, gender, and physical or mental ability. Information on all programs, fees, and applications is available from the Child Care Services Office in the Community Building at Family Student Housing, (831) 459-2967 or e-mail childcareservices@ucsc.edu.

Infant Toddler Center
Located in Family Student Housing, the Infant Toddler Center provides care for infants and toddlers ages 3–36 months. Small groups, low child-to-adult ratios, and primary caregivers ensure that children receive consistent and individualized care and nurturing. Full- and half-day schedules are offered. The majority of spaces are reserved for students who meet low-income requirements; these spaces are free or have a sliding-scale fee, depending on income. A few spaces with flat monthly fees are reserved for faculty and staff families. Fee-for-service spaces at a reduced rate may be available to student parents whose income exceeds state-subsidy requirements. The Infant Toddler Center operates virtually year-round, with closures for administrative holidays, academic breaks, and staff development.

Granary Child Development Center
Located near the main entrance to campus, the Granary Child Development Center provides care for preschool children ages 2–4 years. Full- and half-day schedules are offered. State-subsidized (free or sliding-scale) spaces are available to low-income students, and reduced student rates are available for higher-income student parents. Several spaces are available for faculty and staff at flat monthly rates. The Granary operates virtually year-round, with closures for administrative holidays, academic breaks, and staff development.

Children’s Center
Located in Family Student Housing, the Children’s Center provides care for prekindergarten children ages 4–6 and after-school care for children in kindergarten. Full- and half-day schedules are offered. State-subsidized (free or sliding-scale) spaces are available to low-income students, and reduced student rates are available for higher-income student parents. Several spaces are available for faculty and staff at flat monthly rates. The Children’s Center is closed during the summers, but children may enroll in the School Age Center’s Summer Recreation Program.

School Age Center
Located in Family Student Housing, the School Age Center is an after-school recreation program for children in kindergarten through sixth grade during the academic year. The program provides developmentally appropriate arts and crafts, life-skills and sports activities, occasional community outings, and quiet time for homework. Extended service hours are available on a preregistration basis for elementary school holidays or in-service days. The majority of spaces are available at low cost to Family Student Housing residents; a few fee-for-service spaces are available for university-affiliated parents who do not live in Family Student Housing. An all-day Summer Recreation Program is also offered for children of UCSC students, faculty, and staff.

UCSC Alumni Association
Through the UCSC Alumni Association, graduates of the university can maintain a lifelong connection to UCSC.

The association contributes to the life of the colleges and to the enrichment of the entire campus. Thirty percent of annual membership fees fund student programs, special activities, and other projects at the colleges, and additional funds support similar projects campuswide. The association promotes excellence at UCSC through its sponsorship of awards for alumni achievement, excellence in teaching, and outstanding service by a university staff member; two types of student awards (college service and financial need); and its Distinguished Visiting Professor endowment.

The association brings hundreds of alumni back to campus during the Banana Slug Spring Fair reunion weekend. Thousands of alumni reconnect with UCSC through the association’s Online Community, which offers online alumni directory, association event information and RSVP services, student and alumni online mentorship opportunities, and much more. Over 700 alumni act as career information resources through their participation in the Career Advice Network program, the annual Multicultural Career Conference, and other career fairs and conferences. The Alumni Association also participates with other UC Alumni Associations in an annual legislative conference in Sacramento aimed at increasing support for UC.

Events for alumni and alumni-student mentorship opportunities are offered by regional groups nationwide—Los Angeles, New York, Rainier (Seattle), Sacramento, San Francisco Bay Area, Santa Cruz, Silicon Valley, and Boston—and by four affinity groups—Gay, Lesbian, Bisexual, and Transgender (GLBT), Latino Alumni Network (LAN), Black Escargot, and the Page and Eloise Smith Scholastic Society.

Members are eligible for benefits such as library privileges across the UC system, use of campus recreation facilities, the alumni online directory, an alumni affinity e-mail account, insurance coverage, use of a UC vacation center, UC Extension discounts, alumni events, and more. News of alumni is featured in the campus’s magazine, the UCSC Review, and the Alumni Association’s newsletter, the Banana Slug Bulletin.

The association, governed by an elected board of volunteers called the Alumni Association Council, is a dues-supported, tax-exempt 501(c)(3) nonprofit organization. Information about the Alumni Association is available at its campus headquarters in the Carriage House, (831) 459-2530, (800) 933-SLUG, e-mail alumni@ucsc.edu, web: alumni.ucsc.edu.
Programs and Courses

Programs are listed alphabetically
Programs and Courses

The academic programs offered at UC Santa Cruz are described in detail in this section. Curricula, courses, and degrees listed in this catalog are subject to change through normal academic channels. New proposals and changes are initiated by the relevant departments, divisions, or colleges and approved by the appropriate academic dean and by the Committee on Educational Policy or the Graduate Council. The designations F (fall), W (winter), S (spring), or Summer that appear at the end of each course indicate the intentions of the academic units; however, on occasion, the actual scheduling of classes may change.

For changes and additions to courses listed in this catalog, consult the Schedule of Classes, published each quarter and available online at reg.ucsc.edu/catalog. Course syllabi, when provided by faculty, can be accessed via Advance Course Information (ACI) at reg.ucsc.edu/acis. The Office of the Registrar provides detailed information on its pages at reg.ucsc.edu.

Course Credit

Unless otherwise specified in the course description, each course earns 5 quarter credits. Therefore, regardless of course format or scheduling, each course makes approximately equal demands on enrolled students. Five (5)-credit courses usually meet for four to five hours per week.

All physical education courses are noncredit. Other noncredit courses include certain graduate seminars, laboratory courses, music courses involving individual lessons or ensemble participation, as well as some special-interest seminars and individual studies courses. Courses carry less than 5 credits and are designated accordingly.

The normal UCSC undergraduate program of study is three 5-credit courses per quarter or equivalent. In 12 quarters at UC Santa Cruz, most students complete 180 credits. With a college's approval, a student may be allowed to vary the course load. See also Part-Time Program, page 40.

Course Numbering

Undergraduate courses are classified as lower division or upper division. Lower-division courses (numbered 00-199) are designed for first-year and sophomore students but may be taken by more advanced students. Upper-division courses (numbered 100-499) are designed for junior and senior students but are open to first-year and sophomore students who have sufficient background and the consent of the instructor in charge.

Graduate courses (numbered 200-299) are either restricted to graduate students or open only to students who can show the instructor that they have completed sufficient upper-division coursework basic to the subject matter of the course.

Footnotes

Courses marked with an asterisk (*) will not be offered in the 2004-05 academic year. Courses marked with a dagger (†) will be offered, with the quarter as yet to be determined.

General Education Codes

The general education codes that appear in some course descriptions are explained in the section on general education requirements, page 30.

Course Format

Most courses at UC Santa Cruz are taught as lectures or, when the class is small enough for considerable discussion, as seminars. A large number of courses require enrollment in a secondary discussion section scheduled at a different time from the primary course. Sometimes there is laboratory or fieldwork associated with a course. Occasionally, a student may wish to do an individual project as part of the work for a course. UC Santa Cruz instructors are usually quite willing to consider and evaluate such work, time permitting. The campus system of evaluation of student performance makes such individual work a natural option, even in larger classes.

Prerequisite Policy

When applicable, prerequisites are listed in this catalog within the course description for each course. There are many courses that meet general education requirements and do not require a prerequisite.

Prerequisites come in many forms—for example, specific courses, placement examinations, or “satisfaction of the Subject A requirement” for writing courses. Some course descriptions also specify that students must be declared majors or seniors in order to enroll. Other course descriptions recommend the appropriate background for a course—for example, “ability to use algebra and solve problems.”

Questions concerning prerequisites should be directed to the instructor of the course or the respective department office. Students who have not met all prerequisites may be excluded from a course. Alternatively, the instructor or a department adviser may waive the prerequisite based on demonstrated competence or equivalent academic experience.

Class Size

A student's class level plays a large part in how many small classes are available. Introductory classes tend to be large, although they are usually accompanied by required small sections or labs. Many small classes have prerequisite courses that enroll large numbers of students. Also, certain large classes fulfill campuswide general education requirements. First-year students experience at least one small seminar in conjunction with the college core course, and they are likely to experience an increasing proportion of small classes as they progress to senior status.

Individual Study

Especially in the upper division, students are encouraged to devise special courses to pursue independently, under the guidance of faculty members. A study plan should be discussed with a faculty member in the general subject area of interest. This faculty member will ultimately be responsible for evaluating the work done. The study plan must also be approved by the appropriate program and the student's college; it should be noted that not all proposed plans are accepted.

Field Study

Independent, off-campus field study is available through many departments. It is handled in much the same way as individual study. In addition, there are several established field programs that offer a variety of full- or part-time off-campus field placements as part of the regular program of academic study. For more information on these programs, see page 41.

Apprentice Teaching

An upper-division or graduate student may apply for approval to teach an undergraduate seminar of his or her own design. The seminar is supervised by a faculty member and carries normal academic credit for the student and the apprentice teacher. Interested students should initiate a proposal with a faculty member in the appropriate subject area.

Credit by Petition

Regularly enrolled students may obtain full academic credit for a course by challenging the course. Challenging the course entails passing an examination or completing an appropriate body of work supervised by a regular instructor for the course. The petition for such credit must be approved by the instructor of the course, the chair of the department offering the course (or provost, if it is a course offered by a college), and the provost of the student's college. Some courses are not considered appropriate for credit by petition.

For foreign language students, credit by petition may not be used by students whose language ability greatly exceeds the course level proposed for challenge. Petitions for credit for levels 4 and 5 cannot be filed in the same quarter. Contact the Language Program, 239 Cowell, 459-2654, for more information.

Auditing of Classes

Instructors may permit nonenrolled students to attend their classes when space is available after all students who wish to enroll officially have done so. An instructor is not obligated to devote time to the work of students who are not officially enrolled in the class.

Additional Courses of Interest

Sometimes, following the official course listings for a program, related courses offered by other academic units are listed under the heading Additional Courses of Interest. Some of these courses may be accepted in partial satisfaction of the major requirements. Students should consult with the chair of the program offering the major about the availability of major credit for enrollment in related courses. The full descriptions of the related courses should also be checked for prerequisites.

American Studies

231 Oakes College
(831) 459-4658
http://humwww.ucsc.edu

Faculty and Professional Interests

Michael H. Cowan, Professor of American Studies and Literature
American cultural theory and history, history of American studies, symbolic expression in American life, urban cultural studies, American literary studies, studies in the institutional culture of higher education
Program Description

The American studies program is committed to a self-critical and historically grounded examination of the United States and its diverse people, viewed within a local and global context. The major is designed to be comparative along a number of axes. First, it is an interdisciplinary project, drawing on a mix of methodological and theoretical approaches. Second, it compares the United States with other imperial enterprises and states. And third, it compares different social groups and identities in historical context. The program aims to help students develop critical thinking, research, and writing skills so that they will be able to function effectively in an ever-changing, complicated, and culturally diverse world.

Students will take courses and work closely with faculty who are committed to interdisciplinary, multicultural, and transnational work and who include these interlocking themes in their courses: (1) Political Culture and Economy addresses the ways in which global capitalism structures everyday life and life chances in the United States; (2) Comparative Race, Ethnicity, and Diaspora Studies features research concerning the myriad relations among different racial, ethnic, and diasporic groups and (3) Cultural Representations and Practices support research into the history, aesthetics, and politics of different cultural forms, including music, visual culture, literature, film, mass media, popular culture, and vernacular performance.

Because of their broad-based exposure to the United States, collective learning experience, and ability to focus on topics of particular interest to them, American studies students find the major a useful preparation for careers in education, law, journalism, social work, community organizing, business, and government. The major also offers an excellent liberal education for students interested in exploring their responsibilities and opportunities as American citizens. Students who intend to go on to graduate school, whether in American studies or another discipline, should determine an appropriate selection of courses with their American studies faculty adviser.

Requirements for the Major

Students wishing to pursue a major in American studies must submit a proposed study plan specifying courses of study that satisfy the requirements for the major in a coherent manner and, at the same time, enable efficient pursuit of their particular interests. The study plan must be approved by the American Studies Department before the student is formally accepted into the major. Students
Course Requirements
To graduate with a major in American studies, a student is required to complete 12 courses with the approval of the department:

• one lower-division course chosen from 1 or 2;
• one lower-division course chosen from 80E, 80F, or 80G;
• seven upper-division courses chosen from 100–159;
• one senior seminar from the 190 series to fulfill the comprehensive exit requirement in the major; students may petition to complete a senior thesis project or teach a senior-directed seminar in lieu of taking the senior seminar;
• two courses outside the program that are integrated and related to American studies: two language courses in the same language at level 4 or above or two Education Abroad Program (EAP) courses or two upper-division courses in the same department or two upper-division courses in an area of ethnic study or 10 credits of fieldwork or internship.

Graduate Studies
Graduate students in the Literature and History of Consciousness Department may work toward a paratextual annotation in American studies on their Ph.D. degree documents. Students in other departments must initiate the request through their home departments. Guidelines and application forms are available in the American Studies Department Office in Oakes 231. The following are required for the annotation:

• a designated graduate adviser who is a faculty member of the American Studies Department and who will serve on the student's qualifying examination or dissertation committee;
• submission of a significant piece of scholarly writing in the area of American studies;
• five graduate courses in American studies selected from relevant offerings of any UCSC department or program, with at least three courses taught by faculty members of the American Studies Department;
• teaching experience as a teaching assistant or instructor in an American studies course.

Plans are currently underway to launch an interdivisional doctoral program in comparative United States studies (CUSUP); Enrollment in the program is projected for fall 2005 or 2006.

Lower-Division Courses

1. America and Americans. W, S
An introductory course to basic theories in American studies, including the U.S. in historical and transnational perspectives, social and cultural diversity and conflict in American life, and debates over concepts of national culture and citizenship. Satisfies American History and Institutions Requirement. (General Education Code(s): IH, E.) (S) A. Huginnie, (W) M. Cowan

2. California and Californians. F
Interdisciplinary examination of past and present California and its diverse peoples, with attention to regional, national, and global contexts. Addresses social, political, and cultural issues and considers representation of California life in literature and film. Satisfies American History and Institutions Requirement. (General Education Code(s): IH, E.) F. Robinson

42. Student-Directed Seminar. F, W, S
Seminar taught by upper-division students under faculty supervision. (See course 192.) The Staff

80E. U.S. Racial and Ethnic Histories and Formations, F, W
Introduces key concepts and debates in study of race and ethnicity in U.S. by focusing on a particular ethnic/racial group (e.g., Native Americans, African Americans, Asian Americans, Latinx, or by developing a comparative perspective. May be repeated for credit. (General Education Code(s): TS-H humanities and Arts or Social Sciences.) (F) C. Ramirez, (W) R. Ramirez

80F. Introduction to U.S. Popular Cultures. W
Introduces key concepts and debates in popular culture and media studies and discusses their importance in relation to American studies. Addresses these issues by examining films, television programs, musical recordings, fashion, and so on and the ways in which they are produced, distributed, marketed, and consumed. (General Education Code(s): TS-H humanities and Arts or Social Sciences.) E. Porter

93. Field Study. F, W, S
Various topics to be arranged. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Various topics to be arranged. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Upper-Division Courses

100. Key Concepts in American Studies. W
Introduction to key American studies concepts, featuring the close scrutiny of a small selection of representative American studies texts, lectures by several American studies faculty, and careful attention to analytical writing. Pre-requisite: completion of Subject A and Composition requirements. Enrollment restricted to sophomores, juniors, and seniors. (General Education Code(s): W.) C. Ramirez

101. Race and Ethnicity. *
A critical examination of sociological and historical literature on race/ethnic formations and relations in U.S. society within the socioeconomic and political contexts of capitalism and colonization. Concepts and theories are applied to contemporary issues of race and ethnic relations. Course 1 recommended as preparation. Enrollment restricted to American studies majors. Enrollment limited to 24. (General Education Code(s): E.) A. Huginnie

102A. Gender and U.S. Society. *
Introduction to the gendered analysis of U.S. society and culture from theoretical and historical perspectives. Particular attention given to the ways in which gender intersects with racial, ethnic, and class differences, focusing on the themes of work, politics, and sexuality. Course 1 is recommended prior to taking this course. C. Ramirez

102B. Sexuality and Culture. *
Examines how aspects of sexuality (such as sexual identities, preferences, roles, and desires) are fundamentally shaped by social-cultural and psychological factors. Topics include gender formation, the social construction of sexuality, and the historical emergence of the modern "gay" and "lesbian" identity of the U.S. Recommended for senior American studies majors. The Staff

104A. U.S. Labor and the Working-Class History, Colonial Period to 1919. W
Explores the history of work, working-class people, and the labor movement in the U.S., with attention to race and gender dynamics and to social and cultural development of the working class, as well as to the development of organized labor. (Also offered as History 104A. Students cannot receive credit for both courses.) Satisfies American History and Institutions Requirement. A. Huginnie

104B. U.S. Labor and the Working-Class History, 1919 to the Present. F
Explores the history of work, working-class people, and the labor movement in the U.S. in global perspective with attention to race and gender dynamics and to social and cultural development of the working class and political-economic changes. (Also offered as History 104B. Students cannot receive credit for both courses.) Satisfies American History and Institutions Requirement. D. Frank

105A. Oral History. *
Study and application of the theories, methods, and ethical issues involved in the practice of oral history. Critical readings and writing exercises will culminate in a 20-page oral history project. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to American studies majors. Enrollment limited to 24. (General education Code(s): W.) The Staff

105B. Understanding "America" through Ethnography. *
Examines ethics and politics of ethnographic research and various methodologies. Students collect their own ethnographic data to be analyzed with relevant theory in a final capstone project. (Formerly course 190A.) Enrollment restricted to senior American studies majors. Enrollment limited to 20. R. Ramirez

107A. U.S. Popular Culture: 1800–1918. *
A survey of major popular cultural forms and texts in the pre-WW1 era including M instrelsy, Uncle Tom's Cabin, P.T. Barnum, Tom's Cabin, P.T. Barnum, Mata Hari and Birth of a Nation, with attention to historical context and theory. F. Robinson

107B. U.S. Popular Culture: 1920–Present. *
Major popular cultural forms from the 1920s to the present. Topics include early "race" recordings; Depression radicalism; W.W.II entertainment of the Cold War; popular film genres; the 1970s and 1980s contemporary music...
109A. Technology and American Culture. *
Assesses political conditions under which the U.S. became committed to certain technologies, discusses merits of recent accounts of “crisis” in our politics and environment, and examines alternatives to mainstream political and technological enrollment restricted to sophomores, juniors, and seniors. The Staff

109B. Science Fiction in Multicultural America. F
Science fiction by authors and artists of diverse cultural backgrounds, contextualized within the political and economic conditions of the U.S. Enrollment restricted to sophomores, juniors, and seniors. G. Lipsitz

111A. The West in American Culture. *
Features texts with Western settings and with representative casts of Western characters. The often contradictory patterns that emerge from this regional literature and the qualities that attach to its familiar hero are explored. F. Robinson

112. Immigration and Assimilation. F
Examines immigration to U.S. from colonial era to present with special emphasis on issues of citizenship, social identity, and social membership. G. Lipsitz

113A. Imagining America. S
Examination of varied and often conflicting ways the ambigious entity conventionally labeled “America” has been imagined, both positively and negatively, in political speeches, painting, fiction, film, television, music, drama, advertising, parades, and other modes of expression. M. Cowan

114A. Politics and American Culture. *
Examines of major conceptions of citizenship in the context of American society and culture, with particular attention both to the sources of these conceptions in Western political thought and to their elaboration and testing in specific historical situations. Enrollment restricted to juniors and seniors. The Staff

114B. Marxist Thought in American Culture. *
Explores history of Marxist thought and activism in the U.S. with special emphasis on uses and effects of Marxism within aggrieved communities of color. Prerequisite(s): Satisfaction of the Subject A and Composition requirements. (General Education Code(s): W.) G. Lipsitz

118A. American Musical Theater. *
An examination of representative works of the American musical theater in the nineteenth and twentieth centuries, with attention to ways in which they illustrate significant aspects of American life and address problems of politics, class, race, and gender. (Also offered as Cowell College 118A. Students cannot receive credit for both courses.) Enrollment limited to 40. The Staff

121C. Mixed Race in America. *
Examines what it means to be of mixed race in America along historical, social, political, and cinematic lines. Theories on racial and identity formation applied to understanding multiracial experiences of various racial groups in the U.S. (General Education Code(s): E.) The Staff

123. Native American Studies.
123F. Native American Women. S
Introduces students to the history of Native American women’s lives. Topics include the impact of colonization and Christianization on Native women, political activism, the role of Native women in tribal politics, and contemporary artistic production. (General Education Code(s): E.) R. Ramirez

123H. Native Americans: Decolonization, Identity, and Resistance. *
This course examines how Native Americans are constructed by the dominant discourse on race, culture, and gender and how they subvert these negative representations through autobiography, novels, and humor. (General Education Code(s): E.) R. Ramirez

123T. Inventing the Savage. *
Examines how colonialism is at the root cause of cultural trauma in Native American communities; how colonialism affects both the colonizer and the colonized; how Native American scholars have theorized cultural trauma; and using novels, how Native Americans create strategies to heal from the negative effects of colonialism. (General Education Code(s): E.) R. Ramirez

125 African American Studies.
125A. Aspects of African American Culture. *
A seminar examining the dominant and defining characterstics of African American culture, covering such areas as folklore, religion, politics, music, verbal arts, and social ritual, as well as the “everyday” manifestations of the culture. May be repeated for credit. (General Education Code(s): E.) The Staff

125E. Jazz Cultures. F
Explores the meaning of jazz in American culture, particularly the social and cultural forces that have produced different jazz styles and the various ways that social conflicts and ideals have been displaced onto jazz. A prior familiarity with the music itself will be helpful but is not required. (General Education Code(s): E.) E. Porter

125G. African American Life in the City. S
Examines social and cultural history of three black urban communities: Chicago, Los Angeles, and New York. Focusing primarily on the mid-to-late twentieth century; considers black life through sociological, musical, literary, and historical sources. (General Education Code(s): E.) T. Rose

125X. Hip Hop Music Culture. F
Examines hip hop music and culture since its inception and addresses the forces that have affected its emergence and addresses the forces for its emergence in U.S. cities sampling, cultural crossings, market forces, aesthetics, popular culture debates, race, culture, gender, sexuality, and class. (General Education Code(s): E.) T. Rose

126B. Chicana/o Music. *
Examines Chicana/o music: Topics include corridos and border rebelling, music and social movements, Chicana radio and music industry, Chicanas/os and the emergence of rock and roll, Latin American/Latino music, and contemporary Chicana/o music. (General Education Code(s): E.) The Staff

127A. Aspects of Asian American Culture. F
Selected topics on Asian American culture, religion, music, foodways, literature, theater, film, and/or art. May be repeated for credit. (General Education Code(s): E.) The Staff

127D. Filipino Americans: History and Culture. *
Examines the history and culture of Filipinos in the U.S. from 1763 to present day with the context of colonial and postcolonial relations between the Philippines and the U.S. Topics include immigration, labor, community, identity, politics, and contemporary issues. (General Education Code(s): E.) The Staff

127E. Asian American Women. *
Examines the intersectionality of race, class, gender, and sexuality in the history and lives of Asian American women from a woman-centered perspective. Topics include immigration, work, family, identities, sexism, and political and social activism. Students cannot receive credit for this course and History 189. (General Education Code(s): E.) The Staff

127F. Chinese Americans: History and Culture. *
Examines the history, culture, and politics of Chinese Americans from the California Gold Rush to present day within the context of socioeconomic and political developments in China and the U.S. Topics include immigration and labor patterns; race, gender, and class dynamics; family and community development; identity politics; and cultural expressions. (General Education Code(s): E.) The Staff

141. The Great Book of America. *
The course will feature texts that were conceived as, or have been widely received as, expressions of themes and values that are especially or essentially American. Moby Dick, Walden, Leaves of Grass, and Huckleberry Finn are such books. F. Robinson

145. Mark Twain and American Culture. W
A survey of Mark Twain’s major writings with special attention to biography and historical content. The writer's status as a leading cultural spokesperson is also explored. Satisfies literature major requirement. Students cannot receive credit for this course and American Literature 120B. F. Robinson

157. Sexual Identities and Communities. *
Examines how gay, lesbian, bisexual, and transgendered people negotiate the intersections of their sexual and gender identities with their racial, ethnic, and class identities in the contemporary U.S. Considers the ramifications of these intersections for notions of “gay issues” and “queer communities.” The Staff

188. 9/11. S
Considers the events of September 11, 2001, and the subsequent changes in U.S. society and in the country’s role across the globe. Focuses on three areas where these transformations have occurred: politics, culture, popular culture, and women and ethnic relations. E. Porter

190. Senior Seminars.
Capstone seminars enable American studies seniors to apply their overall training in interdisciplinary research and analysis to major problems in the field. Topics vary from year to year. Satisfies American studies senior comprehensive requirement.
190C. Debating American Culture. *
Examines major debates about national culture in the U.S., considered in the context of ethnic, class, gendered, and other subnational and transnational cultural formations and of relevant social, political, and cultural theory. Enrollment restricted to senior American studies majors. Enrollment limited to 20. M. Cowan

190D. American Studies and Cultural Studies. W
Examines the history and state of the field of American studies. Investigates current debates in the field, with a focus on recent calls for a "post-nationalist" American studies, and begins to chart some of the directions in which the field is moving. Encourages students to reflect on their education in American studies at UCSC. (Formerly New Directions in American Studies.) Enrollment restricted to senior American studies majors. Enrollment limited to 20. G. Lipsitz

190E. Rethinking American Studies. W
As a culminating experience in the major, the seminar intends to encourage seniors to meditate critically on what American studies is and what it will be in the future. Focuses much attention on recent calls for a "post-nationalist" American studies, considers the possibilities/problems such imperatives bring, and analyzes recent work in this direction. Enrollment limited to 20. E. Porter

190H. Race, Politics, and Region. S
Examines race relations in modern-day Latin America with particular emphasis upon the Andes since pre-Columbian times. Students examine the experiences of African Americans, Asian Americans, European Americans, Mexican Americans, and Native Americans and how class and gender politics shape and, at times, become the language for race relations. Enrollment restricted to senior American studies majors. Enrollment limited to 20. (General Education Codes: E.) A. Huginn

192. Directed Student Teaching. F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) For students with regular standing who have submitted a proposal supported by a faculty member willing to supervise. The Staff

193. Field Study. F,W,S
Individual studies program undertaken off campus. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

195A. Senior Project. F,W,S
For students continuing work on their senior thesis. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

195B. Senior Project. F,W,S
For students continuing work on their senior thesis. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

198. Independent Field Study. F,W,S
Individual study program off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Approval of student's adviser and certification of adequate preparation required. May be repeated for credit. The Staff

199. Tutorial. F,W,S
Various topics to be arranged. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits). F,W,S
Various topics to be arranged. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

205. Theorizing American Culture. *
A selective examination of theoretical and methodological issues central to American studies, of the history of attempts to consider the U.S. as manifesting a cultural system, and of contemporary critiques that problematize the focusing of cultural analysis on nation-state. Enrollment restricted to graduate students. M. Cowan

207. Politics of Popular Music. *
Engages a number of the critical theoretical and methodological issues raised in contemporary studies of popular music. Explores these issues while reading case studies that range across scholarly disciplines and musical genres. Enrollment restricted to graduate students. Enrollment limited to 10. E. Porter

208. Readings in the History of the U.S. West. *
Explores recent trends in historical scholarship on the U.S. West, including the use of Western resources, the relationship between urban and rural places in the West, and the diversity of Western peoples. In order to reflect on the variety of ways in which scholars communicate their understandings of history, students also read a variety of academic books. Enrollment limited to 20. A. Huginn

210. Studies in Early American Nationality. *
Examines the relationship of the attempts to legitimate U.S. nationhood in the late eighteenth and nineteenth centuries and the construction during this period of the concept of a national culture. Particular stress is given to the ideological functions served by the developing concept of American nation as both polity and culture. Enrollment restricted to graduate students. Enrollment limited to 8. M. Cowan

211. Nativity, Culture, Race, and Space. *
This seminar examines the concept of "nativity" (of being or claiming to be native to a particular location) and how it functions in historical and contemporary conflicts, ranging from historical settler colonialism to contemporary gentrification of urban areas. Enrollment restricted to graduate students. Enrollment limited to 10. A. Huginn

222. Tradition and Modernity in Black Culture. *
Examines the interplay of past and present in expressive culture by, for, and about African Americans, especially in respect to artistic and social innovations and their relationships to history, collective memory, and tradition. Upper-division students may enroll via permission code from instructor. Enrollment restricted to graduate students. Enrollment limited to 10. A. Huginn

223. Cultural Citizenship. *
Seminar examines the right to be different and belong in a participatory, democratic sense. Explores vernacular definitions of what confers political and cultural entitlement, taking into consideration factors ranging from the economic to notions of dignity and respect. Enrollment restricted to graduate students. Enrollment limited to 10. R. Ramirez

225. Black Feminist Thought and Practice. *
Explores the development of African American feminist thought and its articulations in writing, music, literature, and practice in the twentieth-century U.S. Black women's sexuality a major theme, especially motherhood, politics of reproduction, and sexual narratives. Enrollment restricted to graduate students. Enrollment limited to 10. T. Rose

295. Directed Reading. F,W,S
Directed reading which does not involve a term paper. Designed for graduate students. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

296. Special Student Seminar. F,W,S
A seminar study group for graduate students arranged between students and faculty member. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Independent thesis research for graduate students. Students submit petition to sponsoring agency. May be repeated for credit. The Staff
Diane K. Lewis, Emerita

Daniel T. Linger
Self and identity, politics, cultural theory, cities, violence, transnational experience, Brazil, Japan

Carolyn Martin Shaw
African societies, colonial discourse, social theory, anthropology of women, sexuality

Olga Najera-Ramirez
Folklore theory, ritual, dance, greater Mesoamerican culture, history and folklore, transnationalism, identity, oppressive culture, ethnography, colonialism, gender, history, and culture of Latin America, the U.S., and Mexico

Tedoki Nath Pandey
Native peoples of North America, cultures of India, political anthropology, anthropological theories and comparisons

Richard R. Randolph, Emeritus

Stuart A. Schlegel, Emeritus

Anna Tsing
Culture and politics, feminist theory and gender in the U.S., social landscapes and tropical forest ethnographies, ethnicity, local power and relations to the state in Indonesia, Southeast Asia, and the U.S.

Adrienne L. Zihlman
Primate and human evolution, human evolution, comparative functional anatomy and sex and gender, life history and evolutionary theory, history of physical anthropology

Associate Professor

Nancy N. Chen
Medical anthropology, visual anthropology, urban anthropology, an American identity, mental health, food, China

Judith A. Habicht-Mauche
North American prehistory and ethnography, cross-cultural interaction and trade, ceramic technology, archaeology of gender, power, and identity, Southwest and Southern Plains

Hugh Raffles
Nature, ethnology, human, intimacy, scale, taxonomy writing, Brazilian Amazon

Lisa Rofel
Critical theory, anthropology of modernity, popular/public culture, gender and sexuality, cultures of capitalism, postcolonial feminist anthropology, China

Assistant Professor

Mark Anderson
Racial formation, diaspora, nationalism, transnationalism, culture and power, Latin America, African diaspora

Melissa L. Caldwell
Economic anthropology, poverty and welfare, anthropology of food, memory, socialism, and postsocialism; Russia, the former Soviet Union; and Eastern Europe

Nathan J. Dominy
Primate sensory systems, color vision, primate evolution, tropical ecology, food properties, and nutrition

Lecturer

Annapurna Pandey
Religious of India; women's organizations and resistance movements in India; and Indians in the Bay Area, the study of their religious practices, and identity in the diaspora

Professor

Raoul Birnbaum (History of Art and Visual Culture)
Buddhist studies, religion and visual culture in China

John Brown Childs (Sociology)
Sociology of knowledge, religion and social action, elitist and populist social movements

James T. Clifford (History of Consciousness)
History of anthropological travel, exoticism, transnational cultural studies, seminar courses, indigenous studies

Russell Flegal (Environmental Toxicology)
Anthropogenic perturbations of biogeochemical cycles, applications of isotope tracers in anthropology and archaeology

Margaret Greya A. Gibson (Education)
Imigrants and education; minority status, schooling; community-school relationships, ethnicity, class, gender, and educational processes in U.S. Mexican youth; and qualitative research methods

Stephen R. Glueckman (Environmental Studies)
Agroecology, sustainable agriculture, natural history, tropical land use and development, ecology and management of California vegetation

Donna Haraway (History of Consciousness and Women's Studies)
Feminist theory and analysis of historical studies of science and technology, relation of life and human sciences, and human-animal relations

Paul Koch (Earth Sciences)
Isotope biogeochemistry, vertebrate palentontology

Marc S. Mangel (Engineering [Applied Mathematics and Statistics])
Mathematical modeling of biological phenomena, especially the evolutionary ecology of growth, aging, and longevity; quantitative issues in fishery management; mathematical and computational aspects of disease

Patricia Zavella (Latin American and Latino Studies)
The relationship between women's work and domestic labor, poverty, family, sexuality and social networks, feminist studies, ethnohistorical research methods, and transnational migration of Mexican women and U.S. capital

Associate Professor

Carolyn Dean (History of Art and Visual Culture)
Cultural histories of the Americas, colonial Latin America, and the Americas

S. Ravi Rajan (Environmental Studies)
Environmental history and political ecology, risk and disaster studies, science and technology studies, North-South environmental conflicts, environmental social theory, environmental ethics

Assistant Professor

Ranya Ramirez (American Studies)
Native American studies, Native American women, cultural citizenship, expressive culture, and anti-racist education

Program Description

Anthropology studies people throughout the world and through time. Because it covers a wide range of topics—physical evolution, material remains of the past, and the world that humans create through their ideas and practices in present-day societies—anthropology is an especially integrative discipline.

The Anthropology program at UCSC offers courses that reflect the diversity of the field.

- Cultural anthropology explores the movements of people, objects, and ideas in diverse societies, including our own. Cultural anthropology courses examine such topics as race and ethnicity, medicine, science, gender, sexuality, the environment, religion, law, popular culture, and politics.

- Archaeology uses the material evidence of human activities to understand past human lives. Archaeology at UC Santa Cruz focuses on past peoples' interactions with one another at the local level and within their wider social and ecological contexts. Faculty research areas include the pre-colonial and early post-colonial history of East Africa and the American Southwest.

- Physical anthropology traces the human journey from its beginnings in Africa over five million years ago. Physical anthropology courses look at fossil evidence, evolutionary theory, human variation, and the behavior of primate relatives in order to analyze biological, social, and cultural change over time.

UCSC students have the opportunity to do independent library and field research in cultural anthropology, archaeology, and physical anthropology. Laboratory courses in anthropology are held in the Anthropology Building. Students may use the social sciences media laboratory to develop technical and creative skills in visual and audio media. In cultural anthropology courses, students learn to carry out anthropological research through interviews, participant observation, surveys, the collection of oral histories, and the interpretation of archives.

Because anthropology is concerned with understanding human interaction, it is a useful major for any student planning a career that involves working with people, especially those from diverse cultures. Some UCSC anthropology graduates are in social work, many are in teaching, and others pursue careers in law, city planning, politics, medicine, public health, cultural resource management, and journalism. Students intending to specialize in anthropology usually go on to graduate school because professional employment in the field almost always demands an advanced degree.

Most anthropology faculty have their offices in Social Sciences 1 Building. Social Sciences 1 also houses the Visual Culture Research Laboratory and laboratories for archaeology and physical anthropology where space is provided for laboratory and individual studies courses and for collections of mammalian skeletal material, casts of fossil hominids, ceramics, stone tools, and other archaeological artifacts.

The Anthropology Society, a campus club, is open to all students interested in anthropology. The Anthropology Colloquium showcases guest speakers and gives faculty and students an opportunity to discuss new approaches to anthropological questions. Students and faculty interested in archaeology also gather informally at the Archaeology/Physical Anthropology Forum to share information on fieldwork and employment opportunities.

Undergraduate Handbook

All undergraduate majors should obtain a copy of the Undergraduate Catalogue at the Anthropology Department at UCSC from the department office (361 Social Sciences 1 Building). It outlines information on department procedures and requirements, program planning, independent study,
Major Requirements

The Anthropology Department urges students to seek faculty advice early in planning for the major. Faculty hold regular office hours weekly and encourage students to come in to talk about their program or course work. Peer advisors are also available.

The anthropology major is available as a general track or as an intensive specialization in one of the three major subdivisions of the discipline represented at UCSC. To graduate with an anthropology major in the general track, students must take courses 1, 2, and 3, and either course 4 or an 80-series level course as background for upper-division courses. They must take a minimum of eight upper-division anthropology courses. At least one of these eight courses must be selected from each of the four categories below:

Sociocultural Anthropology Courses

- 120 Culture Through Film
- 123 Psychological Anthropology
- 124 Anthropology of Religion
- 126 Sexuality and Society in Cross-Cultural Perspective
- 128 Born-Again Religion and Culture
- 129 Other Globalizations
- 131 Women in Cross-Cultural Perspective
- 132 Photography and Anthropology
- 133 Narratives of the Popular
- 134 Medial Anthropology
- 136 Diaspora and Transnational Identities
- 137 Consuming Anthropology
- 138 Political Anthropology
- 139 Language and Culture
- 140 Art, Artists, Artifacts
- 142 Anthropology of Law
- 146 Anthropology and the Environment
- 150 Communicating Anthropology
- 151 Workshop in Ethnography
- 152 Survey of Cultural Anthropological Theory
- 153 Documenting Culture
- 161 Hello Dolly: Cultural Politics of Animals
- 164 Anthropology of Dance
- 165 Anthropological Folklore
- 167 Practicing Folklore

Ethnographic Area Studies Courses

- 130A Peoples and Cultures of Africa
- 130B Brazil
- 130C Politics and Culture in China
- 130D Peoples and Cultures of the Middle East
- 130E Culture and Politics of Island Southeast Asia
- 130G Asian Americans in Ethnography and Film
- 130L Ethnographies of Latin America
- 130I Cultures of India
- 130K Politics and Culture in East Asia
- 130N Native Peoples of North America
- 130Q Mestizos in Anthropological Discourse
- 130S The Anthropology of Black America
- 130U Amazonia
- 130X Special Topics in Ethnography

Physical Anthropology and Archaeology Courses

- 101 Human Evolution
- 101E Human Evolution Laboratory (2 credits)
- 102A Human Skeletal Biology
- 103 Forensic Anthropology
- 104 Human Adaptability
- 106 Primate Behavior and Ecology
- 106E Primate Behavior Laboratory (2 credits)
- 107 Anatomy of the Human Body
- 107L Anatomy of the Human Body Laboratory (2 credits)
- 110 Anthropology of Mammals
- 110H History of Archaeological Theory
- 122 Archaeological Research Design
- 123 Origins of Farming
- 124 Origins of Complex Societies
- 125A African Archaeology
- 126A North American Prehistory
- 128A Behavioral Archaeology
- 180L Ceramic Analysis Laboratory
- 182A Lithic Technology
- 183 Introduction to Quantitative Methods in Archaeology
- 184 Zooarchaeology
- 185 Odontology of Mammals, Birds, and Fish

Senior Seminar Courses

- 194A History of Evolutionary Theory
- 194B Community
- 194E Advanced Topics in Folkloristics
- 194F Localities and Globalization
- 194H Thinking with Bateson
- 194I Anthropology of Development
- 194J History of Forests and Other Wild Places
- 194K Reading Ethnographies
- 194L Southwest Prehistory
- 194M Special Topics in Medial Anthropology
- 194N Comparison of Cultures
- 194O Anthropology of Sexuality
- 194P Space, Place, and Culture
- 194Q Race, Hegemony, Diaspora
- 194R Behavioral Ecology in Archaeology
- 194S Hearing Culture
- 194T Politics and Inequality
- 194V Filming Cultures
- 194X Women in Politics: A Third World Perspective

Intensive Tracks

Students majoring in intensive tracks will complete the same lower-division requirements as for the general track. Upper-division requirements differ by track and replace the upper-division requirements of the standard track. The senior exit requirement may be fulfilled by a senior seminar (course 194) or a senior thesis and an additional elective. One 5-credit independent study course may be counted as an upper-division elective.

Archaeology

- 130 Anthropology (one ethnographic course)
- 152 Survey of Cultural Anthropological Theory
- 170 History of Archaeological Theory
- 172 Archaeological Research Design
- 173 Origins of Farming
- 174 Origins of Complex Societies

One upper-division area culture history course (175-176 series)

Two upper-division electives

One upper-division laboratory methods course (5 credits or more)

Senior exit requirement

Cultural Anthropology

One upper-division archaeology or physical anthropology course

- 130 (one ethnographic course)
- 150 Communicating Anthropology
- 152 Survey of Cultural Anthropological Theory
- 151 Workshop in Ethnography
- 154 Documenting Culture

Three upper-division electives

Senior exit requirement

Physical Anthropology

- 101 Human Evolution
- 106 Primate Behavior and Ecology

Two laboratory courses from the following:

- 102A Human Skeletal Biology
- 107L Anatomy of the Human Body and Laboratory
- 130 (one ethnographic course)
Transfer Students
If possible, transfer students should complete lower-division requirements for the major before coming to UCSC by taking classes equivalent to courses 1, 2, and 3. Department policy also allows up to 10 quarter credits (equivalent to two UCSC courses) of upper-division transfer credit toward the major requirement. Transfer students are expected to submit to the department an official transcript or a USI Transfer Credit Summary and an unofficial copy of all pertinent transcripts to the adviser in charge of undergraduate studies in the department office (361 Social Sciences 1 Building) as soon as possible after reaching campus so that prerequisites can be verified and course enrolment can proceed smoothly.

Peer Advisers
As a supplement to academic advising offered by faculty members, the Anthropology Department has instituted a peer adviser program. The peer advisers are juniors and seniors who have been trained to help students with questions and general guidance through the anthropology major. Peer advisers hold regularly scheduled office hours in the department office, the Peer Advising Office (347A Social Sciences), and the Ethnographic Library (328 Social Sciences).

Honors
Honors in anthropology are awarded to graduating seniors whose evaluation is judged to be consistently outstanding by a committee of anthropology faculty. The highest honors in the major are reserved for students who have received consistently superior evaluations and a notation of Honors on their senior comprehensive requirement (senior seminar or senior thesis).

Minor Requirements
Students earn a minor in anthropology by completing all of the requirements for the major with the following differences:

- The number of upper-division courses is reduced from eight to six. Of these, at least one must be from each of the following categories: 1) cultural anthropology, 2) ethnographic area studies, and 3) physical anthropology or archaeology.

- Independent study courses cannot be used toward completion of the minor.

- No senior seminar or thesis is required.

For more information regarding department policies, please consult the undergraduate adviser at the Anthropology Department Office, 361 Social Sciences 1 Building. A handbook on the anthropology program is available there or online.

Graduate Program
The anthropology doctoral program at UCSC consists of three tracks. The majority of students are admitted to the cultural anthropology program. Small numbers of students are admitted to the programs in either archaeology or physical anthropology. Although applicants are accepted only for the Ph.D. program, students may obtain an M.A. degree after fulfilling specific requirements during the first or second year.

The study of culture and power unites the research interests of the faculty in the cultural anthropology graduate program at UC Santa Cruz. In recent years, anthropologists’ central concept of culture has been subjected to extraordinary ethnographic and theoretical pressures. For certain kinds of problems, anthropologists can study culture as shared meanings—symbols, assumptions, and knowledge—which are enduring and stabilizing and possess an internal logic that organizes apparently contradictory or unrelated activities. But problems requiring attention to power—including not only coercion, persuasion, and authority, but also the discursive practices by which meanings are produced and contested—have led anthropologists to rethink culture. In this perspective, culture is not shared equally but is positioned within a field of inequalities, is more the outcome of events than their pre-condition; and is as readily manifest in disorder, conflict, and fragmentation as in order and stability.

Our concentration on culture and power and on the construction of anthropological knowledge is especially well suited for drawing together specialists in challenging and enriching conversations. Rather than reproduce the boundaries among the traditional subfields of anthropology, we explore how recombinations of these approaches can elucidate specific anthropological problems.

Working with their faculty advisory committee, students in cultural anthropology have considerable freedom to design their own programs of study after completing the two-quarter core course and the ethnographic practice course during the first year. To achieve Ph.D. candidacy, students are expected to pass a first-year review of their written work, take three additional 5-credit courses in anthropology (excluding independent study courses), maintain satisfactory academic progress, satisfy the ethnographic writing requirement and the foreign language requirement, pass a qualifying exam at the end of the third year, and meet the specific requirements of the Division of Graduate Studies. After advancing to Ph.D. candidacy, students carry out a sustained ethnographic fieldwork project and are expected to complete their dissertation within a year after returning from the field.

Graduate students in cultural anthropology may obtain a notation on the anthropology Ph.D. diploma indicating that they have specialized in women’s studies if they meet requirements spelled out by the individual committee composed of anthropology and women’s studies faculty.

The Ph.D. program in archaeology is highly selective and emphasizes intersections of theories of economy and production, human ecology, gender, and ethnicity, all of which is augmented by rigorous laboratory apprenticeships. Training is offered in combinations of the following: ceramic analysis, zooarchaeology, isotopic characterization, and archaeology of the Southwest, California, and Africa.

The Ph.D. program in physical anthropology combines a strong emphasis on hard and soft tissue anatomy with a broad evolutionary perspective. This highly selective track is characterized by intense mentoring of students, involvement of students in instruction as well as course work, and interdisciplinary training. Specific training is offered in skeletal biology, primate anatomy, forensic anthropology, and evolutionary theory.

Although the areas of study of the archaeology and physical anthropology programs are distinct, their paths toward the Ph.D. are the same. In the first year, students take two foundational theory courses and pass a review of their work. Within the first two years of study, the Ph.D. program consists of approximately 90 credits. Students complete at least two foundational materials/methods courses or laboratory courses in other departments; two advanced laboratory apprenticeship courses or similar courses in other departments; two foundational courses in geographic/temporal areas or, in physical anthropology, topical areas; two graduate seminars with another anthropologist or campus faculty; one quantitative methods course; and two terms of supervised teaching experience.

The third year requirements are three laboratory apprenticeship courses, the grant writing seminar, and tutorials to prepare for the qualifying exams. All courses outside the department must be approved by the student’s adviser. After advancing to Ph.D. candidacy, the student carries out a sustained laboratory or fieldwork project and is expected to complete the dissertation within a year after finishing research.

Lower-Division Courses

1. Introduction to Human Evolution, F
Study of evolution illustrated by Pliocene hominid fossils and variation in living human groups. Behavior and evolution of primates examined as they contribute to the understanding of human evolution. Required for all anthropology majors. (General Education Code(s): IN.) A. Zihlman

2. Introduction to Cultural Anthropology, W
A number of different peoples are studied and a variety of approaches to the nature of the culture and to the study of specific cultures presented. Required for all anthropology majors. (General Education Code(s): IS.) N. Chen

3. Introduction to Archaeology, S
Overview of ways of learning about the human past beyond the scope of written history. Reviews development of archaeology, fundamental methods and theories, and archaeology’s contribution to understanding human origins, the emergence of farming, and the origins of complex societies. (General Education Code(s): IS.) J. Habicht M. Aude

4. Public Life and Contemporary Issues, W
How can cultural anthropology help us to understand current events unfolding locally, nationally, and globally? Students learn how to “read” newspapers differently—that is, through the lens of cultural analysis. The world of everyday politics and society, as it unfolds in debates happening right now, forms the topical substance of the course. (General Education Code(s): IS.) A. Tsing

42. Student Directed Seminar, *
Seminars taught by upper-division students under faculty supervision. (See course 192.) T. The Staff

80B. African Women, *
Survey of the position and roles of women in African societies with different social, political, and economic organizations. Offered in alternate academic years. (General Education Code(s): T-3-Social Sciences, E.) C. Shaw

80C. Buried Lives, *
Burials provide us with a glimpse of individuals and the context in which they lived their lives. This course combines an examination of the depiction of bodies in popular media, scholarly discussions, and the possibility of alternative interpretations. (General Education Code(s): T-3-Social Sciences.) A. Galloway

80D. Africa Today, F
Present-day values and social life of selected sub-Saharan African peoples examined using anthropological studies and African literature. (General Education Code(s): T-3-Social Sciences.) T. The Staff
80F. Exotic Tours. W
Explores exotic (including extreme, adventure, ethnic, and eco) tourism and journalism using writings, photography, and web sites. It is in effect, a series of virtual exotic tours each one centered around an itinerary drawn from actual tours. (General Education Code(s): T3-Social Sciences.) The Staff

80L. Culture and Power in Latin America. *
Introduces key issues in the anthropology of Latin America, with emphasis on identity formation, cultural practices, and power. Major themes include race, class, and gender as intersecting forms of oppression, violence, and terror and indigenous social movements. (General Education Code(s): T3-Social Sciences, E.) M. Anderson

80J. Introduction to Visual Culture. S
Introduces current issues in cultural anthropology using film as a medium with which to explore culture. Raises questions about visual representations and the portrayal of cultural difference in the context of global inequalities. (General Education Code(s): T3-Social Sciences) The Staff

80K. Culture through Food. *
Examines anthropology of food and politics of eating. Cultural and social uses of food in rituals of solidarity or fasting, identities and meanings of food for individuals, and consumption in the global context are key components of study. Will be offered in the 2005-06 academic year. (General Education Code(s): T3-Social Sciences) N. Chen

80L. Anthropology of Performance. F
Introduction to performance studies and theater anthropology investigates performance traditions across cultures. Learn to connect theory and practice by relating class discussions of readings and documentary films to experiences of practical performance exercises led by instructor. (General Education Code(s): T3-Social Sciences) V. M. agnani

80O. Environmental Politics. S
A survey course on anthropological approaches to environmental questions that covers the history of anthropological engagement with environmental politics. Considers the various "ecologies" cultural, symbolic, historical, political, and the types of analyses these have enabled. (General Education Code(s): T3-Social Sciences) T. The Staff

80P. India and Indian Diaspora through Films. W
Explores several themes of relevance in contemporary India and Indian diaspora, concentrating on anthropological research and various documentary and popular Bollywood films. Through films and ethnographies, students analyze the nature of anthropological contributions to the study of Indian societies. (General Education Code(s): T3-Social Sciences, E.) A. Pandey

80Y. Power, Politics, and Protest. *
Examines the many ways in which organized groups engage in political protest against those whom they understand to dominate them. The course first establishes the framework for the discussion of power, politics, and protest, and then examines a variety of forms taken by political protests worldwide. Will be offered in the 2005-06 academic year. (General Education Code(s): T3-Social Sciences) T. Pandey

93. Field Study, F,W,S
Supervised research or organized projects on anthropological topics for lower-division students. Conducted either on or off campus. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

99. Tutorial, F,W,S
Students submit petition to sponsoring agency. The Staff

100P. Cultural Performance: Filipino American Experience (2 credits). W
This course offers two credits to students participating in the production of the Pilipino Cultural Celebration (PCC), a cultural performance held annually which includes four aspects: theater, folk dance, choir, and contemporary dance. Audition required. May be repeated for credit. O. Najera Ramirez

101L. Human Evolution. W
Study of human evolution covering the last five million years. Examines the fossil evidence and emphasizes the reconstruction of behavior from the paleontological and anatomical evidence. Prerequisite(s): course 1. Offered in alternate academic years. A. Zihlman

101E. Human Evolution Laboratory (2 credits). *
Laboratory focuses on the locomotor, dental, facial-cranial anatomy of hominids. Meets weekly, with exercises designed around primate and human skeletal materials and casts of fossil hominids. Concurrent enrollment in course 101. Enrollment limited to 15. A. Zihlman

102A. Human Skeletal Biology. S
Presents basic human osteology allowing students to identify skeletal material by element. Emphasizes the dynamic nature of bone by integrating anatomy with a discussion of bone physiology within the context of the human life cycle. Prerequisite(s): course 1. Enrollment limited to 15. The Staff

102B. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102C. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102D. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102E. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102F. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102G. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102H. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102I. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102J. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102K. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

102L. Human Skeletal Biology Laboratory (2 credits). *
Serves as an introduction to human skeletal remains and the study of the human body. Students will learn the basic analysis of human skeletal remains and the evidence these offer as to the human body. The Staff

106. Primate Behavior and Ecology. *
The nature of primate social systems and their dynamic of their relationships. Prerequisite(s): course 2. The Staff

106E. Primate Behavior Laboratory (2 credits). *
Focuses on locomotor and dental-cranial anatomy, and skeletal development of primates. Weekly meetings, with exercises designed around primate materials. Concurrent enrollment in course 106. Enrollment limited to 15. A. Zihlman

Study of structure and function of the human body through lectures with an evolutionary perspective including regional anatomy and body systems. Students cannot receive credit for this course and course 207. (Also offered as Biology 135L. Students cannot receive credit for both courses.) Prerequisite(s): course 1 or Biology 208. N. Dominy

107L. Anatomy of the Human Body Laboratory (2 credits). S
Study of structure and function of the human body using dissection, comparative vertebrate anatomy, anatomical models, and computer-assisted instruction. Students are billed for a lab fee. Students cannot receive credit for this course and course 207L. (Also offered as Biology 135L. Students cannot receive credit for both courses.) Prerequisite(s): course 1 or Biology 208; concurrent enrollment in course 107 is required. Enrollment limited to 20. A. Zihlman

110. Anthropology of Movement. *
Comparative and evolutionary anatomy of human performance. Examines locomotor systems and their underlying structure and evolution through videos, skeletons, and dissections in a variety of mammals, primates, and humans. Prerequisite(s): courses 106 or 101; 102 or 107 or 164 or 185; or by interview. Enrollment limited to 20. A. Zihlman

120. Culture through Film. W
Introduces current issues in cultural anthropology using film as a medium with which to explore culture. Raises questions about visual representation and the portrayal of cultural difference in the context of global inequalities. Prerequisite(s): course 2 or 80J or Film 20A or 20B; or History of Art and Visual Culture 10D, 10E, 10F or 10G. S. Errington

120L. Culture Through Film Laboratory (2 credits). W
This lab in video production is to train students in Culture Through Film, course 120. Through lectures, demonstrations, hands-on instruction, and review of students' work in progress, the lab will enable students enrolled in Culture Through Film to learn the fundamentals of film/video pre-production, production, and post-production skills. Portfolio review prior to enrollment and concurrent enrollment in course 120 required. Enrollment limited to 15. The Staff

122. Culture and Education. *
Anthropological study of themes and issues in educational research, reform, and practice. Investigates education as a process that disseminates and regenerates culture. Explores cultural components of various educational settings and dynamics of their relationships. Prerequisite(s): course 2. The Staff

123. Psychological Anthropology. F
An introduction to some of the central theoretical issues in psychological anthropology. Psychoanalytic, cognitive, and relativist perspectives on the link between person and society are discussed and compared. The Staff

124. Anthropology of Religion. S
Study of the phenomenon of religion as manifested in ethnographic literature, with special attention to traditional and recent modes of analysis of religious behavior. Special topics include myth, religious healing, witchcraft and sorcery, ritual, and millennial movements. A. Pandey

126. Sexuality and Society in Cross-Cultural Perspective. F
The meaning and social processes associated with sexuality in selected societies. Examination of variations in sexual expression and control of sexuality, and in economic and political organizations, highlights the interrelationship of sex and society. Prerequisite(s): course 2. The Staff

129. Other Globalizations: Cultures and Histories of Interconnection. * The history of social and cultural interconnections at a global scale. Anthropological approaches to the study of cultural encounter are used to investigate topics such as trade, religion, and citizenship and to evaluate shifting concepts of civilization and barbarism. Prerequisite(s): course 2. A. Tsing

130. Enthographic Area Studies.

130A. Peoples and Cultures of Africa. S Survey of sub-Saharan societies. Analysis of principles of social organization and factors of cultural unity of selected western, eastern, central, and southern African peoples. (General Education Code(s): E) C. Shaw

130B. Brazil. * Examines Brazilian culture and its link to interpersonal relationships, religion, politics, and psychological experience. (General Education Code(s): E) D. Linger

130C. Politics and Culture in China. * Joins substantive information "about" Chinese society and culture with debates in social theory and rethinks conventional wisdom about colonialism and modernity. Topics include representations of "Chineseness," class resolution, Chinese diaspora, popular culture, family and kinship, nationalism, history/memory, race and gender. (General Education Code(s): E) N. Chen

130D. Peoples and Cultures of the Middle East. F Religion, culture, and change in the Middle East with emphasis on the Arab world. (General Education Code(s): E) The Staff

130E. Culture and Politics of Island Southeast Asia. * Southeast Asia includes a variety of societies exhibiting many ecological adaptations, religions, marriage systems, and experiences with colonial powers. Case studies of particular societies, chosen to reveal variety, are examined comparatively. Emphasis on religion and social organization. Prerequisite(s): course 2. (General Education Code(s): E) A. Tsing

130G. Asian Americans in Ethnography and Film. * Critically examines category of Asian Americans. Addresses historic representations of Asians and Asian Americans in ethnographic research and film. Explores contemporary issues of race, culture, and politics through ethnographic practice and cultural production. Will be offered in the 2006-07 academic year. (General Education Code(s): E) N. Chen

130H. Ethnography of Eurasia. F Introduces students to the ethnography of Eurasia, with special attention to the lived experience and legacy of state socialism in this region. Topics include new ideas of personhood, changing economic practices, public health, and international development. (General Education Code(s): E) M. Caldwell

130I. Cultures of India. W An examination of anthropological studies of tribal, rural, and urban cultures of India and alook at changes taking place in India. Prerequisite(s): course 2. Offered in alternate academic years. (General Education Code(s): E) J. Pandey

130K. Politics and Culture in East Asia. * Introduces scholarship that rethinks the conventional wisdom about colonialism and modernity in China, Japan, and Korea. Emphasis on the production of colonial knowledge about Asian "others" and genealogies of nationalism, tradition/modernity, history/memory, race and gender. Will be offered in the 2005-06 academic year. (General Education Code(s): E) T. The Staff

130L. Ethnographies of Latin America. * A broad introduction to issues and areas of cultural production and formation in the Caribbean, Mexico, and Central and South America. Colonial, neo-colonial, class, ethnic, gender, religious, ecological, and political relations intersect as represented in ethnographies and films. Will be offered in the 2006-07 academic year. Prerequisite(s): course 2. (General Education Code(s): E) The Staff

130N. Native Peoples of North America. S A survey of Native American cultures and experience during the past century, with emphasis on Pueblo cultures of the American Southwest. (General Education Code(s): E) J. T. Pandey

130Q. Miconos in Anthropological Discourse. F Provides students with an opportunity to critically analyze various ethnographic accounts of Micronesian communities on both sides of the border. Uncovers how anthropologists in this century have approached Micronesian culture by examining the methodologies, theories, evidence, and conclusions employed and/or produced in these works. (General Education Code(s): E) O. N. H. Ramirez

130T. The Anthropology of Black America. S Surveys and critically examines ethnographic studies of black American culture. Studying classic works by pioneers of black anthropology as well as contemporary ethnographies, interrogates key issues in black American culture, race, gender, class, identity, and community. (General Education Code(s): E) T. The Staff

130U. Amazonia, W An introduction to the anthropology of Amazonia. Students consider the emergence of Amazonia as a region, examining the history and politics of social transformation. The second half of the course is devoted to close reading of key ethnographic monographs. Prerequisite(s): course 2 or 146. (General Education Code(s): E) H. Raffles

130X. Special Topics in Ethnography, F, W, S This course on special topics in ethnography will be taught on a rotating basis by various faculty members. Precise focus of each year’s courses will vary according to the instructor and will be announced by the department. May be repeated for credit. T. The Staff

131. Women in Cross-Cultural Perspective, F Examines the diversity of women’s as well as men’s roles, experiences, and self-conceptions in a number of societies to explore how women and men shape, and are shaped by, particular forms of social life. Prerequisite(s): course 2. Offered in alternate academic years. M. M. Oodie

132. Photography and Anthropology, F Moving historically from woodcuts and paintings to the World Wide Web, but emphasizing the invention and development of documentary photography, this course explores the world of images depicting society and culture. Major theoretical approaches to "reading" pictures will be emphasized, and students must produce a final project incorporating visual images. Prerequisite(s): course 2 or H. History of Art and Visual Culture 100 or 10F or 10G or Art 30. T. The Staff

132L. Photography and Anthropology Laboratory (2 credits), F This still photography lab trains students in the basic operations and techniques of the camera and the creation of a set of still photographs to use for social documentation. It includes lectures, demonstrations, hands-on instruction, and a continuous review of the students’ work in progress. It does not include darkroom work. Prerequisite(s): Concurrent enrollment in course 112 and a portfolio review. Enrollment restricted to anthropology majors. Enrollment limited to 30. T. The Staff

133. Narratives of the Popular. * Addresses the increasing importance of popular culture as the terrain upon which to address issues of culture and power. Emphasizes an ethnographic approach to popular culture, socio-cultural phenomena. Students learn about a variety of activities including television and film viewing, music, fashion, photography, postcards, comic books, and urban spatial relations and architecture. Offered in alternate academic years. L. Rofel

134. Medical Anthropology: An Introduction, F Cross-cultural study of health, disease, and illness behaviors from ecological and ethnomedical perspectives. Implications for biomedical health care policy. N. Chen

138. Political Anthropology, F The ideas, in selected non-Western societies, about the nature of power, order, social cohesion, and the political organization of these societies. (Also offered as Legal Studies 118. Students cannot receive credit for both courses.) Offered in alternate academic years. T. Pandey

139. Language and Culture, S Examination of language system and language use in relationship to cultural contexts of communication in Western and non-Western societies. Topics include the Sapir-Whorf linguistic relativism hypothesis; linguistic constructions of gender; speech variation in relation to, class, ethnicity, and national identity; and the emergence of self in communicative acts. Prerequisite(s): course 2. D. Brennes

140. Art, Artists, Artifacts, S Studies the ways of interpreting non-Western art, both in the context of the Western art world and in the context of the societies that produced the art forms. T. The Staff

142. Anthropology of Law, S An ethnographically informed consideration of law, dispute management, and social control in a range of societies including the contemporary U.S. Topics include conflict management processes; theories of justice, legal discourse, and relations among local, national, and transnational legal systems. (Also offered as Legal Studies 142. Students cannot receive credit for both courses.) Enrollment restricted to anthropology and legal studies majors. M. M. Oodie
146. Anthropology and the Environment. *
Examines recent approaches to study of nature and the environment. Considers historical relationship between nature, science, and colonial expansion as well as key issues of contemporary environmental concern: conservation, environmental justice, and social movements. Will be offered in the 2005-06 academic year. Prerequisite(s): course 2. The Staff

150. Communicating Anthropology. F
Encourages anthropology majors to explore different means of communicating anthropology with much attention to individual writing and presentation skills. Intensive work on library research; recognizing, comparing, and making arguments; and analyzing ethnographies, articles, reviews, and films. Prerequisite(s): two of the following courses: 1, 2, or 3; satisfaction of the Subject A and Composition requirements. Enrollment restricted to sophomores and juniors. (General Education Codes(s): W.) H. Raffles

151. Workshop in Ethnography. W
Through demonstration, practice, and participation, acquire skills in collecting and analyzing cultural data. Work with members of other cultures and with each other to learn to identify significant cultural patterns. Lectures and readings provide added perspective and a theoretical base. Prerequisite(s): course 2. Enrollment limited to 20. L. Rofel

152. Survey of Cultural Anthropological Theory. W
Major figures, ideas, and writings in nineteenth- and twentieth-century cultural anthropology surveyed. Prerequisite(s): course 2 and satisfaction of the Subject A and Composition requirements. (General Education Code(s): W.) J. Shaw

153. Experimental Ethnography. W
Engages students in critical thinking about positionality of the ethnographer and introduces them to reflexive, dialogic, performative, and indigenous methodologies. Readings and discussions lead to design and conducting experimental ethnographic projects, carrying out fieldwork, and presenting research results. V. M. Sign

154. Documenting Culture. S
Drawing on scholarship in the fields of folklore, cultural studies, performance studies, dance, and anthropology, focuses on theories and methods for documenting, analyzing, and representing culture. Students learn the fundamentals of photography, video production, and audio recording. Prerequisite(s): courses 1, 2, and 3. Enrollment restricted to anthropology majors. Enrollment limited to 40. S. Errington

154L. Multimedia Laboratory (2 credits).
Designed to instruct in aesthetics and technical production of a short digital slideshow. Using iMovie editing program, produce a digital slideshow incorporating sound (narration, music, and sound effects) and still images. Concurrent enrollment in course 154 is required. Enrollment limited to 12. T. The Staff

159. Race and Anthropology. W
Examines concept of race in anthropology. Begins with histories of race in anthropology; turns to contemporary analysis of racism, identity formation, and diaspora and concludes with current debates on the validity of "race" as an object of analysis. M. Anderson

161. Hello Dolly! Cultural Politics of Animals. *
Levi-Strauss observed that animals are not just good to eat, but "good to think." This course examines the history and politics of relations between humans and other animals. Topics covered include classification, pets, zoo, meat, and cloning. Will be offered in the 2006-07 academic year. H. Raffles

164. The Anthropology of Dance. W
An intense reading seminar which critically reviews anthropological works in dance ethnography and dance theory. Recommended for anthropology majors. Prerequisite(s): course 2. Enrollment limited to 25. Offered in alternate academic years. The Staff

165. Anthropological Folklore. F
Survey of the major forms of folklore with emphasis upon games, humor, superstitions, and folk-narratives (myth, legend, and folktale). Addresses methodological issues in folklore and theoretical approaches to the study of folklore. Prerequisite(s): course 2. Offered in alternate academic years. The Staff

167. Practicing Folklore. *
Designed to provide students with a demonstrated interest in background in folkloristics an opportunity to develop a project that integrates folkloristic theory and ethnographic practice. Will be offered in the 2006-07 academic year. Prerequisite(s): course 2. Enrollment restricted to anthropology majors. Enrollment limited to 40. The Staff

170. History of Anthropological Theory. F
Historical review of prehistoric archaeology from anti-quarantine to the present. Emphasis on development of archaeological theory and its relation to evolutionary and anthropological theory. Students cannot receive credit for this course and course 270. Prerequisite(s): course 3; satisfaction of the Subject A and Composition requirements. Recommended for juniors. Offered in alternate academic years. (General Education Code(s): W.) D. Gifford-Gonzalez

172. Archaeological Research Design. W
Introduces theories and methods for recovering and analyzing archaeological data. Critically explores the nature of archaeological evidence and how archaeologists know what they know. Strongly recommended for those contemplating further studies in archaeology. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 3, and one upper-division archaeology course. Strongly recommended for those contemplating further studies in archaeology. Enrollment limited to 25. Offered in alternate academic years. (General Education Code(s): W.) J. H. Abicht

173. Origins of Farming. *
Survey of the ecological and archaeological evidence for the origins of plant and animal domestication in Africa, Eurasia, and the Americas. Discussion will center on the preconditions of this drastic alteration in human ecology and its consequences in transforming human societies. Open to nonmajors. Students cannot receive credit for this course and course 273. Offered in alternate academic years. The Staff

174. Origins of Complex Societies. W
Deals with evidence and theories concerning the origins of complex society; the transition from egalitarian, foraging societies to the hierarchical, economically specialized societies often referred to as "civilizations." Focuses on both Old World and New World cultures. Prerequisite(s): course 3. S. Hutzon

175A. African Archaeology. S
Archaeological history of Africa from the first 2.5 million years ago to the emergence of African cities, states, and commercial relations with Medieval Asia and Europe. Disciplinary models and assumptions critically examined in their historic and political contexts. Students cannot receive credit for this course and course 275A. Prerequisite(s): course 3 or equivalent. Enrollment restricted to juniors and seniors. Enrollment limited to 45. D. Gifford-Gonzalez

176A. North American Archaeology. *
Development of Native cultures in North America. Topics include peopling of the New World, early foragers, spread of agriculture and complex societies in the Southwest and Eastern Woodlands, and review of cultural developments in the West and Far North. J. H. Abicht

177. European Conquest of the Americas. F
Uses ethnographic, archaeological, and historical sources to examine the clash of cultures between Native Americans and Europeans during the fifteenth through nineteenth centuries. Focuses on social, political, and demographic impacts of contact on Native American societies. Prerequisite(s): courses 2 and 3. J. H. Abicht

180. Ceramic Analysis in Archaeology. *
Focuses on theories and techniques used by archaeologists to bridge the gap between the recovery of ceramic materials and their interpretation within cultural contexts. Topics include the origins of pottery, production methods, classification and typology, seriation, functional analysis, materials analysis and description, organization of production, trade, and the analysis of style. Concurrent enrollment in course 180L required. Prerequisite(s): course 3. Concurrent enrollment in course 180L required. Enrollment restricted to anthropology majors. J. H. Abicht

180L. Ceramic Analysis Laboratory (2 credits).
Practicum in ceramic materials analysis and description. Students perform material experiments in materials selection and processing, hand-building techniques, and open-pit firing. Demonstrations of standard techniques of attribute analysis and the mineralogical and chemical characterization of ceramic materials are presented. Prerequisite(s): course 3 and concurrent enrollment in course 180. Enrollment restricted to anthropology majors. Enrollment limited to 16. J. H. Abicht

182A. Lithic Technology. *
Introduction to lithic and ceramic analysis in archaeology. Includes lab analysis, discussions of classification and typology, and exploration of the concept of style as it relates to ceramics and lithics in archaeology. Prerequisite(s): course 3. Enrollment limited to 20. T. The Staff

184. Zooloarchaeology. F
Lectures and seminar on archaeological faunal analysis. Topics include mammalian evolution and osteology, vertebrate taphonomy, reconstruction of human diet from faunal remains, foraging strategy theory, data collection and management, and methods of quantitative analysis. Students cannot receive credit for this course and course 284. Prerequisite(s): course 3. Offered in alternate academic years. D. Gifford-Gonzalez

185. Osteology of Mammals, Birds, and Fish. W
Practicum in archaeological faunal analysis. Students learn to identify bones of all larger mammal species of central California plus selected bird and fish species. Students cannot receive credit for this course and course 285. Prerequisite(s): courses 179 or 120 or Biology 138L, or Earth Sciences 100 or Environmental Studies 108L, plus consent of instructor. Enrollment limited to 16. Offered in alternate academic years. D. Gifford-Gonzalez
192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students submit petition to sponsoring agency. The Staff

193. Field Study, F,W,S
Students submit petition to sponsoring agency. The Staff

194. Senior Seminar.

194A. History of Evolutionary Theory. *
The history of ideas. At the most general level, concern is with the impact of scientific thinking in biology and human evolution. An overview of Darwin's work presents the broader framework of scientific method. Students cannot take this course after completing another senior seminar. Students cannot receive credit for this course and course 294A. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to seniors majoring in anthropology. Enrollment limited to 15. (General Education Code(s): W.) J. Zilhman

194B. Community. *
Critically considers four concepts of community: community as place, community of interests, community as social relations, and community as intentional goal. Examines internal dynamics of communities, social relations between communities in complex societies, and the successes and failures of particular intentional communities. Will be offered in the 2005–06 academic year. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to junior and senior anthropology majors. Enrollment limited to 25. (General Education Code(s): W.) C. Shaw

194C. Food and Medicine. F
Critically examines interactions of food, medicine, and culture. Special attention to "studying up" of industrial food system and pharmaceutical industry. Additional focus on anthropology of food, medicine, nutrition, and consumption. Prerequisite(s): courses 1, 2, and 3; satisfaction of Subject A and Composition requirements. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) N. Chen

194E. Advanced Topics in Folkloristics. *
An examination of selected topics and issues in the field of folklore; topics vary each quarter. Designed for advanced students with a demonstrated interest in folkloristics. Will be offered in the 2005–06 academic year. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) J. Hardig

194F. Locality and Globalization. *
Why are some people considered global and others local? Explores current anthropological debates on globalization to ask what aspects of contemporary life the term describes and the implications of using it. Will be offered in the 2005–06 academic year. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to seniors majoring in anthropology. Enrollment limited to 20. (General Education Code(s): W.) H. Raffes

194G. Ritual Performance: The Riddle of "Spirit Possession," S
Examines competing ethnographic interpretations of ritual "spirit possession" practices. Addresses the pathologizing and theatricalizing of "spirit possession," the emic/etic debate, and questions of embodiment and agency that are pivotal to the postmodern and postcolonial reassessment of anthropology. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) V. M. Agar

194H. Thinking with Bateson. *
Examines major themes in the work of anthropologist Gregory Bateson. Topics covered include communication, cybernetics, learning, mind, and scientific practice. Prerequisite(s): courses 1, 2, and 3; and satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior anthropology majors. Enrollment limited to 26. (General Education Code(s): W.) D. Linger

194I. Anthropology of Development. *
Explores current debates in development anthropology examining the history of the development idea and its relationship to modernity and globalization. Readings focus on practices of individuals and organizations aiming to understand the meaning of development for particular places and people. Prerequisite(s): courses 1, 2, and 3; and satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) J. The Staff

194J. Histories of Forests and Other Wild Places. *
"Wild Nature" has a history. This class offers tools for understanding the social and natural construction of wild nature. We will learn to "read" rural landscapes/ethnographically, biologically, historically, creatively, and politically. Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) A. Tsing

194K. Reading Ethnographies. F
Explores issues in the representation of culture through reading and discussing ethnographies. Recent experimental ethnographies open topics including the relation between fieldwork and writing, textual strategies, and the politics of ethnographic writing and research. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) J. Hardig

194M. Special Topics in Medical Anthropology. *
Focuses on critical issues in the social sciences of health and healing. Designed for students pursuing graduate work in medical anthropology and/or public health. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, 3, and 114. Enrollment restricted to senior anthropology majors. Enrollment limited to 15. (General Education Code(s): W.) N. Chen

194N. Comparison of Cultures. S
Seminar for upper-division students interested in theories and methodology of social and cultural anthropology. Devoted to critical discussion of different methods of comparison practiced in anthropology. Prerequisite(s): satisfaction of Subject A and Composition requirements; courses 1, 2, and 3; and enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) T. Pandey

194O. The Anthropology of Sexuality. W
Provides an anthropological approach that focuses on the way representations of sexuality are connected with a broad array of cultural and historical contexts including colonialism, kinship, the formation of policies, nationalism, rituals of exchange, and cultural borderlands. Students cannot take this course after completing another senior seminar. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 15. (General Education Code(s): W.) C. Shaw

194P. Space, Place, and Culture. *
Examines ways anthropologists have studied relationships between space, place, and culture. Covers early formulations acknowledging people in different cultural contexts ascribe particular meanings to places and to the concept of space and then traces the ways these questions have come to the fore in more recent scholarship. Will be offered in the 2005–06 academic year. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) T. The Staff

194Q. Race, Hegemony, Diaspora. S
Explores theoretical and empirical insights into "race" in relation to key concepts of hegemony and diaspora. Draws on case studies from the U.S., Europe, and Latin America to analyze nuances of racial domination and resistance and theorizes relations between race and diaspora. Prerequisite(s): satisfaction of Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) M. Anderson

194R. Behavioral Ecology in Archaeology. *
Critical overview of behavioral ecology as applied in archaeology starting with key documents in animal ecology, modern-day human forager studies, and use in human evolution and archaeological model building. Evaluates applicability to problems in human evolution, emergence of agriculture, and social complexity. Students cannot receive credit for this course and course 294R. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3; and enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) D. Gifford-Gonzalez

194S. Hearing Culture: The Anthropology of Sound. *
Explores relationships between culture and acoustic worlds—environmental, verbal, and musical—within which we live. How sound is shaped by human belief and practice and the role sound plays in cultural and social life, both past and present. Will be offered in the 2005–06 academic year. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 15. (General Education Code(s): W.) D. Breenes

194T. Poverty and Inequality, W
Through ethnographies about homelessness, food deprivation, and unemployment, examines the institutions through which poverty is recognized, the systems of morality shaping debates about need and appropriate behavior, and the effects of community responses to poverty. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2,
M. Caldwell, H. Raffles, N. Dominy, O. Najera Ramirez, N. Dominy, A. Galloway

194V. Picturing Cultures. *
A historical, analytical, and practical exploration of the uses of still and moving pictures in ethnographic representations, research, and production. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) S. Errington

194W. Evolution of Human Sensory Systems. W
Introduces mechanisms, ecology, and evolution of the human sensory system. Emphasis is comparative and examines how nonhuman primates acquire and respond to information. Topics include audition, olfaction, vision, taste, and touch. Students cannot receive credit for this course and course 294W. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) N. Dominy

194X. Women in Politics: A Third World Perspective. *
Focuses cross-culturally on the status of women in the Third World and their formal and informal participation in politics. Also discussed are organized efforts, through participation in both national and autonomous movements, for women's rights. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment restricted to senior anthropology majors. Enrollment limited to 20. (General Education Code(s): W.) The Staff

197. Laboratory Tutorial. F,W,S
Independent laboratory research on selected topics in archeology and physical anthropology. Interview with appropriate instructor required. May be repeated for credit. The Staff

197F. Laboratory Tutorial (2 credits). F,W,S
Independent laboratory research on selected topics in archeology and physical anthropology. Interview with appropriate instructor required. Enrollment restricted to anthropology majors. May be repeated for credit. D. Gifford-Gonzalez, A. Zihlman, J. Habicht Mauche, A. Galloway

198. Independent Field Study. F,W,S
Off-campus field study. Students submit petition to sponsoring agency. The Staff

199. Tutorial. F,W,S
Students submit petition to sponsoring agency. The Staff

Graduate Courses

200A. Core Graduate Course (10 credits). F
Introduces history, ethnography, and theory of cultural anthropology with emphasis on awareness of construction of anthropological canon and areas of conflict within it, leading up to contemporary debates on a variety of issues. Multiple-term course; students must enroll in both quarters to receive academic credit. Enrollment restricted to anthropology graduate students. Enrollment limited to 12. O. Najera Ramirez

200B. Core Graduate Course. W
Introduces history, ethnography, and theory of cultural anthropology with emphasis on awareness of construction of anthropological canon and areas of conflict within it, leading up to contemporary debates on a variety of issues. Multiple-term course; students must enroll in both quarters to receive academic credit. Enrollment restricted to anthropology graduate students. Enrollment limited to 20. (General Education Code(s): W.) M. Caldwell

201. Human Evolution. W
Provides an overview of the first five million years of human evolution and a framework for studying evolution and reconstructing the human past. Emphasizes that all lines of evidence must be included: hominid fossils, archaeology, paleoecology, and molecular data. Enrollment restricted to graduate students. Enrollment limited to 15. A. Zihlman

202A. Skeletal Biology. S
Focuses on human skeletal biology, the identification of elements, physiology of hard tissue formation, growth, and maintenance. Students are required to show competence in skeletal identification to pass this class. Prerequisite(s): course 102A or permission of instructor. Enrollment restricted to graduate students. Enrollment limited to 5. The Staff

202L. Video Laboratory (2 credits). S
Provides students with hands-on training with a variety of audiovisual equipment. Through lectures, demonstrations, hands-on field exercises, and review of student media exercises, students learn the fundamentals of photography, video production, and audio recording in the field. Concurrent enrollment in course 202A is required. Enrollment restricted to graduate students in anthropology. Enrollment limited to 15. The Staff

209. Life Histories. F
Examines biological and social markers of infant to mature and aged adult stages through life history. Compares and discusses timing and pattern of life history in humans across species, with examples from contemporary and historical societies. Enrollment restricted to graduate students. A. Zihlman

210. Anthropology of Movement. *
Comparative and evolutionary anatomy of human performance examines locomotor systems and their underlying structure and evolution through videos, skeletons, and dissection in a variety of mammals' primates, and humans with applications to the fossil record. Enrollment restricted to graduate students. Enrollment limited to 15. A. Zihlman

226. Taxonomy, Government, and Difference. W
Taxonomies are ways of making and organizing human beings, nature, objects, space, and time. They have histories, geographies, complex ways of traveling, and decisive material effects. In this course, we examine what some of these might be. Enrollment restricted to graduate students. Enrollment limited to 15. H. Raffles

228. Grant Writing. F
Devoted entirely to writing grant proposals. Students either work on their graduate education fellowships or their doctoral dissertation grants or both. Reading materials consist of granting agency documents plus examples of successful applications. Enrollment restricted to anthropology graduate students. Enrollment limited to 15. M. Anderson

230. Image Culture. *
Visuality as epistemology, image-consumption, and the political and representational possibilities stemming from digitalization and the World Wide Web are increasingly important issues in the humane sciences. Offers historical and critical background and the possibility of hands-on practice using visual material in current research. Enrollment restricted to graduate students. Enrollment limited to 15. S. Errington

232. Bodies, Knowledge, Practice. *
Contemporary social theory and science both focus on bodies as critical sites of inquiry and the production of knowledge. Explores these theoretical intersections and constructions of the body with new ethnographic works. Questions how race, gender, and culture are inscribed through bodily practice, imagery, and phenomenology. Enrollment restricted to graduate students. Enrollment limited to 15. N. Chan

234. Feminist Anthropology. *
Examines how feminist anthropology has created its object of knowledge: gender differentiation in cross-cultural perspective. Reading across feminist theory and ethnography, focuses on nature/culture/postcolonial debates, the intersection of gender with race and nationalism, and...
gender and transnationalism. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. A. Tsing

235. Language and Culture. S
An examination of language system and language use in relationship to social contexts of communication in Western and non-Western societies. Also examines the complex role which linguistic inquiry and models have played in broader theories of culture. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. D. Brenneman

236. On Insults. F
What is the role of insult in social and legal life (from play to jokes to ritual to war and from blasphemy to defamation to hate speech)? Emphasizes philosophical, anthropological, psychoanalytical, and legal approaches to the issues. (Also offered as Philosophy 236. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Enrollment limited to 20. J. Neu

238. Advanced Topics in Cultural Anthropology. *
Advanced topics in cultural anthropology. Current topics in anthropological theory and ethnography taught on a rotating basis by various faculty members. Precise focus of each seminar varies and will be announced by the department. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. The Staff

240. Anthropology and Poststructuralism. *
This course traces an ongoing dialogue between post-structuralist theories and texts and the disciplines of anthropology. The course will pay particular attention to the philosophy of Michel Foucault; in addition, the influences of Derrida, Levinas, Barthes, and Bourdieu will be discussed. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. L. Rolfe

242. Writing Ethnography. *
Seminar examines ethnography as a genre of writing and as a “workshop of cultural production.” Looks at changes in the anthropological genre of ethnography over the last 100 years and compares the anthropological genre with related genres. Enrollment restricted to graduate students. Enrollment limited to 15. S. Harding

243. Cultures of Capitalism. W
Introduction to selected themes in political economy, stressing the work of Marx. Topics include the development of capitalism, colonialism, dependency, world-systems, state formation, class consciousness, commodity fetishism, the nature of late capitalism, postmodernism, and the aesthetics of mass culture. Through political economy's interlocutors, raises questions about gender, race and ethnicity, and post-structuralist critiques. (Formerly Political Economy and Its Interlocutors) Enrollment restricted to graduate students. Enrollment limited to 15. L. Rolfe

244. Science, Medicine, and Technology. *
Engages in critical studies of medicine, science, and technology from an anthropological perspective. Recent ethnographic research will examine configurations of knowledge and practice with special attention to social justice, community interventions, and the “study up” of institutions. Will be offered in the 2006–07 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. N. Chen

245. Culture and Mind. *
Examines theoretical intersections of anthropology and psychology. Topics include psychoanalytic and cognitive approaches to culture theory, the “psychic unity” debate, language and cognition, cultural models, and current controversies in psychological anthropology. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. D. Linger

249. Ecological Discourses. S
Explores narratives of nature and their practical consequences in contexts over “wild places” and their resources. Readings focus on the histories of forests and on analytic frameworks—ecology, social history, interpretation, cultural studies—with which to investigate competing constructions of the environment. Enrollment restricted to graduate students. Enrollment limited to 15. A. Tsing

251. Globalization and Identity in Latin America. *
Explores theoretical and ethno-analytic analysis of globalization and transnationalism as processes that shape conditions of struggle around livelihood, culture, and identity in the Americas. Focuses on key themes of production, consumption, transnationalism, and social movements. Enrollment restricted to graduate students. Enrollment limited to 15. M. Anderson

270. History of Archaeology. F
Historical review of prehistoric archaeology from antiquarianism to the present. Emphasis on the development of archaeological theory, its relation to evolutionary and anthropological theory, and themes ongoing over time. Students cannot receive credit for this course and course 170. Enrollment restricted to graduate students. Enrollment limited to 15. D. Gifford-Gonzalez

271. Anthropology of Dead Persons. *
Cross-disciplinary examination of death and the dead person in various cultures, past and present. Topics include cultural constructions of death, dead bodies and dead persons in contemporary and archaeological perspectives, rights pertaining to dead bodies in the U.S. legal system, use of cadavers in education, forensic of dead persons in mass disasters and human rights cases, indigenous rights and repatriation. Will be offered in the 2006-07 academic year. Prerequisite(s): graduate standing in anthropology or permission of instructor. Enrollment restricted to graduate students. Enrollment limited to 15. D. Gifford-Gonzalez, A. Galloway

273. Origins of Farming. *
Survey of the ecological and archaeological evidence for the origins of plant and animal domestication in Africa, Eurasia, and the Americas. Discussion will center on the preconditions of this drastic alteration in human ecology and its consequences in transforming human societies. Students cannot receive credit for this course and course 173. Enrollment restricted to graduate students. Enrollment limited to 15. The Staff

275A. Tutorial on African Archaeology. S
Tutorial on the archaeology of Africa from the first 2.5 million years B.P. to the emergence of African commercial relations with Medieval Asia and Europe. Emphasizes critical examination of disciplinary models and assumptions in their historic and political context. Students cannot receive credit for this course and course 175A. Enrollment restricted to graduate students. Enrollment limited to 15. D. Gifford-Gonzalez

276A. Advanced Topics in North American Archaeology. *
In-depth examination of development of Native cultures in North America from end of last ice age to time of European contact. Focuses on specific regional trajectories and problems of social change. Enrollment restricted to graduate students. Enrollment limited to 15. J. Habicht Mauch

277. Tutorial on European Conquest of the Americas. F
Uses ethnographic, archaeological, and historical sources to examine clash of cultures between Native Americans and Europeans during fifteenth through nineteenth centuries. Emphasizes critical analyses of social, political, and demographic impacts of contact on Native American societies. Enrollment restricted to graduate students. Enrollment limited to 15. J. Habicht Mauch
294W. Evolution of Human Sensory Systems. W
Focuses on origins, diversity, and acuity of primates' senses with emphasis on field techniques, primate evolution and morphology, and cultural innovations in modern human society. Students cannot receive credit for this course and course 194W. Enrollment restricted to graduate students. Enrollment limited to 15. N. Dominy

297. Independent Study. F,W,S
Students submit petition to sponsoring agency. The Staff

298. Advanced Laboratory Apprenticeship. W
Supervised tutorial in specialized analytic methods in archaeology or physical anthropology. Students collaborate on laboratory research with a departmental mentor or, with advisor's consent, with researchers on or off campus, preparing a manuscript for publication or an extensive literature review. Permission of instructor required. Enrollment restricted to graduate students. May be repeated for credit. The Staff

Prerequisite(s): petition on file with sponsoring agency. The Staff

Arabic

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Program Description
For students interested in acquiring proficiency in the Arabic language, beginning level language courses are offered. The courses emphasize reading, writing, understanding, and speaking modern standard Arabic as used by educated native speakers of the language. In the beginning, the fundamental structures are emphasized with an aim toward developing the reading and writing skills and introducing the speaking and comprehension skills gradually.

Campus Language Laboratories and Placement Exams
Information on these topics can be found on page 275, under Language Program.

Lower-Division Courses

1. Instruction in the Arabic Language. F
Instruction in elementary modern standard Arabic with emphasis on the fundamentals of grammar, reading, writing, and progressing toward speaking and conversation. Prerequisite(s): course 2 or permission of instructor. The Staff

2. Instruction in the Arabic Language. W
Instruction in elementary modern standard Arabic with emphasis on the fundamentals of grammar, reading, writing, and progressing toward speaking and conversation. Prerequisite(s): course 1 or permission of instructor. The Staff

3. Instruction in the Arabic Language. S
Instruction in elementary modern standard Arabic with emphasis on the fundamentals of grammar, reading, writing, and progressing toward speaking and conversation. Prerequisite(s): course 2 or permission of instructor. The Staff

Upper-Division Courses

199. Tutorial. F,W,S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

Art

Elena Baskin Visual Arts Studios
Room E-104
(831) 459-2272
visart@ucsc.edu
http://art.ucsc.edu

Faculty and Professional Interests

Professor
PATRICK AHERNE, Emeritus
JOYCE BROSKY
Contemporary theory and criticism in the visual arts and in relationship to the practice of art in the 20th century

DOYLE FOREMAN, Emeritus
FRANK GALUSZKA
Painting, book arts

HARDY HANSON, Emeritus
FRED A. HUSSNUTT, Emeritus

NORMAN LOCKS
Photography

DOUGLAS E. McCLELLAN, Emeritus
JENNIE LIND MCDADE
Drawing, painting

KATHRYN E. METZ, Emerita
JASPER A. ROSE, Emeritus

DONALD L. WYGANDT, Emeritus
JACK ZAJAC, Emeritus

Associate Professor
E. G. CRICHTON
Intermedia, electronic arts, photography, installation

ELIZABETH STEPHENS
Sculpture, installation, video, performance, intermedia

Assistant Professor
EILTH ANDERSON
Electronic art

MELISSA GWYN
Painting, drawing

DEE HIBBERT JONES
Sculpture

JIMIN LEE
Etching, lithography, monoprinting, book arts, ukiyo-e

ED O'SBORNE
Electronic art

JENNIFER PARKER
Sculpture

LEWIS WATTS
Photography

Lecturer
SUSAN FRIEDMAN
Photography

DONALD FRITZ
Drawing, painting, and sculpture

INGEBORG GERDES
Photography

MIRIAM HITCHCOCK
Drawing, painting

GEORGE KANE
Book arts

PAUL RANGLER
Lithography

SUSAN TERRILL
Drawing, painting

RICHARD WOHLFLEIFER
Printmaking, theory

Program Description
The Art Department offers an integrated program of study in theory and practice exploring the power of visual communication for personal expression and public interaction. The department provides students with the means to pursue this exploration through courses that provide the practical skills for art production in a variety of media within the contexts of critical thinking and broad-based social perspectives.

The art program at UCSC is composed of courses in drawing, painting, photography, sculpture, printmaking, intermedia, critical theory, electronic art, and interactive technologies. The Art Department is committed to pursuing a continuing dialogue about what constitutes basic preparation in the arts while offering students experience in established practices, new genres, and new technologies. Foundation courses are open to all non-art students after priority enrollment. Art and pre-art majors have enrollment priority in lower-division studio courses until open enrollment, when restrictions are lifted, allowing students with appropriate prerequisites to enroll if space permits.

Students graduating with a major in art may become professional artists or pursue careers in such diverse areas as arts management, museum and gallery practices, communication technologies, public school teaching, media arts, and publishing. Many students who want to teach at the college level continue their education in graduate school.

Baskin Visual Arts studios provide excellent facilities for drawing, painting, installation, photography, casting, and sculptural construction, computers, and printmaking.

Declaring the Pre-Art Major
Students must declare the pre-art major in order to enroll in introductory studio courses. Students should declare
their pre-art major early in their freshman year to insure their ability to enroll in studio courses, but may declare in their sophomore year also. Juniors cannot declare pre-art. Deadlines for pre-art declaration are the same as those established by the Office of the Registrar for filing the Proposed Study Plan and Declaration of Major. M inor petition. Please note that students who have declared the pre-art major still need to follow the procedure for acceptance to the full major; a student may not graduate as a pre-art major.

Acceptance to the Art Major: Freshmen
Students may apply for admission to the major after completing at least three lower-division studio courses (not foundation courses) with a grade of B- or better. If one of these classes is graded B- or lower, the student must take another lower-division studio course and receive a B to be eligible to declare art. While completing this lower-division course work, it is critical that each student meet with a faculty adviser regarding the student’s potential to proceed to the major level.

Junior Transfer Students
Junior transfer students are accepted into the art major for fall quarter after passing a portfolio review in April. Their acceptance is contingent upon their acceptance to UCSC. Transfer students must identify themselves as potential art majors when applying to the university in order to receive information on the portfolio review deadlines and the materials required for the review. All junior transfers will be required to take Art 60, Forms and Ideas, and one art seminar in their junior year at UCSC in lieu of the foundation program requirements.

Requirements for the Art Major
The minimum requirements for the art major are completion of at least one lower-division studio course and satisfaction of the senior comprehensive requirement. Students plan their course of study in consultation with a faculty adviser by choosing an area of concentration.

Lower-Division Requirements
Students complete eight courses as follows:
- T he foundation series
  10G  2-D Foundation
  10H  3-D Foundation
- 80C Introduction to Visual Arts
- T hree courses from the following list (with a grade of B or better):
  20 Introduction to D rawing for the Major
  21 Introduction to Computer Art
  22 Introduction to Electronics for Interm edia
  23 Interm edia I
  24 Introduction to Painting Oil
  26 Introduction to Printmaking
  28 Figurative Sculpture
  30 Introduction to Photography for Art Majors
  40 Sculpture I
- Two courses from the history of art and visual culture 10-series, one with a Western focus and one with a non-Western focus; students may substitute upper-division history of art and visual culture classes for this requirement.

Art Major Planner
The following is a recommended academic plan for students to complete during their first two years as preparation for the art major.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Art 80C</td>
<td>Art 10H</td>
<td>Art 10G</td>
</tr>
<tr>
<td>(full)</td>
<td>low-dv studio</td>
<td>low-dv studio</td>
<td>low-dv studio</td>
</tr>
</tbody>
</table>

* courses from history of art and visual culture 10-series

Upper-Division Requirements
Students complete nine courses as follows:
- five upper-division studio courses in the area of focus
- 10 credits of senior studio courses or equivalent senior-level work in the area of focus
- two upper-division nonstudio courses from history of art and visual culture, film and digital media theory, or art critical theory seminars. Students may choose two upper-division courses from another department relevant to the area of focus in consultation with a faculty adviser.
- The last three quarters of course work for the major must be completed in residence at UCSC.

Comprehensive Requirement
Senior majors should meet with their faculty adviser about this requirement. Students may satisfy the comprehensive requirement with one of the following two options:
1. completing 10 credits of senior studio course work in the area of focus.
2. completing 10 credits of upper-division studio course work in the area of focus, and
   a. presenting an exhibition and, by appointment, meeting with a faculty member for review and critique of the exhibition; or
   b. submitting a portfolio and, by appointment, meeting with a faculty member for review and critique of the portfolio.

Study Abroad
The U C Education Abroad Program (EAP) offers students the opportunity for study abroad. Art majors may participate in EAP in their junior year. Pre-art majors are not approved to study abroad. Art students may not go abroad in their senior year, as the last three quarters of course work must be in residence at UCSC.

Materials Fee
Art students should be aware of the materials fee required for some studio courses. The fee is billed to the student’s account for specific course materials purchased by the Art department through the university. Fees generally range from $30 to $125 per course. Students may incur additional expense purchasing individual supplies.

Lower-Division Courses

10. Foundation Series in Art
Introduces general education students and prospective majors to theory and practice of art and contemporary discourse surrounding it. Courses 10G and 10H comprise large lecture sections that meet once a week and smaller studio sections that meet once or twice a week. Courses include both lecture and studio components and are not intended to be technique-intensive studio classes. Students must register for both lecture and studio sections.

10G. 2D Foundation, S
Introduction to two-dimensional art practice and theory. Readings and lectures address both history and contemporary contexts of 2D art practice. Covers issues of content, representation, communication, and process. In the studio, students apply concepts covered in lecture to art projects. Students are billed a materials fee. Enrollment restricted to pre-art and art majors during priority enrollment. Enrollment limited to 100. (General Education Code(s): A-J.)

10H. 3D Foundation, W
Introduction to three-dimensional sculpture, intermedia, performance art, and technologically based contemporary art. Weekly lectures and section discussions introduce historical, theoretical, and critical methods of viewing and understanding contemporary art. Studio assignments introduce students to a range of contemporary techniques and materials used to make sculptural, performative, and technologically based work. Students are billed a materials fee. Enrollment restricted to pre-art and art majors during priority enrollment. Enrollment limited to 100. (General Education Code(s): A.)

20. Introduction to D Drawing for the Major, F,W,S
Introduction to the methods, materials, and purposes of drawing to develop perceptual and conceptual skills through a series of assignments, providing various approaches to drawing as a tool for creative expression. Discussions and critiques facilitate the development of critical skills. Designed for students considering the art major. Students are billed for a materials fee. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.)

21. Introduction to C omputer Art, W,S
Basic introduction to the use of a computer as a fine art tool and medium. Addresses basic skills, concepts relevant to contemporary art theories, and practices. Provides a hands-on introduction to fundamentals of graphics, image acquisition, and manipulation and programming with demonstrations of relevant software. Students work independently and in groups. Assignments include digital image acquisition and manipulation, basic scripting, hyper-text and web publishing, and computer programming. Lectures, readings, and discussions examine new technology and technology’s relationship to contemporary culture. Students billed for a materials fee. Enrollment restricted to art, pre-art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.)

28. Introduction to Electronics for Intermediate, F
Provides basic introduction to electronic devices for use in making intermedia art. Provides hands-on experience
working with sensors, motors, switches, gears, lights, simple circuits, and hardware store devices to create kinetic and interactive works of art. Produce sculptural or installation-based projects. Demonstrations, lectures, and critical discussion of work given to develop concepts and technical skills. Students are billed a materials fee. Enrollment limited to pre-art and art majors. Enrollment limited to 20. (General Education Code(s): A.) E. Anderson, The Staff

23. Intermedia I. F,W,S
Introduction to combining media, materials, and forms to explore contemporary art practices such as installation, time-based work, performance, collaboration, and interactive activity. Assignments encourage an exploration of conscious subject matter, process, and technique. Discussions, reading handouts, and critiques help develop perceptual and conceptual skills. Skill workshops introduce new techniques. Students are billed for a materials fee. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) E. Stephens, E. Crichton, The Staff

24. Introduction to Painting: Oil. F,W,S
Introduction to medium of oil painting and to painting process. Assignments develop understanding of potential of this medium as a tool for perceptual and conceptual exploration. Slide lectures introduce assignments and are basis for class discussion of contemporary and historical art activity in the field. Students billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) J. M. O'dade, E. Anderson. M. Gwyn, G. Kane

25. Introduction to Printmaking. F,W,S
Survey of print medium: basic terminology, techniques, application of tools, materials, and conditioned history of development of printmaking. Assignments consist of individual and collaborative projects aimed at building skills and gathering technical experience. Introduction to relief printing (black and white and color), intaglio, letterpress, and interface between photography/computer and the handmade print. Exploration of print media for communication of issues including formal aesthetics, social/psychological and personal narrative. Students billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) J. M. O'dade. F. Galsuzka. M. Gwyn, The Staff

26. Introduction to Printmaking. F,W,S
Survey of print medium: basic terminology, techniques, application of tools, materials, and conditioned history of development of printmaking. Assignments consist of individual and collaborative projects aimed at building skills and gathering technical experience. Introduction to relief printing (black and white and color), intaglio, letterpress, and interface between photography/computer and the handmade print. Exploration of print media for communication of issues including formal aesthetics, social/psychological and personal narrative. Students billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) J. Lee. F. Rangell

28. Introduction to Figurative Sculpture. F
Introduction to a wide range of techniques for creating sculpture, based on and about the body/figure, through the exploration of contemporary concepts and ideas. Provides demonstrations, slide lectures, and critical discussion of work to develop concepts and technical skills. Students are billed a materials fee. (Formerly Introduction to Figure Sculpture ). Enrollment restricted to art, pre-art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) J. The Staff

30. Introduction to Photography for Art Majors. F,W,S
Introduction to photography as an art form that explores visual ideas beginning with camera-ready use, negative development, and printing. Prepares for further work in photography or for collaboration with other media in art including computer arts and two- and three-dimensional mixed media. Critically examines photographic works while reading historical and theoretical texts. Students billed for a materials fee. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) J. Watts. N. Locks

40. Sculpture I. F,W,S
Introduction to a range of concepts and forms used to make contemporary sculpture. Assignments facilitate becoming familiar with sculptural techniques and materials to enable students to visually manifest their sculptural ideas. Combines lectures and demonstrations with work time in class. Students are billed a materials fee. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. (General Education Code(s): A.) J. Parker, E. Stephens, The Staff

80. Introduction to Drawing. S
Introductory course for beginners and students not majoring in art. Covers the history of what are considered master drawings from prehistory to the present. Various media are examined and assigned in specific exercises. Course is a balance of historical study and practice through assigned homework exercises. A disciplined performance is expected. Enrollment limited to 20. (General Education Code(s): T-4-Humanities and Arts. A.) The Staff

80C. Introduction to Visual Arts. F
Focus is placed on contemporary issues in critical theory and studio practice in comparison with theory and practice in other historical contexts. Students are introduced to topics that involve the social, political, and aesthetic role of visual images in both the private and public domains. While theory and practice are addressed in the context of Western cultures, guest speakers introduce topics related to the visual practices of their cultures. Enrollment limited to 100. (General Education Code(s): T-4-Humanities and Arts. A.) The Staff

80D. Introduction to Photography. F,S
Introductory course for beginners and nonmajors. Various techniques examined and assigned in specific exercises. Work on projects using color film; this is a non-darkroom course. Examples given of photography from 1826 to the present. Balances historical study and practice through assigned homework exercises. Students billed for a materials fee. Enrollment limited to 90. (General Education Code(s): T-4-Humanities and Arts. A.) The Staff

80F. Introduction to Issues in Digital Media. F
Digital media revolutionizing ways in which artists create and exchange information. Introduces digital media through lectures, demonstrations, and exercises. Topics include networks, imaging, MIDI, interactivity, audiodubbing, and the World Wide Web. (General Education Code(s): T-6-Natural Sciences or Humanities and Arts. A.) E. Anderson, The Staff

Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

100. Gallery/Museum Management and Practices (2 credits)
Focuses on providing practical experience in all phases of exhibition design and implementation. General tasks of program operation supplemented with selective reading and written assignments designed to enhance theoretical understanding of broader issues in art administration. Includes field trips to galleries and museums as well as in-class visits by artists and arts professionals. Enrollment restricted to art, history of art and visual culture, and pre-art majors. Enrollment limited to 20. The Staff

Work moves toward individual directions in drawing. A variety of media are explored. Each student is expected to do 150 hours of drawing over the quarter. Students are billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to art majors. Enrollment limited to 20. M. May be repeated for credit. J. M. O'dade, F. Galuszka, M. Gwyn, The Staff

102. Figure Drawing. W
Focuses on drawing from the human figure and exploring the figure for the purpose of personal expression and social communication. Intended for the intermediate/advanced drawing student. Students are billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to art majors. Enrollment limited to 20. M. May be repeated for credit. (General Education Code(s): A.) J. M. O'dade, F. Galuszka, M. Gwyn

103. Intermediate/Advanced Painting. F,W,S
Continuation of the development of a basic foundation in painting with emphasis on the development of individual, experimental procedures. Students are billed for a materials fee. Prerequisite(s): course 24. Enrollment restricted to art majors. Enrollment limited to 20. M. May be repeated for credit. F. Galuszka, M. Gwyn, J. M. O'dade

104. Special Topics in Painting. F,S
Special studies in painting as announced. Students are billed for a materials fee. Prerequisite(s): courses 24. Enrollment restricted to art majors. Enrollment limited to 20. M. May be repeated for credit. J. Brodsky, F. Galuszka, M. Gwyn, J. M. O’dade

106A. Senior Studio in Drawing and Painting. W,S
An intensive studio experience for art majors, meeting three full days per week. Major emphasis is on the development of individual projects in preparation for the senior exhibition. Satisfies senior exit requirement. A and B must be taken concurrently. Students are billed for a materials fee. (One charge for both 106A and 106B.) Course is designed for senior art majors. Completion of a portfolio review required; students should complete course 103 as preparation. Courses A and B must be taken concurrently. Enrollment limited to 18. M. May be repeated for credit. F. Galuszka, M. Gwyn, J. M. O’dade
106B. Senior Studio in Drawing and Painting, W,S
An intensive studio experience for art majors, meeting three full days per week. Major emphasis is on the development of individual projects in preparation for the senior exhibition. Satisfies senior exit requirement. Students are billed for a materials fee. (Fee charged for both 106A and 106B.) Course is designed for senior art majors. Completion of a portfolio review required; students should complete course 103 as preparation. Courses A and B must be taken concurrently. Enrollment limited to 18. May be repeated for credit. F. Galuska, M. Gwyn, J. McDade

107. Mixed Media Works on Paper. *
This course stresses alternative drawing processes, techniques, and materials. Intended for the intermediate or advanced student. Students are billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) F. Galuska

107A. Outdoor Painter’s Project. *
Along with an increasing general concern to preserve our natural environment, there has been the resurgence of interest in celebrating the landscape through painting. This impulse to strengthen the bond between art and nature has provided a degree of urgency, revitalizing a tradition that had once been a simple nostalgia for a romantic and rural past. Explores the potential for meaning in outdoor painting today. Emphasis is placed on group excursions and intensive discussion that includes visiting artists. Enrollment limited to 20. The Staff

109. Intermedia II. W,S
Further investigation in combining media, materials, and forms to explore a variety of contemporary art practices. Students develop their projects thematically throughout the quarter. Assignments encourage experimentation with time and motion, text and images, collaboration, installation, performance, and interactivity. Discussions, reading handouts, and critiques further the development of perceptual and conceptual skills. Skill workshops introduce new techniques. Students billed for a materials fee. Prerequisite(s): course 23 or 29. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) E. Crichton, E. Stephens, The Staff

110. Special Topics: Interactive Art. *
Exploring interactive strategies for making art. Projects experiment with combining forms and mediums to engage an audience. Students are billed for a materials fee. Prerequisite(s): course 23 or 29. Enrollment restricted to art majors. Enrollment limited to 20. E. Crichton, E. Stephens

111. Book Arts II. F,W,S
Individual projects to complete printing and binding of small books. Taught in conjunction with course 70. Does not fulfill a requirement for the art major. Enrollment limited to 12. May be repeated for credit. G. Kane

112. Intaglio I. F
Introduces students to various methods used in making intaglio prints. Encourages individual artistic growth of imagery and technique through assignments designed to explore the medium. Includes discussion and critique of work with equal emphasis on technique and concept. Students are billed for a materials fee. (Formerly offered as Relief and Intaglio Printmaking: Intaglio.) Prerequisite(s): course 26. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) J. Lee

113. Intaglio II. W
This presentation of advanced intaglio techniques emphasizes a variety of multi-plate color printing and photo etching processes. The course concentrates on individual development in style and concept through the intaglio process. Students are billed for a materials fee. Prerequisite(s): course 26 or 112. Enrollment restricted to art majors. Enrollment limited to 20. (General Education Code(s): A.) J. Lee

114. Lithography I. F,W,S
Introduction to drawing, process, and printing of lithographs from stone. Emphasis on discovery of tonal, textural, and expressive potential from the surface of the stone, while establishing individual directions in imagery. Condensed history of the medium, technical theory, and critique in lecture and demonstrations. Students are billed for a materials fee. Prerequisite(s): course 20. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) P. Rangell

115. Lithography II. S
Continuation of course 114. Introduction of tusche wash, aluminum plates, transfers, photo-lithography (computer interface), and multiple color techniques. Emphasis on experimentation, refinement of craft and approach, defining individual imagery, and expanding scale. Further investigation of the history of the medium and contemporary practice. Students are billed for a materials fee. Prerequisite(s): course 114. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) P. Rangell

116A. Senior Studio in Printmaking. S
An intensive studio experience for majors, meeting three full days per week. Provides an opportunity for in-depth practice in all print media in preparation for the senior exhibition. In addition to individual projects, students work collaboratively and in series. Prints incorporating multiple colors and concurrent media, and utilizing a larger scale are encouraged. Readings and research are required. Satifies senior exit requirement. Students are billed for a materials fee. Completion of a portfolio review required; students complete courses 113 and 114, or 112 and 115, as preparation. Courses A and B must be taken concurrently. Enrollment limited to 18. May be repeated for credit. J. Lee, P. Rangell

116B. Senior Studio in Printmaking. S
An intensive studio experience for majors, meeting three full days per week. Provides an opportunity for in-depth practice in all print media in preparation for the senior exhibition. In addition to individual projects, students work collaboratively and in series. Prints incorporating multiple colors and concurrent media, and utilizing a larger scale are encouraged. Readings and research are required. Satifies senior exit requirement. Students are billed for a materials fee. Completion of a portfolio review required; students should complete courses 113 and 114, or 112 and 115, as preparation. Courses A and B must be taken concurrently. Enrollment limited to 18. May be repeated for credit. J. Lee, P. Rangell

117. Special Topics in Printmaking. S
Special studies in printmaking, as announced. Students are billed for a materials fee. Prerequisite(s): course 26. Enrollment restricted to art and pre-art majors. Enrollment limited to 20. May be repeated for credit. J. Lee, P. Rangell

118. Computer Art: Theories, Methods, and Practices. W
Examines computer interactivity and interface in art making through theory and practice. Students develop interactive installation and sculptural works of art. Assignments may include the acquisition and creation of digital images, two-dimensional animation, programming with M A X / M SPitter, basic electronics and sensors, and digital video and audio. Discussions, readings, and critiques address content, aesthetics, concepts, and expression as well as a practical grasp of relevant software. Students are encouraged to develop research projects and explore experimental practices. Students are billed for a materials fee. Prerequisite(s): course 21 or 109 or prior basic programming experience and permission of instructor. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) E. Anderson, The Staff

119. Digital Video. *
An exploration of the video medium including production using the digital video format. Digital video cameras will be used to produce digital source material to be manipulated in a non-linear digital editing system. Image manipulation, effects, and editing will be explored. A variety of video structures, theories, concepts, and forms will be examined through production, discussions, and viewing students’ and artists’ work. Students are billed for a materials fee. Prerequisite(s): course 21 or 22 or 23 or 80F or 118. Enrollment limited to 18. May be repeated for credit. (General Education Code(s): A.) The Staff

120. Advanced Projects in Computer Art I. S
Independent and collaborative creative projects using advanced computer methods. May include networking projects, virtual representations, interactive multimedia, installation, performance, robotics, and three-dimensional modeling. Emphasis on advanced critical and experimental approaches to computers as a unique art medium and contemporary research issues. Students are required to enroll in scheduled lab sections. Students are billed for a materials fee. Enrollment limited to 20. May be repeated for credit. E. Anderson, The Staff

121. Advanced Projects in Computer Art II. *
Independent and collaborative creative projects using advanced computer methods, which may be a continuation of projects initiated in course 120. May include networking projects, virtual representations, interactive multimedia, installation, performance, robotics, or three-dimensional modeling. Emphasis on advanced critical and experimental approaches to computers as a unique art medium, and contemporary research issues. Students are required to enroll in scheduled lab section. Students are billed for a materials fee. Enrollment limited to 20. May be repeated for credit. E. Anderson, The Staff

123. Digital Printmaking in Contemporary Art Practice. W
Addresses electronic imaging, output, and transferring as means of producing prints. Students gain knowledge and experience in using computer equipment including digital cameras, scanners, printers, and a variety of software. Investigation of conceptual and technical identities between digital image-making and traditional methods, as well as crossing over them to contemporary trends in art practice. Students are billed a materials fee. (Formerly Computer Printmaking.) Prerequisite(s): course 118. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) The Staff
126. Art of Bookmaking. * 
Introduction to production of small edition books and multiples utilizing sequential visual imaging, narrative content, and mixed media in bookmaking. Provides instruction in conceptualizing, producing, and distributing prints and multiples. Ideas encouraged in a broad range of possibilities via the format of artists' books. Materials fee will be charged for this class. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Codes: A.) The Staff

130. Intermediate Photography, F, W, S 
Continuation of course 30. Students explore visual ideas, directing their work toward individualized goals. Required work includes making photographic prints, reading historical and theoretical works, and examining of photographs. Students are billed for a materials fee. Prerequisite(s): course 30. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. L. Watts, N. Locks

131. Advanced Photography, W 
Continuation of course 130. Students produce a portfolio of photographs, read historical and theoretical works, and study photographs and other art works. Students are billed for a materials fee. Prerequisite(s): one of the following: course 130 and either course 132 or 134 or by passing 10 credits of 130. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. L. Watts, The Staff

132. Color in Photography, F, W 
Concentration on making photographic works in color. Students produce a portfolio of color photographs, read historical and theoretical works, and study photographs and other art works. Individualized projects may include work with color transparencies, etchcolor printing, color xerox, computer-generated imagery, or mixed media. Students are billed for a materials fee. May be repeated once for credit. N. Locks, L. Watts, The Staff

133A. Senior Studio in Photography, S 
An intensive studio experience, with major emphasis on the development of individual projects leading to a required senior exhibition. Satisfies senior exit requirement. Students are billed for a materials fee (one charge for both A and B). Portfolio review prior to advance enrollment required. Courses A and B must be taken concurrently. Enrollment restricted to art majors. Enrollment limited to 20. N. Locks, The Staff

133B. Senior Studio in Photography, S 
An intensive studio experience, with major emphasis on the development of individual projects leading to a required senior exhibition. Satisfies senior exit requirement. Students are billed for a materials fee (one charge for both A and B). Portfolio review prior to advance enrollment required. Courses A and B must be taken concurrently. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. L. Watts, N. Locks

134. Special Topics in Photography, F, W, S 
Special studies in photography, concentrating on specific subject matter or media. Topics may include documentary photography, landscape, alternative processes, or mixed media. Students are billed for a materials fee. Prerequisite(s): course 30. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. N. Locks, L. Watts

135. Introduction to Digital Photography, F, W 
Introduction to basic theories behind the digital production, manipulation, and output of photographic images. Through readings and production, students address major issues specific to working with images in an increasingly digital environment. Students are billed for a materials fee. Prerequisite(s): course 30. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) The Staff

136. Advanced Digital Photography, S 
A continuation of course 135 to further study the practice, theories, and criticism of the digital production, manipulation, and output of photographic images. Major issues specific to the production of digital images will be addressed through readings and discussion, including techniques and theories drawn from a course reader and a textbook on advanced Photoshop skills. A final project is required. Students are billed for a materials fee. Prerequisite(s): course 135 or portfolio review. May be repeated for credit. (General Education Code(s): A.) The Staff

139. Intermediate to Advanced Sculpture (Foundry), W, S 
This intermediate to advanced course provides the information and facilities necessary to express ideas through the indirect process of metal casting. The "lost wax" method is used to manifest ideas in sculpture. Lectures and demonstrations are combined with work time in class. Students generate sculptural forms in wax, then gate, invest, weld, chase, patina, and present at least one finished piece. Students are billed for a materials fee. Prerequisite(s): one of the following: course 28, 29, 40, or 41. Enrollment restricted to art majors. Enrollment limited to 17. May be repeated once for credit. E. Stephens, J. Parker, The Staff

140. Metal Sculpture, F, W, S 
Focus on teaching intermediate to advanced students the processes and techniques of direct metal fabrication for contemporary sculpture. Explores a range of welding, cutting, and forming techniques and processes through demonstrations, slide lectures, field trips, and studio time. Demonstrations, slide lectures, and critical discussion of work help develop technical and conceptual skills. Students are billed for a materials fee. Prerequisite(s): one of the following courses: 22, 23, 28, 29, 40, or 41. Enrollment restricted to art majors. Enrollment limited to 16. May be repeated for credit. E. Stephens, J. Parker, The Staff

141. Sculpture II, F, W 
More advanced fabrication techniques in sculpture using wood, metal, and other building and industrial materials. Techniques include basic carpentry, woodshop skills, and an introduction to the metal fabrication facilities. Demonstrations, slide lectures, and critical discussion of work help develop technical and conceptual skills. Students are billed for a materials fee. Prerequisite(s): course 23, 28, 29, 40, or 41. Enrollment restricted to pre-art, art, and history of art and visual culture majors. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) E. Stephens, J. Parker, The Staff

143. Advanced Intermedia: Three-Dimensional Approaches. * 
The investigation of constructed sculpture, site-specific installation, performance art, and work that utilizes time-based media. Students are billed for a materials fee. Prerequisite(s): one of the following courses: 23, 29, 37, or 144. Enrollment restricted to art majors. Enrollment limited to 20. May be repeated for credit. E. Cristdon, E. Stephens

144. Site Works. * 
Advanced studio art course investigating the artistic practice of site-specific works, installations, and other nontraditional art forms which explore expression through alternative contexts. Gives emphasis to the projects and issues involved in the time, space, and process (four-dimensional) based works including earthwork, site-specific installation, environmental work, and public art that are ephemeral and permanent. Students are billed for a materials fee. (Formerly Site Works: Four-Dimensional Approaches.) Prerequisite(s): one of the following courses: 109, 143, or 145. Enrollment restricted to art majors. Enrollment limited to 18. May be repeated for credit. D. H. Jones

145. Material Metaphor II. * 
Continuation of course 37. Workshops introduce further investigation of materials and techniques. Students explore diverse methods of visual communication through a series of projects that require individual research and collaborative efforts. Students are encouraged to develop projects according to their motivation, expertise, and self-assessment. Emphasis placed on contemporary studio practices of installation, students will integrate a variety of materials and metaphor within the architectural and environmental space. Students are billed for a materials fee. Prerequisite(s): course 29 or 37. Enrollment restricted to art majors. Enrollment limited to 18. D. H. Jones

146. Special Topics in Intermedia/Sculpture: Conceptual and Process-Oriented Approaches. F 
Special subjects to be offered by regular staff or visiting artists as announced. Students are billed for a materials fee. (Formerly Special Topics: Intermedia.) Prerequisite(s): one of the following courses: 23, 28, 29, or 40. Enrollment restricted to junior and senior art majors. Enrollment limited to 20. May be repeated for credit. E. Crichton, E. Stephens, The Staff

148. Special Topics in Sculpture and Public Art, F, W 
Special topics in public art, as announced, concentrating on specific aspects of subject matter and media. Students are billed for a materials fee. (Formerly Special Topics: Sculpture.) Prerequisite(s): one of the following courses: 23, 28, 29, or 40. Enrollment restricted to art majors. Enrollment limited to 20. Offered in alternate academic years. May be repeated for credit. D. H. Jones

149A. Contemporary Visual Media: Issues of Theory and Practice, W 
Through class discussions of a core of readings, selected issues in critical theory relevant to contemporary visual practices are examined. Enrollment restricted to juniors and seniors. Enrollment limited to 20. J. Brodsky

149B. Contemporary Visual Media: Issues of Theory and Practice, W 
Continuation of course 149A with emphasis on readings about visual practices related to issues of class, gender, sexuality, ethnicity, postcolonialism and postnationalism. Enrollment restricted to juniors and seniors. Enrollment limited to 20. J. Brodsky

150. Seminar in Contemporary Art. 
150A. Feminism and Visual Art. * 
Explores the impact of feminism on art practice and critical theory. Topics include the history of women's art practice, history of women's education in the visual arts, social constructions of femininity and how feminist theory has affected the way in which art is made, viewed, and evaluated. New genres are also addressed.
Individual presentations and written assignments are required. Enrollment restricted to junior and senior art majors. Enrollment limited to 24. J. McDade

150B. Ethno-American Art. *
The development of an awareness of the history of ethno-American art (such as African, Latino, Asian, and M (ide East) and contemporary ethno-American artists. Guest lectures. Enrollment restricted to junior and senior art majors. Enrollment limited to 24. (General Education Codés: A, E) T The Staff

150C. Issues in Collaboration and Interactivity. *
Explores the role of collaboration and interactivity in contemporary art practices. Emphasis placed on modes of making work in which responsibility for the activity is shared, and modes of reception in which, in various degrees, boundaries between artist and audience are breached. Enrollment restricted to art or history of art and visual culture majors. Enrollment limited to 20. J. Brodsky

151. Introduction to Gallery Management. *
Provides practical experience in all phases of an exhibition program's design and implementation including curation, registration, preparation, and publicity. The general tasks of program operation are supplemented with selected reading and written assignments designed to enhance the student's understanding of broader issues in art administration, including an introduction to the political and ethical realities professionals face. Enrollment restricted to art majors. Enrollment limited to 20. The Staff

152. Controversies in Art.
Focuses on several United States art exhibitions that have generated political and social controversy. Students will critically examine the curatorial visions, art, exhibition reviews public and institutional responses, and broader cultural, historical, and political context that surrounded the controversies. Enrollment restricted to juniors and seniors. Enrollment limited to 30. (General Education Codés: A) E. Crichton

159A. Senior Studio in Intermedia, Sculpture, and Electronic Art. S
An intensive studio experience for art majors concentrating in the areas of intermedia, sculpture, public art, installation art, electronic art, and interactive art. Major emphasis is on development of individual and collaborative projects in preparation for the senior exhibition. Readings and research required. Class discussions focus on project work and critiques, assigned reading, and the development of a written component by each student. Satisfies senior exit requirement. Students are billed for a materials fee (one charge for both 159A and 159B). Portfolio review prior to advance enrollment required. Enrollment restricted to art majors. Courses A and B must be taken concurrently. (Formerly Senior Studio in Inter-Dimensional Art. ) Enrollment limited to 18. May be repeated for credit. E. Anderson, E. Crichton, D.H. Jones, J. Parker, E. Stephens

159B. Senior Studio in Intermedia, Sculpture, and Electronic Art. S
An intensive studio experience for art majors concentrating in the areas of intermedia, sculpture, public art, installation art, electronic art, and interactive art. Major emphasis is on development of individual and collaborative projects in preparation for the senior exhibition. Readings and research required. Class discussions focus on project work and critiques, assigned reading, and the development of a written component by each student. Satisfies senior exit requirement. Students are billed for a materials fee (one charge for both 159A and 159B). Portfolio review prior to advance enrollment required. Enrollment restricted to art majors. Courses A and B must be taken concurrently. (Formerly Senior Studio in Inter-Dimensional Art. ) Enrollment limited to 18. May be repeated for credit. E. Anderson, E. Crichton, D.H. Jones, J. Parker, E. Stephens

160. Practicum for Careers in Art (3 credits). *
Prepares graduating art students for future careers in art. Enrollment restricted to art majors. Enrollment limited to 25. Offered in alternate academic years. The Staff

Studio addresses issues of race, gender, culture, personal identity, and visual representation. Examines ways identities are given visual form and communicated in fine arts and mass media. Students research ways traditionally underrepresented groups in society have been and are being represented in mass media; they then visually interpret that information in forms of visual artifacts. This process and interpretation serve as springboard to examination of expanded ideas of identity, including personal and/or family culture and history, gender, and ethnicity. Encourages use of broad range of mediums available to construct visual representations of identity. Students are billed a materials fee. Enrollment restricted to pre-art, art, film and digital media, and history of art and visual culture majors. Enrollment limited to 20. (General Education Codés: A) L. Watts

191. Teaching Apprenticeship. F, W, S
Designed for art majors at the upper-division level. Each student assists in a lower-division art course under the direct supervision of a faculty member. Students assist in technical instruction, critiques, and class discussions. May not be repeated for credit. Does not count toward upper-division major requirements. Enrollment restricted to art majors. T The Staff

192. Directed Student Teaching. F, W, S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students should have upper-division standing with a proposal supported by a faculty member willing to supervise. Students submit petition to sponsoring agency. Enrollment limited to 5. T The Staff

193. Field Study. F, W, S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by upper-division students doing part-time off-campus study. Students submit petition to sponsoring agency. Petitions may be obtained in the Art Department Office. May be repeated for credit. T The Staff

196. Senior Project. F, W, S
Student will concentrate on completing work for comprehensive exhibition under the direction of his or her art advisor, with help from other faculty as needed. Students submit petition to sponsoring agency. May be repeated for credit. T The Staff

198. Independent Field Study. F, W, S
Provides for department-sponsored independent study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students submit petition to sponsoring agency. May be repeated for credit. T The Staff

199. Tutorial. F, W, S
Individual study in area approved by sponsoring instructors. Students submit petition to sponsoring agency. May be repeated for credit. T The Staff

Graduate Courses

297. Independent Study. F, W, S
Independent study or research for graduate students. Students submit petition to sponsoring agency. The Staff

Art History

See History of Art and Visual Culture, page 258.

Digital Arts and New Media M.F.A. Program

The program explores the theory, history, and practice of digital and electronic art media, with an emphasis on collaborative work in project teams. The curriculum is interdisciplinary involving faculty from the Art, History of Art and Visual Culture, Film and Digital Media, and Theater Arts Departments and as from the Baskin School of Engineering. The Division of Physical and Biological Sciences, and the Division of Social Sciences.

The program requires two years to complete. Further information regarding the program, its admission criteria, and the application process can be found at http://digitalarts.ucsc.edu. Also, see Digital Arts and New Media M.F.A. Program, page 163.
Astronomy and Astrophysics

Astronomy Department Office
201 Interdisciplinary Sciences Building
(831) 459-2844
http://wwwastro.ucsc.edu

Faculty and Professional Interests

**Professor/Astronomer**

**Peter H. Bodenheimer**
Stellar structure, star formation

**Michael J. Bolte**
Dynamics of star clusters, ages of star clusters, chemical enrichment history of the galaxy, observations of interacting galaxies

**Jean P. Brodie**
Galaxies, instrumentation

**Harland W. Epps**
Astronomical optics and instrumentation

**Sandra M. Faber**
Galaxies, stellar populations, cosmology

**Puragra (Raja) Guhathakurta**
Faint blue galaxies, study of faint stars using multicolor CCD data, search for Kipper belt comets, gravitational lensing by galaxy clusters, HST studies of dense globular cluster cores, near infrared Tully-Fisher diagram, galactic "circus" clouds, interacting galaxies, dwarf galaxies

**Garth D. Illingworth**
Stellar and galaxy dynamics, instrumentation

**Burton F. Jones, Emeritus**

**David C. Koo**
Cosmology, birth and evolution of galaxies and quasars

**Robert P. Kraft, Emeritus**

**Claire Max**
Adaptive optics, planetary science

**Joseph S. Miller**
Active galaxies, quasi-stellar objects

**Jerry E. Nelson**
Design and construction of large telescopes, project scientist for the two Keck telescopes

**Donald E. Osterbrock, Emeritus**

**David M. Rank, Emeritus**
Infrared astronomy, instrumentation

**Jane M. Smith**
Stellar populations, chromospheric activity among late-type stars

**Steven S. Vogt**
Stellar spectroscopy, instrumentation

---

**Assistant Professor/Assistant Astronomer**

**Jason Prochaska**
Damped Lya systems in quasars, Lyman limit systems, stellar abundances, thick disk imaging of our galaxy

**Professor**

**George R. Blumenthal**
Cosmology, galaxy formation, high-energy astrophysics

**Frank D. Drake, Emeritus**

**John Faulkner**
Stellar structure, close binary stars, relativity

**Douglas N. C. Lin**
Fluid dynamics, star formation, galactic structure

**Piero Madau**
Cosmology, high-energy astrophysics

**William G. Matthews**
Galaxies, high-energy astrophysics, gaseous nebulae, comets (musk)

**Stephen E. Thorsett**
Radio astronomy, high-energy astrophysics, compact objects, relativity

**Stanford E. Woosley**
Nuclear astrophysics, stellar structure

**Associate Adjunct Professor**

**Rachel J. Dewey**
Radio astronomy, pulsar astrophysics, VLBI astrometry

**Stephen Murray**
Formation of globular clusters and dwarf galaxies and the structure and evolution of the interstellar medium in young galaxies

**Assistant Professor**

**Gregory Laughlin**
Extra-solar planets, numerical astrophysics, astrophysical phenomena of the extremely distant future

**Constance Rockosi**

---

**Professor**

**Joel R. Primack (Physics)**
Theory of fundamental particles, cosmology, astrophysics

**Research Astronomer**

**Robert B. Hanson**
Astrometry, galactic structure, and statistical astronomy

**Richard Stover**
Instrumentation, catalytic variables

**Research Physicist**

**Terry Mast**
Astronomical instrumentation

**Program Description**

The science of astronomy has the universe as its domain. Galaxies, stars, planets, and an ever-increasing variety of phenomena observed from ground- and space-based observatories are among the objects of study. Areas of special interest at UC Santa Cruz include cosmology, the formation and evolution of stars and galaxies, high-energy astrophysics, active galaxies, supernovae and nucleosynthesis, the motions of stars and galaxies, and all aspects of observational optical and infrared astronomy. Astronomers use concepts from and contribute to the development of many other scientific disciplines, including optics, mechanics, relativity, atomic and nuclear physics, applied mathematics, chemistry, geology, and meteorology. The interdisciplinary nature of astronomy, including its historical and philosophical elements, makes its study valuable to those planning careers in a variety of fields.

The Astronomy and Astrophysics Department offers a broad undergraduate curriculum that fulfills the needs of students seeking a general education but also enables students wishing to obtain a minor or major in astrophysics to study the subject in greater depth. The graduate program is intended for those with a professional interest in the subject. The interests of the faculty embrace a wide range of both theoretical and observational aspects of astronomy. Current research and course offerings include the solar system, stellar structure and evolution, stellar spectroscopy, the interstellar medium, galactic structure, active galaxies and quasars, cosmology, general relativity and gravitational radiation, the origin of the elements, infrared and radio astronomy, advanced astrophysical instrumentation, astrobiology, high-energy astrophysics, and X-ray and gamma-ray astronomy.

Graduate students have access to state-of-the-art instrument development and data reduction technology, the UCO/Lick Observatory computer network, and an unusually extensive astronomical library at the Lick Observatory headquarters on campus. Graduate students may conduct supervised research with selected telescopic facilities of the Lick Observatory on Mount Hamilton, 55 miles from Santa Cruz. The 10-meter Keck Telescope in Hawaii, the world’s largest, is administered from the UCSC campus and is used for front research by UC astronomers.

The Center for Adaptive Optics (CfAO) is also headquartered at UCSC. Education is central to the CfAO’s mission, and a key element of this is the support provided by the center to graduate students. In addition to research, the center provides interdisciplinary access to a nationwide network of scientists in astronomy and vision science.

**Undergraduate Courses**

In instruction in astronomy for undergraduates at UC Santa Cruz is designed to meet the needs of several groups of students.

Courses 2, 3, 4, 5, 8, 80A, 80B, and 80D provide a general survey of the universe as now understood from historical and modern observations, are offered for those not specializing in a scientific discipline.

Courses 11, 12, 13, 14, 16, and 18, emphasizing basic physical laws and theories as applied to astronomy, taken together provide a survey of modern astronomy for students with some facility in mathematics. Taken separately, they provide an in-depth introduction to gravitational interaction, stellar evolution, and extragalactic astrophysics. These courses are designed for students intending to major in a scientific subject, although qualified non-science majors may enroll. Prior or concurrent enrollment in a basic calculus course (Mathematics 11A or 19A) and a basic physics course (Physics 5A/L or 6A/L) is helpful but not required.
Physics is designed for Ph.D. students seeking a professional career in teaching and research. In view of the thorough preparation in mathematics and physics required for graduate study, most entering astronomy graduate students major in physics or astrophysics as undergraduates.

The suggested minimum requirements for admission to graduate standing at UCSC include the following undergraduate courses:

- Basic physics. Mechanics, wave motion, sound, light, electricity and magnetism, thermodynamics, atomic physics, and quantum mechanics (Physics 5A, 5B, and 5C).
- Intermediate level physics. Calculus (Mathematics 19A-B and 23A-B or equivalent) and statistics (Mathematics and Statistics 5).
- Intermediate level physics. Mechanics (Physics 105); electricity, magnetism, and optics (Physics 110A-B); mathematical methods in physics (Physics 116A-B-C); nuclear and particle physics (Physics 129); and quantum mechanics (Physics 139A-B).
- Intermediate level mathematics. Linear algebra (Mathematics 21), complex analysis (Mathematics 103), and ordinary and partial differential equations (Mathematics 106A and 106B).

Program Graduation

Instruction and research leading to the Ph.D. degree in astronomy and astrophysics at the upper-division level is provided by courses 112, 113, 117, and 118. Completion of course work in calculus of several variables (Mathematics 22 or 23A-B) and Physics 101A is required for these advanced courses.

Astrophysics Minor

For undergraduate students having a particular interest in the subject, a minor in astronomy and astrophysics is offered. Most students who minor in astronomy and astrophysics are majoring in another science, though majors in other fields are also possible. The minor in astronomy and astrophysics requires that students take the Physics 5 or 6 series (with associated laboratories), Physics 101A, a minimum of two courses from the Astronomy 11-18 series, and a minimum of three courses from the Astronomy 112-118 series. A senior thesis on an astronomy-related topic is also encouraged. Interested students should contact the Astronomy Department Office for further information.

Astrophysics Major

The UCSC major in astrophysics is administered by the Physics Department and combines a core physics major with advanced electives in astrophysics, an astrophysics laboratory course, and senior thesis work on a topic in astrophysics. It is a rigorous program designed to prepare students for a broad range of technical careers or for entry into graduate or professional programs. A full description of the major can be found in the physics section of this catalog.

Preparation for Graduate Work in Astrophysics

The UCSC graduate program in astronomy and astrophysics is designed for Ph.D. students seeking a professional career in teaching and research. In view of the thorough preparation in mathematics and physics required for graduate study, most entering astronomy graduate students major in physics or astrophysics as undergraduates.

The suggested minimum requirements for admission to graduate standing at UCSC include the following undergraduate courses:

- Basic physics. Mechanics, wave motion, sound, light, electricity and magnetism, thermodynamics, atomic physics, and quantum mechanics (Physics 5A, 5B, and 5C).
- Intermediate level physics. Calculus (Mathematics 19A-B and 23A-B or equivalent) and statistics (Mathematics and Statistics 5).
- Intermediate level physics. Mechanics (Physics 105); electricity, magnetism, and optics (Physics 110A-B); mathematical methods in physics (Physics 116A-B-C); nuclear and particle physics (Physics 129); and quantum mechanics (Physics 139A-B).
- Intermediate level mathematics. Linear algebra (Mathematics 21), complex analysis (Mathematics 103), and ordinary and partial differential equations (Mathematics 106A and 106B).

Graduate Program

Graduate instruction and research leading to the Ph.D. degree in astronomy and astrophysics at UC Santa Cruz since 1967. The interests of the faculty, as outlined above, embrace both theoretical and observational aspects of the field. Graduate instruction is built upon a two-year cycle of 14 one-quarter courses in astronomy and physics that are normally required of all students. Four courses are specifically required (courses 202, 205, 220A, 240A); nine courses are chosen from a list of electives (physics, galaxies, stars, etc.); and one course is a quarter of independent study with a faculty member. In addition, each student in the program must be a teaching assistant for at least one quarter. Students are also encouraged to engage in research projects under the supervision of the faculty during the early part of their graduate career. After passing a departmental preliminary examination on course material and general astronomical knowledge (usually taken by the spring of the second year) and a qualifying exam based on a proposed thesis topic (usually taken before the end of the third year), students pursue independent research leading to the doctoral dissertation.

Lower-Division Courses

2. Overview of the Universe. F, W, S
   An overview of the main ideas in our current view of the universe, and how they came about. Galaxies, quasars, stars, pulsars, and planets. Intended primarily for non-science majors interested in a one-quarter survey of classical and modern astronomy (General Education Code(s): IN, Q.) J. S. Vogt, P. GuhaTakurta, J. Miller, J. Brodie

3. Introductory Astronomy: The Solar System. F
   Properties of the solar system, the sun, solar system exploration, the physical nature of the Earth and the other planets, comets and asteroids, origin of the solar system, possibility of life on other worlds, planet formation, and search for planets beyond the solar system. Intended for nonscience majors. Courses 3, 4, and 5 are independent and may be taken separately or sequentially. (General Education Code(s): IN, Q.) A. Steinacker

4. Introductory Astronomy: The Stars. F
   Stellar evolution: observed properties of stars, internal structure of stars, stages of a star’s life including stellar births, white dwarfs, supernovae, pulsars, neutron stars, and black holes. Planet and constellation identification. Intended for nonscience majors. Courses 3, 4, and 5 are independent and may be taken separately or sequentially. (General Education Code(s): IN, Q.) M. Boite

5. Introductory Astronomy: The Formation and Evolution of the Universe. S
   The universe explained. Exotic concepts of modern cosmology presented plainly for nonscience majors. The history of the cosmos from big bang to now. How we got here. How physics determines the fate of the universe. Simple algebra and geometry needed for homework; tests do not emphasize math. Courses 3, 4, and 5 are independent and may be taken separately or sequentially. (General Education Code(s): IN, Q.) R. Dewey

8. The Violent Universe: Cosmic Catastrophes and Life on Earth. W
   An overview of current ideas of how astronomical events have influenced evolution of life on Earth. Collisional impacts, mass extinctions, dinosaur deaths, direct evidence: cratering, dealing with future impacts. Related topics: changes in planetary orbits, evolution of the sun, galaxy collisions, fate of the universe. Course intended for nonscience majors. (General Education Code(s): IN, Q.) S. Murray

11. Gravity: The Universal Glue. S
   History of gravitational theory: Copernicus, Galileo, Kepler, Newton, Einstein. Newton’s concept of space and time, laws of motion, and gravity. Einstein’s concepts of space, time, and mass in special relativity. Overview of general relativity, extreme gravity fields of black holes. Modern tests of general relativity. Proficiency in using and applying high school algebra and geometry is highly desirable; the course is for students intending science majors. (General Education Code(s): IN, Q.) J. Faulkner

12. Stars and Stellar Evolution. W
   An introduction to observational facts and physical theory pertaining to stars. Topics include the observed properties of stars and the physics underlying those properties, stellar atmospheres, stellar structure and evolution. It is recommended that students have completed a minimum of high school algebra and physics course intended principally for science students. Offered in alternate academic years. (General Education Code(s): IN, Q.) S. Wooley

   An introduction to modern cosmology and extragalactic astronomy. Topics include the origin of the universe, Big Bang cosmology, expansion of the universe, dark matter, properties of galaxies and active galactic nuclei, and very energetic phenomena in our own and other galaxies. It is recommended that students have completed a minimum of high school algebra and physics course intended principally for science majors. (General Education Code(s): IN, Q.) D. Koo

14. Observational Astronomy. *
   An observational introduction to the night sky. Naked-eye and digital observations of the moon, planets, stars, nebulae, and galaxies are used to understand astronomical phenomena. Topics range from planetary orbits to cosmology. A minimum of high school algebra and geometry is highly recommended. An understanding of mathematics at the Math 2 level is desirable. Enrollment limited to 20. (General Education Code(s): IN, Q.) R. Dewey

16. Life in the Universe. *
   Large-scale habitability of the universe, role of forces of nature, laws of physics after inflation: galactic and stellar evolution, including relativistic considerations of interstellar travel; signal detection techniques with application to the detection of extraterrestrial life. Introductory algebra required. Some knowledge of logarithms and bases recommended. Enrollment limited to 50. Offered in alternate academic years. (General Education Code(s): IN, Q.) L. D. Doyle

   Overview of our solar system and those recently discovered around nearby stars. Topics include formation of planets, structure of planets, moons and rings, asteroids and comets, ground-based and space-based observations, and physical processes. Prerequisite: completion of high school algebra and physics recommended; course intended for science majors. (General Education Code(s): IN, Q.) C. Max

80A. The Space-Age Solar System. W
   Exploration of the solar system during the space age: the early history of rocket development, the Apollo program and the exploration of the moon, studying the earth from space, and the planets of the solar system as revealed by...
unmanned spacecraft. Intended for nonscience majors. (General Education Code(s): T2-N Natural Sciences, Q.)

D. Lin

80B. Light, Color, and Vision, S
Covers a variety of optical and visual phenomena, including the nature of light, optical effects in the atmosphere, the camera and photography, simple optical instruments, the human eye and vision, binocular vision, color, and color perception. A course in high school algebra is recommended as preparation. (General Education Code(s): T2-N Natural Sciences, Q.) J. N dien

80D. Historical Astronomy, *
Historical development of astronomical thought, from stone megaliths to the expanding universe; Western astronomy from ancient Greece to the twentieth century; prehistorical and non-Western astronomy; role of astronomy in development of modern science; political, social, and cultural aspects of astronomy. Offered in alternate academic years. (General Education Code(s): T2-N Natural Sciences.) S. Tho rsett

Upper-Division Courses

112. Physics of Stars, F
The leading observational facts about stars as interpreted by current theories of stellar structure and evolution. Spectroscopy, abundances of the elements, nucelosynthesis, stellar atmospheres, stellar populations. Final stages of evolution, including white dwarfs, neutron stars, supernovae. Prerequisite(s): Mathematics 22 or 23A, Physics 5B or 6B, and 101A. J. Faulkner

113. Physical Cosmology, W
A physical examination of our evolving universe: The Big Bang model; simple aspects of general relativity, particle physics in the early universe, production of elements, tests of geometry of the universe, and formation and evolution of galaxies and large-scale structure. (Prerequisite(s): Mathematics 22 or 23A, Physics 5B or 6B, and 101A. P. Madau

117. High Energy Astrophysics, S
Theory and practice of space and ground-based x-ray and gamma-ray astronomical detectors. High energy emission processes, neutron stars, black holes, observations of x-ray binaries, pulsars, magnetars, clusters, gamma-ray bursts, the x-ray background. High energy cosmic rays, neutrino and gravitational-wave astronomy. Prerequisite(s): Mathematics 22 or 23A, Physics 5B or 6B, and 101A. Offered in alternate academic years. S. Tho rsett

118. Physics of Planetary Systems, *
Determination of the physical properties of the solar system, its individual planets, and extraterrestrial planetary systems through ground-based and space-based observations, laboratory measurements, and theory. Theories of the origin and evolution of planets and planetary systems. Prerequisite(s): Mathematics 22 or 23A or 23B, Physics 5B or 6B, and 101A. Offered in alternate academic years. (General Education Code(s): Q.) P. Bodenheimer

135. Astrophysics Advanced Laboratory, *
Introduction to the techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Offered in some academic years as a multiple-term course: 135A in fall and 135B in winter, depending on astronomical conditions. (Also offered as Physics 135. Students cannot receive credit for both courses.) Prerequisite(s): Physics 133 and at least one astronomy course. Intended primarily for juniors and seniors majoring or minoring in astrophysics. D. Dowey

135A. Astrophysics Advanced Laboratory (3 credits), F
Introduction to techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Intended primarily for juniors and seniors majoring or minoring in astrophysics. Offered in some academic years as a single-term course 135 in fall, depending on astronomical conditions. (Also offered as Physics 135A. Students cannot receive credit for both courses.) Prerequisite(s): Physics 133 and at least one astronomy course. D. Dowey

135B. Astrophysics Advanced Laboratory (2 credits), W
Introduction to techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Intended primarily for juniors and seniors majoring or minoring in astrophysics. Offered in some academic years as a single-term course 135 in fall, depending on astronomical conditions. (Also offered as Physics 135B. Students cannot receive credit for both courses.) Prerequisite(s): Physics 133 and at least one astronomy course. D. Dowey

171. General Relativity, Black Holes, and Cosmology, F
Special relativity is reviewed. Curved space-time, including the metric and geodesics, are illustrated with simple examples. The Einstein equations are solved for cases of high symmetry. Black hole physics and cosmology are discussed, including recent developments. (Also offered as Physics 171. Students cannot receive credit for both courses.) Prerequisite(s): Physics 105, 110B, and 114B. A. Aguirre

199. Tutorial, F,W,S
The Staff

Graduate Courses

202. Electromagnetism and Plasma Physics, W
Topics in classical radiation: multipole radiation, synchrotron and Cerenkov radiation, Compton scattering, bremsstrahlung, stimulated and coherent emission, diffraction and scattering. Topics in plasma physics: plasma waves, D ebye length, adiabatic invariants, wave propagation in plasmas, Landau damping, two-stream instability. (Also offered as Physics 213. Students cannot receive credit for both courses.) Offered in alternate academic years. H. Haber

204A. Physics of Astrophysics I, F
Lagrangian and Hamiltonian dynamics, perturbation theory, action angle variables, classical field, elasticity, kinetic theory, statistical mechanics, quantum mechanics, density matrix, quantum field theory, equation of state. Enrollment restricted to graduate students. Offered in alternate academic years. D. Lin

204B. Physics of Astrophysics II, *
Fluid mechanics, equation of motion, inviscid and viscous flow, boundary layers, turbulence, compressibility, sound and non-linear waves, heat and momentum transport, instabilities, magnetohydrodynamics, Alfven waves, antipolar diffusion, plasma physics, stability. Enrollment restricted to graduate students. Offered in alternate academic years. J. Prochaska

205. Introduction to Astronomical Research, F
Lectures by UCSC faculty on current areas of astronomical and astrophysical research being carried out locally. Enrollment restricted to graduate students. H. Epps

207. Future Directions/Future Missions, W
Examines possible key science goals for the next decade, such as planet detection, galaxy formation, and "dark energy" cosmology; the means for addressing these goals, such as new space missions and/or ground-based facilities and the political, technical, and scientific constraints on such research. Looks at the role of the Decadal Survey. Examines a few existing programs (D EEP, ALMA, SNAP N, G ST) as examples. Enrollment restricted to graduate students. G. Illingworth

210. Radiation Astrophysics, W
Explores how physical conditions in astrophysical objects can be diagnosed from their spectra. Discussion topics include how energy flows determine the thermal state of radiating objects and how the physics of radiative transfer can explain the emergent spectral characteristics of stars, accretion disks, Lyman-alpha clouds, and microwave background. Enrollment restricted to graduate students. G. Laughlin

212. Dynamical Astronomy, F
Surveys dynamical processes in astrophysical systems on scales ranging from the planetary to the cosmological, stability and evolution of planetary orbits, scattering processes and the few-body problem, processes in stellar clusters, spiral structure and galactic dynamics, galactic collisions, and evolution of large-scale structure. Enrollment restricted to graduate students. G. Laughlin

214. Structure Formation in the Universe, S
Course builds upon course 240C (offered in alternate years) and covers a similar set of topics with a larger emphasis on first stars and black holes, galaxy formation, the physics of the intergalactic medium, and high-redshift sources. Enrollment restricted to graduate students. P. Madau

220A. Stellar Structure and Evolution, F
Survey of stellar structure and evolution. Physical properties of stellar material. Convective and radiative energy transport. Stellar models and evolutionary tracks through all phases, comparison with observations. Enrollment restricted to graduate students. P. Bodenheimer

220B. Star and Planet Formation, W
Theory of star formation. Interpretation of observations in star forming regions. Theory and observations of protoplanetary disks. Origin and evolution of the solar nebula, formation and evolution of the terrestrial planets and the giant planets. Prerequisite(s): course 220A. Offered in alternate academic years. P. Bodenheimer

220C. Advanced Stages of Stellar Evolution and Nucleosynthesis, S
The evolution of massive stars beyond helium burning; properties of white dwarf stars; physics and observations of novae, supernovae, and other high energy stellar phenomena; nuclear systematics and reaction rates; the origin and production of all the chemical elements. Prerequisite(s): course 220A. Enrollment restricted to graduate students. Offered in alternate academic years. W. Woodey

222. Planetary Science, *
Gross dynamical and chemical properties of solar system, interior structure, plate tectonics, atmospheric structure, structure and evolution of giant planets, generation of magnetic fields, planet-satellite tidal interaction, planetary rings, comets, meteorites, formation and long-term stability of solar system. Enrollment restricted to graduate students. Offered in alternate academic years. D. Lin
224. Origin and Evolution of the Universe. *
Introduction to the particle physics and cosmology of the very early universe: relativistic cosmology, initial conditions, inflation and grand unified theories, baryosynthesis, nucleosynthesis, gravitational collapse; hypotheses regarding the dark matter and consequences for formation of galaxies and large scale structure. (Also offered as Physics 224. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Offered in alternate academic years. The Staff

225. Physics of Compact Objects. *

226. General Relativity. *
Develops the formalism of Einsteins general relativity, including solar system tests, gravitational waves, cosmology, and black holes. (Also offered as Physics 226. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Offered in alternate academic years. A. Aguirre

230. Low-Density Astrophysics.
Fundamental physical theory of gaseous nebulae and the interstellar medium. Ionization, thermal balance, theory and observation of emission spectra. Interstellar absorption lines, extinction by interstellar dust. Ultraviolet, optical, infrared, and radio spectra of gaseous nebulae. Offered in alternate academic years. J. Prochaska

231. Astrophysical Gas Dynamics. *

233. Physical Cosmology. *
Survey of modern physical cosmology, including Newtonian cosmology, curved space-times, observational tests of cosmology, the early universe, inflation, nucleosynthesis, dark matter, and the formation of structure in the universe. Prerequisite(s): course 202. Offered in alternate academic years. G. Blumenthal

235. Numerical Techniques. *
Gives students theoretical and practical grounding in the use of numerical methods and simulations for solving astrophysical problems. Topics include N-body, SPH and grid-based hydro methods as well as stellar evolution and radiative transport techniques. Enrollment restricted to graduate students. G. Laughlin

237. Accretion in Early and Late Stages of Stellar Evolution. *
Theories of spherical accretion, structure and stability of steady-state accretion disks, and the evolution of time-dependent accretion disks. Applications of these theories to the formation of the solar system as well as the structure and evolution of dwarf nova and X-ray sources are emphasized. Offered in alternate academic years. D. Lin

240. Galactic and Extragalactic Stellar Systems. *

240B. Galactic and Extragalactic Stellar Systems. *
Galaxy formation and evolution from observations of intermediate-to-high redshift galaxies (z > 0.5-5). Completeness of accurate catalogs and field galaxies. Foundation from classic papers on distant galaxies. Recent discoveries of radio and sub-mm measurements. Impact of AGNs and QSOs. Overview of modeling approaches. Identify theoretical and observational issues. Enrollment restricted to graduate students. G. Illingworth

240C. Galactic and Extragalactic Stellar Systems. *

253. Stellar Dynamics. *
Kinematics and relaxation of stellar systems. Potential and orbital theories. Dynamics of globular clusters, spiral and elliptical galaxies. Dynamical friction, mergers, and galactic cannibalism. Galaxy clustering in the early universe. Offered in alternate academic years. D. Lin

257. Modern Observational Techniques. *
Astronomical telescopes and detectors. Observational survey techniques. The reduction of observations. Machine shop practice in instrument construction. Offered in alternate academic years. M. Bolte

260. Instrumentation for Astronomy. *
Introduction to astronomical instrumentation for infrared and visible wavelengths. Topics include instrument requirements imposed by dust, atmosphere, and telescope optical, mechanical, and structural design principles and components; electronic and software instrument control. Imaging cameras and spectrographs are described. Offered in alternate academic years. Enrollment restricted to graduate students. J. Nelson, T. Mast

275. Radio Astronomy. *
Theory and practice of radio telescopes, radiometers, and data handling systems: Principles of aperture synthesis. Theory of continuum and line radio emission mechanisms, and application to actual astronomical observations. Galactic radio sources, quasars, and pulsars. Offered in alternate academic years. S. Throsett

289. Special Topics in Astrophysics.
Occasional courses in particular areas of current interest.

289C. Adaptive Optics and Its Application. *
Introduction to adaptive optics and its astronomical applications. Topics include effects of atmospheric turbulence on astronomical images, basic principles of feedback control, wavefront sensors and correctors, laser guide stars, how to analyze and optimize performance of adaptive optics systems, and techniques for utilizing current and future systems for astronomical observations. Enrollment priority given to graduate students. Prerequisite(s): Physics 110 and 152, or permission of instructor. Enrollment priority given to graduate students. Offered in alternate academic years. C. Max

292. Seminar (no credit). F, W, S
Seminar attended by faculty, graduate students, and upper-division undergraduate students. The Staff

297. Independent Study. F, W, S
Independent study or research for graduate students who have not yet begun work on their theses. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. The Staff

Students submit petition to sponsoring agency. The Staff
DOUGLAS R. KELLOGG, Molecular, Cell, and Developmental Biology
Coordination of Cell Growth and Cell Division

R. SCOTT LOXEY, Chemistry and Biochemistry
Organic chemistry; combinatorial synthesis, biotechnology, molecular biology

ROBERT A. LUDWIG, Molecular, Cell, and Developmental Biology
Plant microbe interactions, photosynthesis, genetic recombination in plants

PRADEEP K. MADHANAK, Chemistry and Biochemistry
Bioinorganic chemistry; design of antibiotic drugs, modeling of active sites of metalloenzymes, design of catalysts for hydrocarbon oxidation, studies on intermediates in non-heme oxygenase chemistry; design of N-O donors for photodynamic therapy

GLENN L. MILLHAUSER, Chemistry and Biochemistry
Electron spin resonance; nuclear magnetic resonance; melanocortin receptor signaling; agouti proteins; prion peptide synthetics

HARRY F. NOLLER, Molecular, Cell, and Developmental Biology
Ribosomes; RNA structure and function; RNA-protein interactions

CLIFTON A. POODRY, Biology

THOMAS W. SCHIELE, Chemistry and Biochemistry
Biomedical magnetic resonance spectroscopy; magnetic resonance imaging; nuclear magnetic resonance spectroscopy; biophysical chemistry

WILLIAM G. SCOTT, Chemistry and Biochemistry
Structure and function of RNA; proteins, and their complexes

WILLIAM T. SULLIVAN, Molecular, Cell, and Developmental Biology
Genetics; cell biology; development of Drosophila embryos

LINCOLN TAITZ, Molecular, Cell, and Developmental Biology
Plant development; light regulation of stomatal opening

FRANK J. TALAMANTES, Emeritus

JOHN W. TANKUN, Molecular, Cell, and Developmental Biology
Transcriptional regulation; molecular genetics of Drosophila development; regulation of gene expression

ALAN M. ZAHLER, Molecular, Cell, and Developmental Biology
Molecular biology, splice site selection; and alternative pre-mRNA processing

MARTHA C. ZUNIGA, Molecular, Cell, and Developmental Biology
Molecular, cellular, and developmental biology of the immune system

Program Description
Research at the macromolecular, molecular, and atomic levels is revolutionizing our understanding of the fundamental processes of life. Students interested in joining this search are best prepared by undertaking course work in biology, chemistry, physics, mathematics, and computer science. Toward this end, an undergraduate major in biochemistry and molecular biology (BM B) is offered by faculty who are actively engaged in research on biological systems.

Students who declare the BM B major earn a bachelor of science degree. The BM B major constitutes an integrated curriculum of basic instruction in biology, chemistry, mathematics, and physics, followed by the opportunity to pursue advanced study in specialized areas of interest. In modern, well-equipped laboratories, distinguished faculty are engaged in frontier research. The Departments of Chemistry and Biology at the University of California, Berkeley, host a very active seminar series of national and international scientists in which advanced undergraduates are encouraged to participate.

The BM B program features close faculty-student interaction, small upper-division classes, stimulating learning environments, and opportunities for independent research and study. Students majoring in BM B are encouraged to become involved in research under the guidance of a faculty sponsor. Many students participating in this aspect of the program have made important contributions to the scientific literature.

Given the wide scope and interdisciplinary nature of this program, a considerable degree of flexibility has been incorporated into the major. All prospective majors should consult the Department of Chemistry and Biochemistry to be assigned a BM B adviser as early as possible. Junior transfer students or others with questions should consult the Department of Chemistry and Biochemistry to arrange programs. Advisor to students majoring in BM B are encouraged to become involved in research under the guidance of a faculty sponsor. Many students participating in this aspect of the program have made important contributions to the scientific literature.

The following is a recommended academic plan for students to complete during their first two years as preparation for the biochemistry and molecular biology major.

Program Elective
One elective course is selected from the following list. Students should be sure to plan for completing appropriate prerequisites.

Biochemistry and Molecular Biology 110, Biochemistry Laboratory

Requirements for the B.S. Degree

Core Courses
Chemistry 1B/M and 1C/N, General Chemistry Laboratory

Biology 20A and 20B, Introductory Biology Sequence

Biology 20L, Experimental Biology Laboratory

Mathematics 1A-B, 11A-B, and 22, Calculus Physics 5A/L, 5B/M, and 5C/N; or 6A/L, 6B/M, and 6C/N; or 112A/L, 112B/M, and 112C/N.

Biology 105, Genetics

Biology 110, Cell Biology

Biology 115, Eukaryotic Molecular Biology

Chemistry 108A/L and 108B/M; or 112A/L, 112B/M, and 112C/N.

Biology 163A and 163B, Physical Chemistry

Biochemistry and Molecular Biology 100A, 100B, and 100C.

Biochemistry and Molecular Biology 100A and 100B, and 100C.

Electives

The following is a recommended academic plan for students to complete during their first two years as preparation for the biochemistry and molecular biology major.

Year Fall Winter Spring
1st Math 1A or 19A
Chem 1B/M
Math 22
Gen ed

Math 1B or 19B
Chem 1B/M
Chem 1C/N
Gen ed

Chem 108B/L
Chem 108B/M
Biol 105

Phys 6A/L
Phys 6B/M
Phys 6C/N

Bio 20B
Bio 20L

Laboratory Elective
One laboratory course selected from the following list is required. Students should be sure to plan for completing appropriate prerequisites.

Biochemistry and Molecular Biology 110, Biochemistry Laboratory

Majors Fee
Biochemistry and molecular biology majors should be aware of the majors fee required for some laboratory courses. The fee is billed to the student's account, for specific laboratory materials purchased by the Department of Chemistry and Biochemistry through the university. Fees generally range from $20 to $40 per course. Students may incur additional expense purchasing individual supplies.

Lower-Division Courses

80A. Understanding Drugs. F

Scientific information on prescription and non-prescription drugs and drugs of abuse is presented. Covers basic

Comprehensive Requirement
Students have two options for fulfilling the senior comprehensive requirement: (a) achieving a score at or above the 50th percentile on the Graduate Record Examination (GRE) Biochemistry, Cell, and Molecular Biology Subject Test, or (b) completing a senior thesis sponsored or cosponsored by a faculty member affiliated with the biochemistry and molecular biology program.

Program Planning Notes
Students who do not begin the lower-division requirements during their first year may have difficulty completing the program within four years. Transfer students may also have problems completing the program within the usual time, depending upon whether or not equivalent courses have been taken at their previous institutions. The department adviser works closely with students interested in pursuing the major to insure that they begin the program immediately and follow the appropriate steps toward its completion.

It is strongly recommended that students avail themselves of the opportunities to obtain firsthand research experience through either independent study or senior thesis research. A tutorial course or a senior thesis research course may not be substituted for the required laboratory elective.

A number of graduate courses in biochemistry and molecular biology are offered by the biology, chemistry, and biochemistry programs. Advanced undergraduates with the necessary background may take one or more of these courses with the consent of the instructor; however, graduate courses may not be substituted for the required elective courses.

Major Disqualification Policy
All biochemistry and molecular biology majors are covered by the biology major disqualification policy, which limits the number of times a student may receive a No Pass, D, and/or F in the introductory biology sequence and still remain a biological sciences major and which also limits the number of times a student may receive a No Pass, D, and/or F in upper-division biology courses. Students should refer to the Biological Sciences section on page 130 for more information.

Materials Fee
Biochemistry and molecular biology students should be aware of the materials fee required for some laboratory courses. The fee is billed to the student's account for specific laboratory materials purchased by the Department of Chemistry and Biochemistry through the university. Fees generally range from $20 to $40 per course. Students may incur additional expense purchasing individual supplies.

Lower-Division Courses
pharmacological concepts, the underlying science behind various disorders and the drugs that are used to treat these disorders. Some drugs covered include common pain relievers, allergy and respiratory drugs, vitamins, gastrointestinal drugs, contraceptives, caffeine, drugs for mental illness, diet drugs, alcohol, drugs in sports, and drugs of abuse. (General Education Codes: T2-Natural Sciences.)

G. Eberhart

Upper-Division Courses

100A. Biochemistry. F
Fundamentals of molecular biology, structure and function of nucleic acids, and protein structure. Designed for students preparing for research careers in biochemistry and molecular biology. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s): Chemistry 108B and 108M or 112C and 112N; Biology 20A; Biology 105 strongly recommended as preparation. M. Ares

100B. Biochemistry, W
Covers enzyme mechanisms, kinetics, regulations, membrane composition and structure, specialized membrane functions, active transport and electro-chemical storage, excitable membranes and neurotransmitters, membrane receptors and sensory transduction mechanisms. Lecture 3-1/2 hours; discussion: 1-1/4 hours. R. Ludwig

100C. Biochemistry, S
Biochemistry: intermediary metabolism and bioenergetics. How enzymatically catalyzed reactions are organized and regulated; how energy from molecules is extracted for chemical work. Lecture: 3-1/2 hours; discussion: 1-1/4 hours R. Ludwig

110. Biochemistry Laboratory, S
An introduction to the major techniques used in the isolation and characterization of biological components. Laboratory: 8 hours; lecture: 1-1/4 hours. Students are billed a materials fee. O. Einarsdottir

Bioinformatics

See Engineering, page 195.

Biological Sciences

225 Sinshimer Laboratories
(831) 459-2209
http://www.bio.ucsc.edu

Ecology and Evolutionary Biology
A308 Earth and Marine Sciences
(831) 459-5358

Molecular, Cell, and Developmental Biology
225 Sinshimer Laboratories
(831) 459-4986
Undergraduate Advising
103A Thimann Laboratories
(831) 459-4143
http://www.biology.ucsc.edu/ug

Faculty and Professional Interests

Molecular, Cell, and Developmental Biology Emeritus Faculty

Harry Beevers
Charles Daniel
Robert Edgar
Henry Hegard
Kivie Moldave
Clifton A. Poody
Frank J. Talamanes
Howard H. Wang

Scott Lokey (Chemistry and Biochemistry)
Organic chemistry; combinatorial synthesis, biotechnology, molecular biology

Todd Lowe (Computer Engineering)
Experimental and computational genomics, nRNA gene finders, DNA microarrays to study the biology of Archaea

Karen Ottmann (Environmental Toxicology)
Environmental responses of pathogenic bacteria

Carol Rohl (Biomolecular Engineering)
Protein design, protein structure and function prediction, protein-protein interactions

William G. Scott (Chemistry and Biochemistry)
Structure and function of RNA, proteins, and their complexes

Fitnar Yildiz (Environmental Toxicology)
Microbiology, molecular genetics, genomics, the mechanism of resistance of survival of Vibrio cholerae

Zhiwu Zhu (Environmental Toxicology)
Molecular mechanisms of metal homeostasis

Ecology and Evolutionary Biology

Giacomo Bernardi
Fish biology, phylogenetics, evolution

Mark H. Carr
Marine ecology, applied marine ecology

Daniel P. Costa
Physiological ecology of marine mammals and birds

Donald Croall
Foraging ecology of marine birds and mammals, island conservation/evology

William Jackson Davis
Environmental and marine science policy, neuroethology

Daniel F. Doak
Conservation biology, population biology, plant-animal interactions

Laurel R. Fox
Terrestrial population and community ecology, plant-animal interactions

Lynda J. Goff
Algal symbiosis, host-parasite relationships, molecular evolution

Bruce E. Lyon
Behavioral ecology, evolutionary ecology, avian ecology

Charles L. (Leo) Ortiz
Physiology of marine mammals, physiological integration, physiology of cetacean

Ingrid M. Parker
Plant ecology, pollination, plant-pathogen interactions, biological invasions

Grant H. Pigdon
Molecular population genetics, ecological genetics, marine invertebrates and fishes

Donald C. Potts
Coral reef ecology, genetics, evolution, and geological history; marine biodiversity, tropical biology, global change, and remote sensing

Peter T. Rainford
Marine ecology, evolutionary ecology, experimental design, applied ecology

Barry Snervo
Animal behavior, evolution, physiological ecology

John N. Thompson
Co-evolution, evolutionary ecology and genetics of species interactions, organization of biodiversity

Terrie M. Williams
Vertebrate locomotor and thermoregulatory physiology; marine biodiversity; comparative vertebrate energetics, exercise physiology

---
Ecology and Evolutionary Biology Emeritus

RALPH BERGER

WILLIAM DOYLE

RALPH HINEGARDNER

JEAN LANGENHEIM

BUREN LEBOUF

A. TODD NEWBERRY

JOHN PEARSE

JAMES ESTES (Adjunct Professor, Ecology and Evolutionary Biology and Ocean Sciences)

M. ARINE SCIENCES, COMMUNITY ECOLOGY

A. RUSSELL FLEGAL (Environmental Toxicology)

Elemental cycles in terrestrial and aquatic systems, isotope geochemistry, environmental toxicology

GREG GILBERT (Environmental Studies)

Disease ecology, conservation biology, tropical forest ecology, microbial ecology

TERRANCE GOSSLER (Ecology and Evolutionary Biology)

Systematic biology, phylogenetics, biogeography of nudibranch mollusks

DANIEL HARDER (Ecology and Evolutionary Biology)

 Floristic inventory of Indochina and central Africa, biogeography, plant systematics

KAREN D. HOLL (Environmental Studies)

Restoration ecology, conservation biology, landscape ecology

PAUL L. KOCH (Earth Sciences)

Isotope biogeochemistry, vertebrate palaeontology

RAFAEL KUDELA (Ocean Sciences)

Ecological modeling and remote sensing, satellite oceanography, phytoplankton ecology, and harmful algal blooms

DEBORAH K. LEOURNEAU (Environmental Studies)

Agroecology, tropical biology, insect-plant interactions, biological control as an alternative to chemical pesticides

MARC S. MANGEL (Engineering)

Mathematical modeling of biological phenomena, especially the evolutionary ecology of growth, aging, and longevity; quantitative issues in fishery management; mathematical and computational aspects of disease

MARY W. SILVER (Ocean Sciences)

Biological oceanography, marine plankton, midwater ecology

DONALD R. SMITH (Environmental Toxicology)

Organismal responses and therapeutic treatment of toxins

ROBERT VRIJENHOEK (Adjunct Professor, Ecology and Evolutionary Biology)

KERSTIN WASSO (Ecology and Evolutionary Biology)

Evolutionary ecology, invasion biology, conservation science

JONATHAN ZEHR (Ocean Sciences)

Aquatic microbial ecology, biological oceanography

Biological Sciences Lecturers

MICHAEL S. DALBEY

BALDO MARINOVIC

LINDA OGRÉN

JILL THOMPSON

MARY ZAVANELLI

General Program Description

The biological sciences have entered into an exciting new era in which phenomena that once seemed insoluble mysteries—such as embryonic development, the functions of the brain, and the dynamics of ecosystems—are now yielding their secrets as the technology to study them becomes more and more sophisticated. From molecular biology, with its potential to revolutionize medicine and agriculture, to ecology, with its lessons for the sustainable management of the environment, biologists are fully engaged in meeting the challenges of the future, helping to improve the quality of human life and to preserve habitats and biodiversity. Thus, it is no surprise that the biological sciences are at the heart of many of today’s most pressing intellectual and social concerns.

The Departments of Ecology and Evolutionary Biology and Molecular, Cell, and Developmental Biology offer a broad spectrum of courses that reflect the exciting new developments and directions in the field of biology. An outstanding group of faculty, each with a vigorous, internationally recognized research program, are available to teach courses in their specialties as well as core courses for the major. Areas of research strength within the departments include RNA molecular biology, molecular and cellular aspects of genetics and development, neurobiology, endocrinology, immunology, microbial biochemistry, plant biology, animal behavior, physiology, evolution, ecology, and marine biology. UCSC is unique in the UC system in providing exceptional opportunities for undergraduate research, allowing students to interact one-on-one with faculty and other researchers in a laboratory or field setting.

Biological Sciences Majors

Students may plan a program that leads to one of several B.A. or more advanced B.S. degrees. The latter are more appropriate for students planning to go on to graduate programs or to medical, dental, or veterinary schools. Students may choose from the following major options:

- Biology B.A. (general)
- Biology B.S. (general)
- Ecology and evolution B.S.
- Health sciences B.S.
- Marine biology B.S.
- Molecular, cell, and developmental biology B.S.
- Neuroscience and behavior B.A.
- Neuroscience and behavior B.S.
- Plant sciences B.S.
- Biochemistry and molecular biology B.S. (administered in conjunction with the Chemistry and Biochemistry Department; see page 145.)
- Environmental studies/biology combined B.A. (administered in conjunction with the Environmental Studies Department; see page 226.)
- Bioinformatics B.S. (administered in conjunction with the School of Engineering; see page 190.)

Advising undergraduate students, with the consent of faculty supervisors, has access to extensive departmental laboratory facilities for independent research. Fieldwork draws on a remarkable variety of terrestrial habitats, as well as ready access to Monterey Bay and the open Pacific. Marine studies are supported by a coastal facility with running seawater, with a research vessel available for offshore work. Año Nuevo Island, north of Santa Cruz, is the site of extensive behavioral studies of marine mammals. Hospitals, convalescent, and physical therapy centers, veterinary clinics, and other enterprises in the vicinity of the campus provide the opportunity to pursue field projects and internships comparable to on-the-job training. This array of opportunities for directed independent study enables biological science majors to enhance their upper-division programs to reflect and strengthen their own interests and goals in the sciences.

Education Abroad Opportunities

The U.C. Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. The biological sciences departments encourage interested students to participate. Many programs are available in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

There are excellent programs for biological science students in Costa Rica, Australia, New Zealand, the United Kingdom, Denmark, and Germany, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Heldon spring and fall quarters at the Monterey Bay Research Station, this program gives students experience with hands-on field research, offers a homestay program, and carries credit for two upper-division biology courses. The University of Queensland (Australia) offers an intensive, full-semester marine science program, which includes a stay at a research station on the Great Barrier Reef, near shelled mangrove and seagrass habitats. Molecular, cell, and developmental biology majors and premedical students might want to consider the Human Biology Program at the Panam Institute in Denmark. This program is taught in English for advanced students planning careers in medicine or biomedical research.

Students interested in study abroad need to get an early start on their basic science requirements, including general and organic chemistry, math, and introductory biology (20A, 20B, 20C) and must declare their major prior to applying to go abroad. Visit the EAP office as soon as possible to begin planning, and seek advice about your schedule from the biological sciences undergraduate adviser and/or faculty adviser.

Prerequisites for the Biological Sciences

The introductory biology sequence, Biology 20A or 21A, 20B, and 20C, is prerequisite to virtually all upper-division biology courses. Biology 20A has a prerequisite of Chemistry 1B, and thus students cannot enroll in course 20A until they have completed Chemistry 1B. Therefore, it is essential for students considering a major in the biological sciences to start chemistry as soon as possible. Students who have not taken Chemistry 1B but have passed the placement exam may begin the introductory sequence with Biology 20C. The entire introductory biology sequence should be taken the first and second year, concurrently with or following the general chemistry sequence (Chemistry 1B/M and 1C/N).

The biology placement examination is given each quarter and must be taken in order to enroll in any biology courses. Students who do not pass the placement exam must take course 3, Concepts in Biology, before taking courses 20A, 20B, and 20C. An Advanced Placement score of 3+ or biology course credit from
another college may waive the placement exam requirement; consult with an academic adviser to determine if you qualify.

The Mathematics Department offers a placement exam several times a year. Biological science majors are expected to take this exam. If the results indicate a need for precalculus, students need to take M Mathematics 3 as soon as possible. Students with even less preparation may need to take college algebra at another institution.

The Chemistry Department also offers a placement exam. Students are encouraged to take the chemistry placement exam at either summer orientation or at the start of their first quarter. Completing Chemistry 1B is the prerequisite to enrolling in Biology 20A.

The biological science majors require one of the following organic chemistry combinations: Chemistry 108A/L and 108B/M or 112A/L, 112B/M, 112C/N.

Course Substitution/Transfer Credit Policy

At least half of the upper-division courses (Biology 100–190) required for each major must be taken through the biological sciences department at UCSC, not as transfer credits from another department or institution. Transfer students are advised to contact the Biological Sciences Undergraduate Advising Office before enrolling in numerous upper-division courses at other institutions.

For more information on transferring courses to UCSC, please consult the Biological Sciences Undergraduate web site at http://www.biology.ucsc.edu/ug.

A maximum of one upper-division course requirement may be met with a research-based independent study or graduate-level UCSC biology course or a course offered by another UCSC department.

Class Size

The biological sciences departments, in conjunction with the other science departments, are committed to maintaining small class sizes. The course 20 introductory sequence and the upper-division core courses such as Biochemistry, Genetics, and Cell Biology are offered at least twice a year (and often during the summer as well), allowing class sizes to remain relatively small compared to other UC campuses. Sections for course 20L are limited to 20 students. Enrollment in other more specialized courses is even lower, and all laboratory courses are limited to a maximum of 25 students per section. Multiple course offerings and relatively small class sizes are also true for the mathematics, chemistry, and physics courses required for biological science majors.

Declaration Process for Biological Sciences Majors

Declaration guidelines for biology majors can be found on the Biological Sciences Undergraduate web site at http://www.biology.ucsc.edu/ug.

Comprehensive Requirement

All majors in the biological sciences require a comprehensive requirement. This requirement can be satisfied in one of the following ways:

• by receiving a passing score on the biology comprehensive examination, administered by the Biological Sciences Department each quarter;

• by completing a senior thesis or a senior essay. Information on the scope and content of senior essays and theses should be obtained from the faculty member who agrees to sponsor the work. Essays and theses (in duplicate) should be submitted to the Biological Sciences Advising Office by the deadline, approximately three weeks before the end of the graduating quarter. See the Biological Sciences Undergraduate web site or the advising office for more information including exact deadline dates;

• by achieving a Graduate Record Examination score at or above the 50th percentile on the Biology Subject Test or the Biochemistry, Cell, and Molecular Biology Subject Test. Reports of GRE scores must be submitted to the Biological Sciences Advising Office before the last day of the graduating quarter;

• by obtaining an MCAT score at or above the 50th percentile on the biological sciences section. Reports of MCAT scores must be submitted to the Biological Sciences Advising Office before the last day of the graduating quarter.

See the individual majors for additional comprehensive requirements specific to each major. More detailed information is available on the undergraduate web site at http://www.biology.ucsc.edu/ug.

Letter Grade Policy

For all students entering UCSC in fall 2001 and later, all courses used to satisfy any of the biological sciences majors must be taken for a letter grade.

Major Disqualification Policy

The biological sciences departments have adopted a major disqualification policy that is intended to encourage students to take their performance in the introductory biology sequence seriously and to make a strong effort to pass the introductory courses.

Students who receive more than one No Pass, D, and/or F in the combined three-quarter sequence of Biology 20A, 20B, and 20C will not be permitted to take any other course in that sequence or to major in any of the biological sciences majors. Students who receive more than one No Pass, D, and/or F in course 20L, Experimental Biology Laboratory, will not be permitted to enroll again in course 20L nor to major in any of the biological sciences majors. In addition, students will not be permitted to enroll in any upper-division biology course in which they have received more than one No Pass, D, and/or F.

Students may appeal their disqualification within the appeal period by submitting a letter to the biological sciences undergraduate adviser. This appeal must be filed no later than 15 days from the date the disqualification notice was mailed, or the 10th day of classes in the quarter of their disqualification, whichever is later. The advising office will subsequently notify the student, the college, and the Office of the Registrar of the decision, no later than 15 days after the filing of the appeal.

A student who has been disqualified from the major may, no earlier than three months from the date of the disqualification, petition to be reinstated. This application will be considered only if there is substantial new evidence that the student is capable of making normal progress in the major.

This policy took effect in fall 1997 and applies to all biological sciences majors, regardless of when they declared their major or first enrolled, based on performance in courses taken in fall quarter 1997 or after. A No Pass, D, or F received prior to fall 1997 will not count against a student, but any No Pass, D, or F received for fall 1997 or later will count under this policy.

Academic Advising

Academic advising is available at the biological sciences undergraduate advising office. Students should take full advantage of this opportunity and should keep in frequent touch with the office to stay informed about late announcements of courses, changes in scheduling, and opportunities for special study.

The advising office provides the Biological Sciences Undergraduate web site (http://www.biology.ucsc.edu/ug), which contains substantial advice and information pertinent to students’ most frequently voiced questions. Each student in the major should review the information posted on the web site for further assistance, contact the advising office.

Transfer Students

The faculty encourages applications from transfer students in the biological sciences. It is very important for transfer students to complete prerequisite courses before transfer, especially precalculus and general chemistry. Students should also take an introductory biology sequence, calculus, and, if possible, organic chemistry. Transfer students who have completed an entire introductory biology sequence with laboratory are considered to have completed equivalent material to Biology 20A, 20B, and 20C. Prospective transfer students should review the transfer guidelines at http://www.biology.ucsc.edu/ug or contact the undergraduate advising office for further information.

Sample Schedule Planners

Plan One is for freshmen placing into Chemistry 1A, Mathematics 3, and Biology 3.

Plan Two is for freshmen placing into Chemistry 1A, Mathematics 11A, and Biology 20.

Plan Three is for freshmen placing into Chemistry 1B, Mathematics 11A, and Biology 20, starting the introductory sequence with Biology 20A.

Plan Four is for freshmen placing into Chemistry 1B, Mathematics 11A, and Biology 20, starting the introductory sequence with Biology 20C.
Plan Four

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
<td>Math 118</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Bio 20C</td>
<td>Math 11A</td>
<td>Biol 20B</td>
</tr>
<tr>
<td>(core)</td>
<td></td>
<td>Biol 20A</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 10BA/L</td>
<td>Chem 10BB/M</td>
<td>Elective</td>
</tr>
<tr>
<td>(soph)</td>
<td>Bio 105</td>
<td>Elective</td>
<td>Biol 100</td>
</tr>
<tr>
<td>gen ed</td>
<td></td>
<td>gen ed</td>
<td></td>
</tr>
</tbody>
</table>

Plan Five is for freshmen with AP credit or desiring a more challenging schedule.

Plan Five

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
<td>Math 22</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Math 11A</td>
<td>Math 11B</td>
<td>Biol 20B</td>
</tr>
<tr>
<td>(core)</td>
<td></td>
<td>Biol 21A</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 112A/L</td>
<td>Chem 112B/M</td>
<td>Chem 112C/N</td>
</tr>
<tr>
<td>(soph)</td>
<td>Bio 105</td>
<td>Bio 206</td>
<td>Bio 100</td>
</tr>
<tr>
<td>gen ed</td>
<td></td>
<td>gen ed</td>
<td></td>
</tr>
</tbody>
</table>

Graduate Programs

The Biological Sciences Departments have two graduate programs offering doctorate and master's degrees in ecology and evolutionary biology and molecular, cell, and developmental biology.

Ecology and Evolutionary Biology

The graduate program in ecology and evolutionary (EE) biology at UC Santa Cruz is one of the premier programs in the country. This is due to the quality and commitment of the faculty, the long-standing tradition of the University of California, and the unique environment of the Santa Cruz campus. UC Santa Cruz has been singularly blessed with varied and easily accessible marine and terrestrial resources for research. UC SC is ideal for marine research—having its own marine laboratory, a fleet of boats, and one of the most active scientific diving programs in the country. In close proximity to pinniped rookeries at the UC Reserve at Ano Nuevo, the campus is located on Monterey Bay, which has the largest concentration of marine research programs in the country. In addition to state-of-the-art departmental laboratories, students have full access to the Molecular Ecology and Evolutionary Genetics (MEEG) facility and other analytical laboratories of the UCSC Institute of Marine Sciences.

Terrestrial biologists have access to all of California's natural environments through the University of California Natural Reserve System; the diverse habitats on UCSC's 2,000-acre campus itself (mixed redwood forest, fossil and dune associations, rolling pasture land, and chaparral) and on several adjacent preserves, the UCSC experimental Farm and Garden; extensive Southern Hemispheric plantings in the UCSC Arboretum; and greenhouses and associated laboratory facilities. More than two-thirds of our faculty participate in field studies throughout the Pacific Basin (from Alaska to Antarctica), in Pacific Rim nations (in Latin America, the Far East, and Australia), and beyond.

The program in ecology and evolutionary biology is comprised of four core tracks: (1) population and community ecology, (2) evolutionary biology, (3) physiology and behavior including marine and terrestrial animals, and (4) systematics and biodiversity.

Degree Requirements for the Program in Ecology and Evolutionary Biology

Ph.D. Requirements

Students must take Biology 250A and 250B in the first year. Biology 279 must be taken fall quarter of the first year; Biology 293 is required four quarters thereafter. Biology 294 must be taken every quarter that the student is in residence. Each Ph.D. student must complete at least two quarters as a teaching assistant during their graduate career.

During fall of the second year, students take a comprehensive examination. This is a two-part exam, written and oral, the goal of which is to examine the student's breadth and depth of knowledge of evolution, ecology, physiology, behavior, organismal, and general biology. A committee is comprised of four examiners selected by each student and his/her supervisor. Each student's area of research, together with the stated goal of the exam, should guide the composition of his/her committee.

During the sixth term, the student submits a dissertation research proposal to his/her dissertation committee and must defend it in a three-hour oral examination before the dissertation committee. The student advances to candidacy only after completing all course work, passing the written and oral portions of the comprehensive examination, writing, and defending a dissertation research proposal, and presenting a candidacy seminar on his/her proposed research.

The student must submit his/her doctoral dissertation to the dissertation committee for tentative approval at least 60 days before presenting a formal, public doctoral research seminar. Also, the student must meet with the dissertation committee to defend the thesis at least one week prior to the public seminar. Before the dissertation is accepted for signature by the dissertation committee, at least one chapter must be submitted as a paper (not an abstract) to a refereed journal for publication.

M.A. Requirements

In addition to course work identified by the advisory committee or adviser, each student will be required to take Biology 279, two quarters of Biology 293, Biology 294, and the appropriate lab course when in residence at the university (not in the field); and Biology 297, as needed, to come up with 15 credits. Biology 250A and 250B are recommended but not required.

The student must submit his/her thesis draft to the thesis committee for tentative approval at least 60 days before presenting a formal, public research seminar. Also, the student must meet with the thesis committee to defend the thesis at least one week prior to the public seminar. At that time, the committee may sign the cover page of the student's dissertation. There is no requirement, but it is highly recommended, that at least one thesis chapter be submitted as a paper (not an abstract) to a refereed journal for publication.

Molecular, Cell, and Developmental Biology

The program in molecular, cell, and developmental biology (MCDB) biology leads to either the Ph.D. or the M.A. and is designed to prepare students for careers in research, teaching, and biotechnology. Current research in MCDB biology focuses on such topics as the structure and function of RNA, gene expression, signaling, cell division, development, and pathogenesis. A major focus of the department is the Center for Molecular Biology of RNA.

Degree Requirements for the Program in Molecular, Cell, and Developmental Biology

Ph.D. and master's students complete the graduate core courses Biology 200A, 200B, and 200C, in the first year. Additional undergraduate courses required to strengthen the student's background may be assigned by the advisory committee during the initial advising meeting.

Typically, these courses are Biochemistry 100A and Biology 115. Students are required to participate in lab research meetings and departmental seminars every quarter.

First-year Ph.D. students complete three 10-week laboratory rotations. Students choose their rotation laboratories in consultation with the Graduate Advisory Committee. The lab rotations give students a chance to learn about the diverse fields and methods of inquiry and to interact with members of the department. At the end of each quarter, students present a short talk to the department on their rotation project. At the end of spring quarter, students consult with rotation faculty to identify a permanent thesis laboratory.

Second-year Ph.D. students are required to submit two proposals—one on their proposed thesis work and a second on an unrelated MCDB research topic. The Ph.D. Qualifying Exam, taken in spring quarter of the second year is an oral exam taken before 30 credits are completed. The exam is comprised of three internal reviewers and one external reviewer. Once the qualifying exam is passed, students, in consultation with their faculty advisor, select a committee to consult with in the development of their thesis. This committee monitors the student's progress and ultimately approves the final draft of the student's dissertation. In spring of the third year, students are advanced to candidacy following presentation of their research to the department in a seminar.

Ph.D. requirements

• Completion of thesis research resulting in a dissertation of individual work
• Completion of any advanced graduate course work required by Graduate Advisory Committee
• Completion of two quarters in two different courses of service as a teaching assistant
• Completion of two graduate-level electives
• Presentation of thesis defense in departmental seminar

M.A. requirements

Acceptance to the master's program requires a faculty sponsor. Interested applicants must contact faculty directly and procure sponsorship before beginning the application process.

• Graduate core courses
• Write a master's thesis based on original research
• Defend thesis in a departmental seminar

General Biology Majors and Minor

The general biology majors permit flexibility, but demand careful attention to one's own interests and plans. Each student should select courses on the basis of up-to-date information in consultation with a biology faculty adviser whose interests reflect the student's interests.

General Biology B.A. Major Requirements

Introductory Requirements

• Biology 20A, 20B, and 20C
• Chemistry 1B/M and 1C/N
• Chemistry 108A/L and 108B/M or 112A/L, 112B/M, and 112C/N
• Mathematics 11A-B or 19A-B
• Physics 7A/L and 7B/M or two courses with laboratories from the Physics 6A/L, 6B/M, and 6C/N sequence

**Advanced Requirements**

A total of eight upper-division biology courses, as follows:

- 100, Biochemistry, or Biochemistry and Molecular Biology 100A, 100B, and 100C, Biochemistry (upon completion of the series, Biochemistry and Molecular Biology 100C may be used to satisfy one elective.)
- 105, Genetics
- 175, Evolution
- Students must complete one upper-division biology course that includes regular laboratory or fieldwork.
- Students must fulfill the major distribution requirement, which includes one course from each of the following groups:
  - Physiology: 113, 125, 130/L, 131/L, 132, 133/L, 135/L, 166

**General Biology B.S. Major Requirements**

The requirements for the biology B.S. follow a similar pattern to those for the biology B.A., but are more rigorous to ensure a stronger level of scientific preparation. Students need to follow the requirements below to complete the B.S. program (differences with the B.A. program are noted).

**Introductory Requirements**

- Biology 20A, 20B, and 20C
- Chemistry 1B/M and 1C/N (same as for B.A.)
- Chemistry 108A/L and 108B/M or Chemistry 112A/L, 112B/M, and 112C/N
- Mathematics 11A-B or 11A-B and 22 (one additional calculus course required for the B.S.)
- Physics 6A/L, 6B/M, and 6C/N (Physics 7A/B option does not apply for the B.S.)

**Advanced Requirements**

A total of nine upper-division biology courses are required (two additional courses for B.S.), including two upper-division laboratory courses (one additional upper-division laboratory course for B.S.).

**General Biology Minor Requirements**

In addition to the introductory biology, chemistry, mathematics, and physics (as listed above), students are required to take a total of five upper-division biology courses including 100, 105, and the three distribution requirement courses; one must include a laboratory. There is no minor comprehensive requirement for the minor. Please contact the Biological Sciences undergraduate Advising Office for further information.

---

**Ecology and Evolution Major**

**Program Description**

The ecology and evolution major provides students with interdisciplinary skills necessary for understanding and solving complex problems in ecology, evolution, behavior, and physiology. While some of these disciplines focus on molecular or chemical mechanisms, they all address questions on larger spatial and temporal scales that can be applied to important environmental problems, including genetic and ecological aspects of conservation biology and biodiversity. Students majoring in ecology and evolution will receive a B.S. degree based on an integrated series of courses providing breadth in fundamental areas of biology and allied sciences that enhance understanding of evolutionary and ecological processes. The curriculum also recommends a total of four upper-division courses and three courses that includes one in cytology and molecular biology disciplines.

**Ecology and Evolution Major Requirements**

**Introductory Requirements**

- Biology 20A, 20B, and 20C
- Chemistry 1B/M and 1C/N
- Chemistry 108A/L and 108B/M
- Applied Math and Statistics 2 or 7 (required)
- Environmental Toxicology 120 (required)
- Mathematics (11A and 11B)
- Physics 7A/L and 7B/M or two courses from the 6-series, laboratories

**Advanced Requirements**

A total of nine upper-division courses, two must include laboratory or fieldwork.

- Core (sophomore and junior years)
  - 100, Biochemistry, or Biochemistry and Molecular Biology 100A, 100B, and 100C, Biochemistry (upon completion of the series, Biochemistry and Molecular Biology 100C may be used to satisfy one elective.)
  - 105, Genetics
  - 150, Ecology
  - 175, Evolution
- Physiology (junior year); one of the following:
  - 110, Cell Biology
  - 131/L, Animal Physiology Laboratory
  - 132, Comparative Physiology of Vertebrates
  - 133/L, Exercise Physiology Laboratory
  - 166, Plant Physiology
- Organism-type courses (junior year); one of the following:
  - 119/L, Microbiology Laboratory
  - 136/L, Invertebrate Zoology/Laboratory
  - 138/L, Biology and Ecology of Vertebrates Laboratory
  - 168/L, Systematic Botany of Flowering Plants Laboratory
  - 170/L, Marine Botany Laboratory
- Electives: three additional courses chosen from the following:

**Ecology and Evolution Concentrations**

In addition to the six upper-division courses listed above (four core courses, physiology, organism-type course, students must take at least three additional upper-division courses, including a field or laboratory methods course. Students wishing to concentrate on ecology, behavioral ecology, physiological ecology, or evolution should at a minimum, take the following additional courses. All students who anticipate going to graduate school and taking the GRE should consider taking course 110, Cell Biology.

**Behavioral Ecology**

- One methods course (e.g., 141, Ecological Field Methods, Laboratory; or 144/L, Ornithology Field Studies)
- 140, Behavioral Ecology
- Electives

**Ecology**

- One methods course (e.g., 161/L, Kelp Forest Ecology Laboratory; or 169/L, Plant Ecology Laboratory)
- One of the following: 140, Behavioral Ecology; 152, Community Ecology; 160, Marine Ecology; or 169, Plant Ecology
- Electives

**Physiological Ecology**

- Three physiology courses including 110, Cell Biology, and one methods course (e.g., 131/L, Animal Physiology Laboratory; or 133/L, Exercise Physiology Laboratory)
- Electives

**Evolution**

- One methods course with laboratory (e.g., 176/L, Molecular Ecology and Evolution Laboratory; 187/L, Molecular Biotechnology Laboratory)
- 107, Population Genetics
- 176/L, Molecular Evolution Laboratory
- Electives

**Ecology and Evolution B.S. Major Planner**

This plan is designed for transfer students.

**Junior Transfer Course Sequence**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td>Chem 108A/L</td>
<td>Chem 108B/M</td>
<td>Biol 100</td>
</tr>
<tr>
<td>(r)</td>
<td>Biol 105 elective</td>
<td>Biol 150 elective</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>Biol 175 elective</td>
<td>Arts 7 elective</td>
<td></td>
</tr>
<tr>
<td>(r)</td>
<td>thesis elective</td>
<td>thesis elective</td>
<td></td>
</tr>
</tbody>
</table>

**Health Sciences Major**

The B.S. major in health sciences is designed for students interested in careers in medicine or biomedical research and satisfies the admission requirements for most U.S. medical schools. It is based on the existing B.S. degree in molecular, cell, and developmental biology, with similar core course requirements in chemistry, physics, and math. Students are required to take five courses directly relevant
to human health in addition to genetics, biochemistry, and cell biology. Students in this program must also fulfill Spanish language and health care internship requirements.

Health Sciences B.S. Major Requirements

Introductory Requirements
- Biology 20A (or 21A), 20B, and 20L
- Chemistry 1B/M and 1C/N
- Chemistry 108A/L and 108B/M or 112A/L, 112B/M, and 112C/N
- Mathematics 11A-B or 19A-B and 22 (three quarters of calculus)
- Physics 6A/L, 68/M, and 6C/N

Advanced Requirements
A total of eight upper-division biology courses, as follows:
- Four core courses:
  100, Biochemistry, or Biochemistry and Molecular Biology 100A, 100B, and 100C, Biochemistry 105, Genetics
  110, Cell Biology
  130/L, Human Physiology/Laboratory
- Three of the following lecture courses:
  111, Immunology
  113, Mammalian Endocrinology
  114, Cancer Cell Biology
  115, Eukaryotic Molecular Biology
  119, Microbiology
  120, Development
  125, Neuroscience
  179, Advanced Natural Development
  132, Comparative Physiology of Vertebrates
  133, Exercise Physiology
  135/L, Anatomy of the Human Body/Laboratory
  145/L, Human Anatomy/Laboratory
  188, Advanced Women's Health

- Internship Requirement: Biology 189, Health Science Internship. The student must participate in a community health care service activity approved by the health sciences internship coordinator. Credit may be earned over multiple quarters.
- Language Requirement: Spanish 1–4 or the equivalent, and one quarter of Spanish for health care workers (Spanish 5M).

Health Sciences B.S. Major Planners
The following is a recommended academic plan for students to complete during their first two years as preparation for the health sciences major. Plan One is for students committed to the major.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>core</td>
<td>gen ed</td>
<td>Biol 20A</td>
</tr>
<tr>
<td></td>
<td>Biol</td>
<td>gen ed</td>
<td>Math 118</td>
</tr>
<tr>
<td>2nd</td>
<td>Biol 20B</td>
<td>Math 22</td>
<td>Chem 108A/L</td>
</tr>
<tr>
<td></td>
<td>Chem 1B/M</td>
<td>Chem 108B/M</td>
<td>Chem 110</td>
</tr>
<tr>
<td>3rd</td>
<td>Span 1</td>
<td>Span 2</td>
<td>Span 3</td>
</tr>
<tr>
<td></td>
<td>Phys 6A/L</td>
<td>Phys 4B/M</td>
<td>Biol 32</td>
</tr>
<tr>
<td>4th</td>
<td>Span 4</td>
<td>Span 5</td>
<td>Biol 189</td>
</tr>
<tr>
<td></td>
<td>Biol 169</td>
<td>Biol 130/L</td>
<td>Biol 189</td>
</tr>
</tbody>
</table>

Biological Sciences 135

Marine Biology B.S. Major Requirements

Program Description
UCSC is situated within five miles of Monterey Bay and its great diversity of coastal marine ecosystems: natural reserves, state, federal, and private marine research institutions and resource management agencies. These resources, combined with on-campus computing and analytical facilities and the Long Marine Laboratory, make UCSC an exceptional campus for the study of marine biology and its application to coastal conservation and management. Descriptions of nearby environments, institutions, and facilities are available through the Ecology and Evolutionary Biology Department web site at http://www.biology.ucsc.edu/eeb/index.html.

The marine biology major is designed to introduce students to marine organisms and the biological and physical processes that affect these organisms, their populations, and their coastal and oceanic ecosystems. The emphasis is on basic principles that help us understand the processes that shape life in marine environments. The marine biology major is a demanding program that offers a B.S. degree and requires several more courses than the general biology B.A. major.

Marine Biology B.S. Major Requirements

Introductory Requirements
The lower-division course requirements are designed to provide a good introduction to biology as well as the foundation in chemistry, mathematics, and physics fundamental to the study of biology.
- Biology 20A, 20B, and 20C
- Chemistry 1B/M and 1C/N
- Chemistry 108A/L and 108B/M or 112A/L, 112B/M and 112C/N
- Applied Mathematics and Statistics 7 or 5 (preferred) or Environmental Toxicology 120 (statistics)
- Mathematics 11A-B or 19A-B (calculus)
- Physics 7A/L and 7B/M or two courses from the 6-series with laboratories

Advanced Requirements
- 100, Biochemistry, or Biochemistry and Molecular Biology 100A, 100B, and 100C, Biochemistry (upon completion of the series, Biochemistry and Molecular Biology 100C may be used to satisfy one elective)
- 105, Genetics
- 115, Evolution
- Ocean Sciences 101, The Marine Environment
- One ecology course (if more than one of these courses are taken, the additional credit may be applied to the upper-division elective requirement described below)
- 150, Ecology, or 160, Marine Ecology

Two courses selected from the following list (if more than two of these courses are taken, the additional credit may be applied to the upper-division elective requirement described below).
- 136/L, Invertebrate Zoology/Laboratory
- 137/L, Ichthyology/Laboratory
- 139/L, Biology of Marine Mammals/Laboratory
- 176/L, Marine Ecology and Evolution/Laboratory
- 187/L, Molecular Biotechnology/Laboratory

Biochemistry and Molecular Biology 100C, Biochemistry

Comprehensive Requirement
The comprehensive requirement for the marine biology major is the same as for the general biology major with the following exceptions: a score of 70 or above the 60th percentile is required on the Graduate Record Examination Biology Subject Test. The Biochemistry, Cell, and Molecular Biology Subject Test does not fulfill the requirement. More information is available from the advising office.

Molecular, Cell, and Developmental Biology Major

Program Description
The molecular, cell, and developmental (MCD) biology major is designed for students interested in medical or other professional graduate programs and those preparing for careers in biotechnology industries. This major is more structured than the general biology major and requires that students pay careful attention to the prerequisites required for upper-division biology courses.

Molecular, Cell, and Developmental Biology B.S. Major Requirements

Introductory Requirements
- Biology 20A, 20B, and 20C
- Chemistry 1B/M and 1C/N
• Chemistry 108A/L and 108B/M or 112A/L, 112B/M, and 112C/N
• Mathematics 11A-B or 19A-B and 22 (three quarters of calculus)
• Physics 6A/L, 6B/M, and 6C/N

Advanced Requirements
A total of nine upper-division biology courses, as follows:
• Four core courses
  100, Biochemistry or Biochemistry and Molecular Biology 100A, 100B, and 100C, Biochemistry (upon completion of the series, Biochemistry and Molecular Biology 100C may be used to satisfy one elective.)
  105, Genetics
  110, Cell Biology
  115, Eukaryotic Molecular Biology
• Three of the following lecture courses
  111, Immunology
  113, Mammalian Endocrinology
  114, Cancer Cell Biology
  119, Microbiology
  120, Development
  125, Neuroscience
  130L, Human Physiology/Laboratory
  166, Plant Physiology
  175, Evolution
• Two of the following laboratory courses
  100L, Biochemistry Laboratory
  105L, Eukaryotic Genetics Laboratory
  105M, Microbial Genetics Laboratory
  109L, Yeast Molecular Genetics Laboratory
  116L, Eukaryotic Molecular Biology Laboratory
  119L, Molecular Microbiology Laboratory
  120L, Development Laboratory
  128L, C. elegans Nucleic Genetics Laboratory
  130L, Human Physiology/Laboratory
  185/L, Hughes Undergraduate Research Laboratory
  186/L, Undergraduate Research in MCD Biology Laboratory
  187L, Molecular Biotechnology Laboratory
  190, Biochemistry and Molecular Biology
  110, Biochemistry Laboratory

* Biology 130L meets either one lecture or one laboratory requirement, but not both.

Neuroscience and Behavior Majors
Program Description
Neuroscience, the study of the nervous system and behavior of animals, is a frontier area in biology, touching psychology on the one hand and computer science on the other.

The neuroscience and behavior majors provide students with rigorous preparation for graduate studies and research in the fields of neuroscience and behavior. The brain and determinants of behavior are studied at all levels, from biological molecules to individual nerve cells to functioning organisms to social behavior. These majors emphasize the interrelationship between the two fields, building on a common core of general and biological science course work. Students select a pathway in either behavior or molecular neuroscience. Rigorous course work is supplemented by opportunities for hands-on laboratory and field course and independent research.

Neuroscience and Behavior B.A. Major Requirements
Introductory Course Requirements
• Biochemistry or Biochemistry and Molecular Biology 100A, 100B, and 100C (upon completion of the series, Molecular Biology 100C may be used to satisfy one elective.)
• 105, Genetics
• 110, Cell Biology
• 125, Neuroscience
• 140, Behavioral Ecology

Advanced Course Requirements
Five upper-division core courses to include:
• 100, Biochemistry or Biochemistry and Molecular Biology 100A, 100B, and 100C
• 105, Genetics
• 110, Cell Biology
• 125, Neuroscience
• 140, Behavioral Ecology

Plus additional elective courses chosen from one of two areas of concentration:
Molecular Neuroscience Pathway (five courses)
• 115, Eukaryotic Molecular Biology
• 126, Advanced Molecular Neuroscience
• One of the following molecular/development courses:
  120, 128, or 135L
• One of the following physiology or psychology courses:
  Biology 130L, 132, Psychology 121, or 123
• One of the following biology or laboratory courses:
  100L, Biochemistry Laboratory
  105L, Eukaryotic Genetics Laboratory
  105M, Microbial Genetics Laboratory
  109L, Yeast Molecular Genetics Laboratory
  116L, Eukaryotic Molecular Biology Laboratory
  119L, Molecular Microbiology Laboratory
  120L, Development Laboratory
  128L, C. elegans Nucleic Genetics Laboratory
  137L, Molecular Biotechnology Laboratory

Behavior Pathway (four courses)
• 113, Mammalian Endocrinology
• One of the following:
  Biology 139L, 141L, 143, 144, 145L, or Anthropology 106
• One of the following physiology or psychology courses:
  Biology 120, 130L, 131L, 132, 133/L, 136/L, 138/L, Psychology 120, 121, 123, 133
• One of the following laboratory courses:
  105L, Eukaryotic Genetics Laboratory
  105M, Microbial Genetics Laboratory
  130L, Human Physiology Laboratory
  131L, Animal Physiology Laboratory
  135L, Invertebrate Zoology Laboratory
  138/L, Biology and Ecology of the Vegetated Laboratory
  141L, Ecological Field Methods
  145L, Behavioral Ecology Field Course
  Computer Science 12A or 12B or 60N

Neuroscience and Behavior B.S. Major Requirements
In addition to the courses above, the following courses are required for the B.S. degree program.
• Mathematics: one additional course in calculus, Mathematics 22.
• Physics: Three courses in calculus-based physics, Physics 6A/L, 6B/M, and 6C/N
• A second laboratory course, chosen from the courses listed in the student's concentration pathway.

Plant Sciences Major
Program Description
UC Santa Cruz has a strong program in the plant sciences (sometimes called botany). A fine natural environment, the campus Arboretum, the facilities under the Center for Agroecology and Sustainable Food Systems (especially the Farm and Garden), and an excellent greenhouse collection all enhance the resources that support our botanical programs.

The plant sciences major is designed for students with an interest in plant biology and its associated curricular fields such as plant ecology, plant physiology, plant pathology, plant molecular biology, soils, and applied plant sciences. After completion of the core courses, students can proceed in one of several directions depending on their interest. For example, a more in-depth study of physiology and molecular biology courses can serve as preparation for work in the biotechnology field or for graduate school; further studies in plant ecology, tropical ecology, or restoration ecology can lead to careers such as resource ecologist or naturalist or to the pursuit of related fields in graduate school; upper-division training in agroecology can lead to careers in agriculture or food systems. A special feature of this major is a one-quarter internship and/or independent research requirement. There are many opportunities for internships both on the UCSC campus and in the community at large.

Plant Sciences B.S. Major Requirements
Introductory Requirements
• Biology 20A, 20B, and 20C
• Chemistry 1B/M and 1C/N
• Organic Chemistry 108A/L and 108B/M or 112A/L, 112B/M, and 112C/N
• Mathematics 11A and 11B (calculus)
• Physics 7A/L and 7B/M or two courses from the 6A/L, 6B/M, 6C/N series

Advanced Requirements
A total of nine upper-division courses
• Core courses
  105, Genetics
  175, Evolution
  166, Plant Physiology
• One course from each of the following pairs:
  168/L, Systematic Botany
  170/L, Marine Botany/Laboratory
  169, Plant Ecology
• Environmental Studies 162/L*, Plant Physiological Ecology/Laboratory

* Envs 162/L taught in alternate years
The following is a recommended academic plan for Biology 169L after receiving prior credit for course 20A, 20B, and 20C. This course is equivalent to course 20A for non-science majors. Will cover principles of human inheritance and techniques used in gene analysis. The evolutionary, social, ethical, and legal issues associated with the knowledge of the human genome will be discussed. (General Education Code(s): T2-Natural Sciences.) M. Anes

80F. The State of the World. S
Earth is treated as an integrated system, emphasizing biological and ecological principles. Topics include climate, global warming, deforestation, biodiversity, desertification, oceans, agriculture and diet, water, energy and waste. The objective is to impart sufficient understanding to critically evaluate environmental policy. (General Education Code(s): T2-Natural Sciences.) W. Davis

80H. The Human Genome. *
Course will focus on understanding human genes. Accessible to non-science majors. Will cover principles of human inheritance and techniques used in gene analysis. The evolutionary, social, ethical, and legal issues associated with the knowledge of the human genome will be discussed. (General Education Code(s): T2-Natural Sciences.) M. Anes

80J. Biology of AID S. W
An overview of the biology of the acquired immunodeficiency syndrome (AIDS) and the social and legal issues that surround it are explored in a series of lectures by biology faculty and experts in the field. (General Education Code(s): T2-Natural Sciences.) M. Zavaneli

80L. The Secret Sex Lives of Plants. F
The long, tortuous, and sometimes comic history of the discovery of sexuality in plants, from Aristotle to Sprengel and Hofmeister, is examined as a case study of the cultural, religious, and psychological barriers that can operate to impede scientific understanding. (General Education Code(s): T2-Natural Sciences.) J. Taiz

80N. Biology of Human Health and Nutrition. W
An introduction to the biology of human nutrition and its effects on human health. The course explores how nutrient balance, exercise, and age interact in their effects on human health, fitness, and disease. (General Education Code(s): T2-Natural Sciences.) J. Taiz

80R. Infectious Diseases and Human Populations. S
An overview of the biology of infectious diseases in human societies including why diseases vary in severity, how human bodies defend themselves, and how public health efforts cope with the problem of rapidly evolving pathogens. (General Education Code(s): T2-Natural Sciences.) J. Thompson

99. Tutorial, F,W,S
Individual, directed study for undergraduates. Students submit petition to sponsoring agency.
Upper-Division Courses

100. Biochemistry, F,S
An introduction to biochemistry including biochemical molecules, protein structure and function, membranes, bioenergetics, and regulation of biosynthesis. Provides students with basic essentials of modern biochemistry and the background needed for upper-division biology courses. Students who plan to do advanced work in biochemistry and molecular biology should take the Biochemistry and Molecular Biology 100 series directly. Students cannot receive credit for this course after they have completed any two courses from the Biochemistry and Molecular Biology 100A, 100B, and 100C sequence with grades of Pass, C, or better. Prerequisites: courses 20A and 20B; and Chemistry 7 or 108A or 112A.

100L. Biochemistry Laboratory, F
Basic techniques and principles of laboratory biochemistry including isolation and characterization of a natural product, manipulation of proteins and nucleic acids to demonstrate basic physical and chemical properties, and characterization of enzyme-substrate interactions. Students are billed a materials fee. Prerequisites: course 100 (may enroll concurrently). Enrollment limited to 20. M. Dalbey

105. Genetics, F,S
Mendelian and molecular genetics; mechanisms of heredity, mutation, recombination, and gene action. Students cannot receive credit for this course and course 106. Prerequisites: courses 20A and 20B. (F. W. Sullivan, (S) J. Feldman

105L. Eukaryotic Genetics Laboratory, F
Classical and newly developed molecular-genetic techniques used to explore genetic variation in wild populations of the fruit fly Drosohila melanogaster. Topics include Mendelian fundamentals, mapping, design of genetic screens, bio-informatic and database analysis, genetic enhancers, and population genetics. Students are billed a materials fee. (Formerly Genetics Laboratory.) Prerequisites: course 105; course 100 or Biochemistry and Molecular Biology 100A recommended. W. Sullivan

105M. Microbial Genetics Laboratory, S
Exploration of basic genetics processes such as replication, mutation, DNA repair, recombination, gene exchange, population genetics, and evolution using microbial model organisms; classical techniques in microbial genetics and contemporary molecular techniques presented. Prerequisites: course 105. Enrollment limited to 16. M. Dalbey

107. Population Genetics, W
Basic population genetics and selected topics will be covered, including genetics of speciation, tempo and mode of evolution, genetics of social behavior, natural selection in human populations, and the impact of molecular studies on evolutionary theory. Students cannot receive credit for this course and course 207. Concurrent enrollment in course 107L is required. Prerequisites: courses 20A, 20B, 20C, and 105. Concurrent enrollment in course 107L is required. Offered in alternate academic years. G. Pogson

107L. Population Genetics Laboratory (2 credits), W
A companion course to 107. Population Genetics, that applies the theory developed in that course to related disciplines including conservation biology, ecology, agriculture, and population biology. Original scientific literature relating to the theory developed in course 107L is read, and applied problem sets are solved by the students. Students cannot receive credit for this course and course 207L. Concurrent enrollment in course 107L is required. Prerequisites: courses 20A, 20B, 20C, and 105. Concurrent enrollment in course 107L is required. Offered in alternate academic years. G. Pogson

109L. Yeast Molecular Genetics Laboratory, *
The powerful genetic and molecular techniques available for yeast combined with the complete genomic DNA sequence offers opportunity for discovery of fundamental aspects of eukaryotic life. Lab providing practical experience in using yeast as an experimental system. Students are billed a materials fee. Prerequisites: course 105; 115 strongly recommended. Enrollment limited to 15. M. Ares, D. Kellogg

110. Cell Biology, F,S
Covers the structure, organization, and function of eukaryotic cells. Topics include biological membranes, organelles, protein and vesicular trafficking, cellular interactions, the cytoskeleton, and signal transmission. Requires a good understanding of basic biochemistry and molecular biology. Prerequisites: courses 20A and 20B; course 100 or Biochemistry and Molecular Biology 100A. (F. A. Zahler, (S) D. Kellogg

111. Immunology, S
Immunology—manifestations and mechanisms of action. Prerequisites: courses 20A, 20B, 105, and 110. M. Zuniga

113. Mammalian Endocrinology, W
Introduction to the major endocrine organs, their hormones, and their receptors. Emphasis is on the following topics: structural analysis of the hormones and receptors at the protein and molecular level, regulation of expression of hormones and their receptors, and the biological functions of hormones. Prerequisites: course 100 or Biochemistry and Molecular Biology 100A. L. Ogen

114. Cancer Cell Biology, S
Focuses on the molecular and cellular mechanisms behind cancer. Topics covered include oncogenes, tumor suppressor genes, cell growth genes, checkpoint genes, telomeres, and apoptosis. Students will gain experience in reading the primary scientific literature. Prerequisites: course 110 or 115. A. Zahler

115. Eukaryotic Molecular Biology, W,S
Covers eukaryotic genome and genome organization; DNA, RNA, and protein synthesis; regulation of gene expression; chromosome structure and organization; and the application of recombinant DNA technology to the study of these topics. Prerequisites: course 100 or Biochemistry and Molecular Biology 100A, and either course 105 or 106L. (W) H. A. Artuz, (S) M. Jurica

115L. Eukaryotic Molecular Biology Laboratory, S
A laboratory designed to provide students with direct training in basic molecular techniques. Each laboratory is a separate module which together builds to allow cloning, isolation, and identification of a nucleic acid sequence from a fragment. Students cannot receive credit for this course and course 187L or 287L. Students are billed a materials fee. (Formerly course 115L.) Prerequisites: Chemistry 108B/M or 112C/N and Biochemistry and Molecular Biology 100A or Biology 115. Enrollment limited to 20. M. Zanelli

117A. Advanced Genetics, F
An analysis of selected topics in the primary research literature including conditional lethality, classical structure genetics, the coding problem, control of operon expression, phage lambda, and developmental genetics. Students cannot receive credit for this course and 200A.
Prerequisites: courses 105 and Biochemistry and Molecular Biology 100A. R. Ludwik, A. Chisholm

117B. Advanced Molecular Biology, W
An in-depth coverage of the structure, function, and synthesis of D N A, RNA, and proteins. Discussion of the roles of macromolecules in the regulation of information in the cell. Students cannot receive credit for this course and course 200B. Prerequisites: course 117A, A. Zahler, H. Nieder

117C. Advanced Cell Biology, S
An in-depth coverage of topics in cellular and subcellular organization, structure and function in plants and animals. Emphasis on current research problems. Students cannot receive credit for this course and course 200C. Previous or concurrent enrollment in courses 110 and 117B is required. D. Kell

118. Biology of Disease, W
Primary objective is to provide an understanding of disease processes in humans. Integrates normal physiology and pathophysiology with the molecular and physiologic basis of disease. Major emphasis on the pathophysiology of the major systems in relation to the biologic basis of disease. Provides an overview of endocrine disease, cardiovascular disease, respiratory disease, central nervous system diseases, and genetic disease. Students are billed a materials fee. (Also offered as Environmental Toxicology 138. Students cannot receive credit for both courses.) Prerequisites: courses 20A and 20B or equivalent and course 110. Course 130 is recommended. D. Smith

119. Microbiology, W
Cell and molecular biology of bacteria and their viruses, including applications in medicine, public health, agriculture, and biotechnology. Prerequisites: courses 20A and 20B. F. Yildiz

119L. Microbiology Laboratory, W
An introduction to the principles and practices of laboratory microbiology, with a substantial presentation of optical microscopy. Students are billed a materials fee. Prerequisites: course 119. Course 119 may be taken concurrently. M. Dalbey

120. Development, S
A description and analysis of selected developmental events in the life cycle of animals. Experimental approaches to understanding mechanisms are emphasized. Prerequisites: course 100 or Biochemistry and Molecular Biology 100A, and course 105. A. Chisholm

120L. Development Laboratory, S
Experimental studies of animal development using a variety of locally obtainable organisms. Approximately eight hours weekly, but it will often be necessary to monitor continuing experiments throughout the week. Concurrent enrollment in course 120 required. Students are billed a materials fee. Prerequisites: course 100 or Biochemistry and Molecular Biology 100A and course 110. Concurrent enrollment in course 120 required. A. Chisholm

122. Cellular and Organismic Toxicology, W
Emphasizes biochemical, cellular, and organ system basis of intoxication, including dose-response relationships, biotransformation of toxins, biochemical mechanisms underlying toxicity, factors influencing toxic action, and biomarkers of exposure. Emphasizes effects of various classes of toxins, including heavy metals and persistent
synthetic organics, with a focus on susceptible biochemical, cellular, and molecular systems. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, and 20C. Course 137L must be taken concurrently. Offered in alternate academic years. G. Bernardi

136L. Invertebrate Zoology Laboratory (2 credits). W
An introduction to invertebrates and their habitats. Weekly laboratory or field trips. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, and 20C. Course 136L must be taken concurrently. Enrollment restricted to majors sponsored by the Molecul, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. Enrollment limited to 96. B. M arinovic

137. Ichthyology. *
An introduction to the biology of jawless, cartilaginous, and bony fishes—their classification, evolution, form, physiology, and ecology. Prerequisite(s): courses 20A, 20B, and 20C. Course 137L must be taken concurrently. Offered in alternate academic years. G. Bernardi

An introduction to the fundamentals of vertebrate biology and ecology including evolutionary history, basic anatomy and physiology, systematics, ecology and major specializations for locomotion, reproduction, homeostasis, energy balance, and thermoregulation. Prerequisite to the 106 series. (Also offered as Environmental Studies 105L. Students cannot receive credit for both courses.) Prerequisite(s): course 20A, 20B, 20C, 150 or Environmental Studies 24. Concurrent enrollment in course 138L required. Enrollment restricted to majors sponsored by biological sciences. Enrollment limited to 50. M. Fusari

138L. Biology and Ecology of the Vertebrates Laboratory (2 credits). W
Covers the basics of vertebrate anatomy and taxonomy with emphasis on local species identification. Lab includes a weekly film series and two Saturday trips to the California Academy of Sciences. Concurrent enrollment in course 105 is required. Prerequisite to the 106 series. (Also offered as Environmental Studies 105L. Students cannot receive credit for both courses.) Prerequisite(s): course 20C, 150, or Environmental Studies 24. Concurrent enrollment in course 138 is required. Enrollment restricted to majors sponsored by biological sciences. Enrollment limited to 12. The Staff

139. Biology of Marine Mammals. S
A survey of cetaceans, pinnipeds, sirenians, and sea otters, including natural history, systematics, physiology, behavior, anatomy, and conservation. Prerequisite(s): courses 20A, 20B, and 20C; course 138 is recommended. D. Costa

139L. Biology of Marine Mammals Laboratory (2 credits). S
Covers the basics of marine mammal taxonomy, anatomy, and field methods with an emphasis on local species identification. Lab includes field trips to Long Marine Lab, Area N, Las Positas, and Monterey Bay. M ust be taken concurrently with course 139. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, and 20C. Course 139L must be taken concurrently with course 139. D. Costa

140. Behavioral Ecology. F
An introduction to social and reproductive behavior. Emphasis on studies of vertebrates in their natural habitat. Ideas concerning the evolution of social behavior, mating
systems, and individual reproductive strategies. Case histories of well-studied animals that illustrate key principles in courtship and mating, parental behavior, and food-getting behavior. Prerequisites: Courses 20A, 20B, and 20C. B. Sinervo

141L. Ecological Field Methods. S
Field-oriented course in the study of animal ecology and behavior. Combines overview of methodologies and approaches to field research with practical field studies. Students are billed a materials fee. Prerequisites: satisfaction of the Subject A and Composition requirements; permission of instructor; course 20C required; course 140, 150, 152, or 160 recommended. Enrollment limited to 25. (General Education Coded: W.) D. Croll

142. Ocean Ecosystems. W
Discussion of selected topics in animal ecology of the open sea: zooplankton production, variability of pelagic populations, food webs, deep-sea pelagic and benthic ecology, fisheries oceanography, and human effects on the open ocean biota. Students cannot receive credit for this course and course 242. (Also offered as Ocean Sciences 142. Students cannot receive credit for both courses.) Prerequisites: courses 20A, 20B, and 20C or equivalent; one ocean sciences course recommended. M. Silver

143. Herpetology. *
Lectures introduce students to evolution, development, physiology, behavior, ecology, and life history of reptiles and amphibians. The materials integrate with conceptual and theoretical issues of ecology, evolution, physiology, and behavior. Concurrent enrollment in course 143L is required. Prerequisites: course 138, 140, 150, 175 or Environmental Studies 105. Concurrent enrollment in course 143L is required. Enrollment limited to 24. Offered in alternate academic years. B. Sinervo

143L. Field Methods in Herpetological Research (2 credits). *
Field trips introduce students to natural history, censusing techniques, physiological ecology, and behavioral analysis of reptiles and amphibians. Laboratories introduce students to techniques for analyzing behavior and physiology. Field studies culminate with a group project in a natural setting. Some field trips may be held on weekends due to weather considerations. Some field trips may require students to provide their own transportation, some transportation will be provided by UCSC. Students are billed for a materials fee. Concurrent enrollment in course 143 is required. Prerequisites: course 138, 140, 150, 175, or Environmental Studies 105. Concurrent enrollment in course 143 is required. Offered in alternate academic years. B. Sinervo

144. Ornithology. *
Introduction to the evolution, ecology, behavior, and natural history of birds, using exemplary case histories to illustrate key concepts in evolution, ecology, and behavior. Prerequisites: course 140, 150, or 175, or Environmental Studies 24 or 105. Concurrent enrollment in course 144L is required. Enrollment limited to 20. B. Lyon

144L. Ornithology Field Studies (2 credits). *
Field trips introduce students to field identification skills and field investigation of census, foraging behavior, migration, social behavior, and communication. Examination of specimens in the laboratory will be used to illustrate the diversity and taxonomy of birds. Students are billed for a materials fee. Some field trips may require students to provide their own transportation. Prerequisites: course 140, 150, or 175, or Environmental Studies 24 or 105. Concurrent enrollment in course 144 is required. Enrollment limited to 20. Offered in alternate academic years. B. Lyon

145L. Behavioral Ecology Field Course. *
A field-based course introducing students to concepts and methods for studying behavioral ecology in nature. Students will conduct observations and field experiments on various local model organisms including elephant seals, humboldt penguins, sparrows, lizards, ants, bees, frogs, and salamanders. Students are billed a materials fee. Prerequisites: course 140 or 150 or Environmental Studies 105. Enrollment limited to 25. Offered in alternate academic years. B. Lyon, B. Sinervo

Biological processes behind conservation problems and the quantitative tools needed to successfully address issues in both basic and applied ecology. Emphasis on data analysis and mathematical modeling of ecological processes at the population and community levels. Prerequisites: courses 20A, 20B, 20C, and Applied Mathematics and Statistics 5 or 7 (formerly Engineering 5 or 7); and Mathematics 11A. Course 148L must be taken concurrently. D. Doak

148L. Quantitative Ecology for Conservation Lab (2 credits), W
Focuses on computational methods used to solve biological problems. Weekly homework assignments issued; students learn to program in language M AT LAB. Prerequisites: courses 20B and 20C, Applied Mathematics and Statistics 5 or 7 (formerly Engineering 5 or 7), and Mathematics 11A. Course 148 must be taken concurrently. Enrollment limited to 25. D. Doak

150. Ecology, W
Focuses on physiological, behavioral, and population ecology, and on linking ecological processes to evolution. It includes basic principles, experimental approaches, concepts of modeling, and applications to ecological problems. Prerequisites: courses 20A, 20B, and 20C. B. Lyon

152. Community Ecology, S
Develops the major themes of community biology: structure, trophic dynamics, succession, complex interactions among species, herbivory, evolution and coevolution. Uses case histories of well-studied marine and terrestrial systems. Students cannot receive credit for this course and course 252. Prerequisites: course 150 or Environmental Studies 24. Enrollment limited to 50. L. Fox

158. Ecology of Reefs, Mangroves, and Seagrasses, S
Integrated treatment of coral reefs, sea grasses, and mangroves emphasizing interactions and processes through time. Major topics: biological and geological history, biogeography, evolution and ecology of dominant organisms, biodiversity, community and ecosystem ecology, geology, biogeochemistry, global change, human impacts. (Also offered as Ocean Sciences 157. Students cannot receive credit for both courses.) Prerequisites: courses 20A, 20B, 20C, and one relevant upper-division course in biology, Earth sciences, or ocean sciences, such as course 150 or 175; Earth Sciences 101, 102, or 105; or Ocean Sciences 101. D. Potts

160. Marine Ecology, W
Paradigms and designs in marine ecology. A review of the paradigms that have shaped our understanding of marine ecology; analysis and discussion of experiments with these paradigms. Students cannot receive credit for this course and course 260. Prerequisites: course 150 or 140 or Environmental Studies 24. M. Carr

160L. Marine Ecology Laboratory, *
Supervised individual research projects in experimental marine biology. Students carry out a complete research project, including (1) the formulation of hypotheses; (2) the design and implementation of experiments; (3) collection, analysis, and interpretation of data; and (4) writing-up of an oral presentation. Students are billed for a materials fee. Admission by interview to assess ability to carry out field project; course 160. Enrollment limited to 20. Offered in alternate academic years. M. Carr

Study of organization of kelp forests as models for examining biologic communities. The physical and biotic factors responsible for community organization of kelp forests are explored using original literature and data collected in course 161L. Class meets one full morning each week. Prerequisites: by interview only; courses 20A, 20B, and 20C are required. Students must pass the University Research Diving Certification (contact the diving safety officer, Institute of Marine Sciences, for further information). Enrollment restricted to seniors. Course 161L must be taken concurrently; courses 136L, 150, or 170L are recommended. Enrollment limited to 24. Offered in alternate academic years. P. Raimondi, M. Carr

161L. Kelp Forest Ecology Laboratory (2 credits), *
Fieldwork using SCUBA to quantitatively and qualitatively examine the abundance and distribution of organisms in kelp forests, with additional laboratory work. Culminates with a directed individual research project. Class meets one full morning each week. Students are billed for a materials fee. Admission by interview; courses 20A, 20B, and 20C are required; course 161 must be taken concurrently; courses 136L, 150, or 170L are recommended. Students must pass the University Research Diving Certification (contact the Diving Safety Officer, Institute of Marine Sciences, for further information). Enrollment limited to 24. Offered in alternate academic years. P. Raimondi, M. Carr

162A. Marine Ecology Field Quarter: Marine Ecology with Laboratory, F
Total immersion in marine ecology for very motivated students. Students develop a research project during first five weeks on campus and then spend five weeks of immersion in directed research without distraction in isolated locations off campus (past locations include the Gulf of California in Mexico and Morro Bay in California). Not available through University Extension. No other courses may be taken during this quarter. Students must sign a contract agreeing to standards of behavior outlined in the UCSC Rule Book and by the instructors. Students are billed for a materials, transportation (not airfare), and room and board fee.

Paradigms and designs in marine ecology. A review of the paradigms that have shaped our understanding of marine ecology and analysis and discussion of experiments with these paradigms. Students carry out a complete research project, including the formulation of hypotheses; the design and implementation of experiments; the collection, analysis, and interpretation of data; and the writing-up and oral presentation of results. Admission by interview during previous winter quarter. Courses 162A, 162B, 162C, and 162D are equivalent to courses 137L, 137L, 160, and 160L for major requirements. Courses 162A, 162B, 162C, and 162D must be taken concurrently. (Formerly M arine Ecology with Laboratory.) Enrollment limited to 26. Offered in alternate academic years. P. Raimondi
162B. Marine Ecology Field Quarter: Ichthyology with Laboratory. F
An introduction to the biology of jawless, cartilaginous, and bony fishes— their classification, evolution, form, physiology, and ecology. Admission by interview during previous winter quarter. Courses 162A, 162B, 162C, and 162D are equivalent to courses 137, 137L, 160, and 160L for major requirements. Courses 162A, 162B, 162C, and 162D must be taken concurrently. (Formerly Ichthyology with Laboratory.) Enrollment limited to 26. Offered in alternate academic years. G. Bernardi

162C. Marine Ecology Field Quarter: Methods in Field Ecology. F
Students learn quantitative methods for field experiments and surveys. Emphasis will be on marine environments, but there will also be exposure to terrestrial systems. This is the lecture component to course 162D. No text is required for this course; instead, readings from the current literature will be assigned. Students are evaluated on written independent field project proposals and class participation. Admission by interview during previous winter quarter. Courses 162A, 162B, 162C, and 162D are equivalent to courses 137, 137L, 160, and 160L for major requirements. Courses 162A, 162B, 162C, and 162D must be taken concurrently. (Formerly Methods in Field Ecology.) Enrollment limited to 26. Offered in alternate academic years. P. Raimondi

162D. Marine Ecology Field Quarter: Methods in Field Ecology Laboratory (4 credits). F
This is the laboratory portion of course 162C. Students carry out independent field projects under the supervision of course instructors. All work is done during the 5–6 week off-campus portion of course 162. Students are evaluated on field techniques, the final write-up of their independent field projects, and class participation. Admission by interview during previous winter quarter. Courses 162A, 162B, 162C, and 162D are equivalent to courses 137, 137L, 160, and 160L for major requirements. Courses 162A, 162B, 162C, and 162D must be taken concurrently. (Formerly Methods in Field Ecology Laboratory.) Enrollment limited to 26. Offered in alternate academic years. G. Bernardi

163. Marine Conservation Biology. F
Initially undertaken as an in-depth comparison of the biology and conservation of marine versus terrestrial ecosystems. With this foundation, course examines marine biodiversity loss resulting from overexploitation, habitat loss, species introduction, and pollution, with particular emphasis on the resulting trophic cascades, biodiversity losses, and climate change. Students cannot receive credit for this course and Environmental Studies 120. Prerequisite(s): courses 20A, 20B, and 20C; Ocean Sciences 101 recommended. D. Crail

166. Plant Physiology. W
Cellular and organ systems function in the life of green plants. Prerequisite(s): courses 20A and 20B and Chemistry 7; a course in cell biology recommended; courses 100 and 110 are highly recommended as preparation. L. Taiz

168. Systematic Botany of Flowering Plants. S
An examination of the taxonomy and evolution of flowering plants. Special topics include phyleogenetics and cladistics, plant species concepts, and modern methods of systematic research. Prerequisite(s): courses 20A, 20B, and 20C; or Environmental Studies 24. Must be taken concurrently with course 168L. Enrollment limited to 32. T. H. Staff

168L. Systematic Botany of Flowering Plants Laboratory (2 credits). S
One laboratory meeting weekly concerned primarily with California flora and plant families. Several field trips. Students are billed a materials fee. Prerequisite(s): courses 20A, 20B, and 20C; or Environmental Studies 24. Must be taken concurrently with course 168. Enrollment limited to 32. T. H. Staff

169. Plant Ecology. F
An exploration of the ecology of plant form, function, distribution, abundance, and diversity. Topics include plant adaptations to environmental conditions, life history variation, competition, reproductive ecology, herbivory, and patterns of diversity. Lecture with discussions of original papers and independent field project. Students cannot receive credit for this course and courses 165 or 269. Prerequisite(s): course 20C or Environmental Studies 24. Course 150 is recommended. Enrollment limited to 30. T. H. Staff

169L. Field Methods in Plant Ecology. F
Hands-on exploration of the concepts and techniques of plant ecology. A combination of lab, greenhouse, and field-based exercises (irrespective of weather conditions). Statistical analysis and scientific writing. One required weekend field trip. Students cannot receive credit for this course and courses 165 or 269L. Students are billed for a materials fee. Prerequisite(s): satisfaction of the Subject A Composition and Requirements courses, 20C or Environmental Studies 24. Concurrent enrollment in course 169 is required. Course 150 is recommended. Enrollment limited to 30. General Education Code(s): W. I. T. Staff

170. Marine Botany. S
An introduction to the biology of marine algae, fungi, and angiosperms with regard to form and function. Major benthic, terrestrial, and tropical marine plant communities. Lecture format. Prerequisite(s): courses 20A, 20B, and 20C. Must be taken concurrently with course 170L. T. H. Staff

170L. Marine Botany Laboratory (2 credits). S
One laboratory weekly and several field trips. Focuses on marine algae, fungi, and angiosperms. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, and 20C. Must be taken concurrently with course 170L. T. H. Staff

171. Marine Microbial Ecology. S
The study of marine bacteria and their role in the marine ecosystem. Emphasis on biochemistry and physiology in relation to metabolic activity and elemental cycles, trophic interactions, and flows of material and energy in marine food webs. Exams and term paper required. Students cannot receive credit for this course and course 218. (Also offered as Ocean Sciences 118. Students cannot receive credit for both courses.) Prerequisite(s): courses 20A, 20B, 20C, and Chemistry 1C. J. Zehr

175. Evolution. F
An examination of the history and mechanisms of evolutionary change. Topics include molecular evolution, natural and sexual selection, adaptation, speciation, biogeography, and macroevolution. Prerequisite(s): courses 20A, 20B, 20C, and 105. G. Pogson

176. Molecular Ecology and Evolution. S
An introduction to evolution at the molecular level. Topics include neutral theory of evolution, natural selection, molecular clocks, molecular phylogenetics, and biogeography. Prerequisite(s): courses 20A, 20B, and 20C. Must be taken concurrently with course 176L. Enrollment limited to 75. Offered in alternate academic years. G. Bernardi

176L. Molecular Ecology and Evolution Laboratory (2 credits). F
One laboratory meeting weekly concerned primarily with the application of molecular research techniques to unanswered questions in human molecular genetics. Emphasis on self-motivated students interested in scientific discovery. Admission by permission of instructor. Enrollment limited to 25. M. Artes

185. Hughes Undergraduate Research Lab. F,W,S
Covers the application of modern research techniques to unanswered questions in human molecular genetics. Emphasis on self-motivated students interested in scientific discovery. Admission by permission of instructor. Enrollment limited to 25. M. Artes

186. Undergraduate Research in MCD Biology (2 credits). W,S
Supervised undergraduate research in laboratory of an MCD biology faculty member accompanied by weekly lectures on ethical and practical scientific issues. Topics include laboratory safety; the scientific method; the collection, treatment, and presentation of data; critical evaluation of scientific literature; scientific misconduct; and peer review. Career issues, including how to apply for admission to graduate and professional schools, also discussed. Prerequisite(s): courses 20A and 20B; at least one of course 100, 105, or Biochemistry 100A; and permission of instructor. May be repeated for credit. W. J. Tamkin, S. G. Hartsgo

186L. Undergraduate Research in MCD Biology. W,S
Supervised undergraduate research in laboratory of an MCD biology faculty member accompanied by weekly lectures on ethical and practical scientific issues. Topics include laboratory safety; the scientific method; the collection, treatment, and presentation of data; critical evaluation of scientific literature; scientific misconduct; and peer review. Career issues, including how to apply for admission to graduate and professional schools, also discussed. Prerequisite(s): courses 20A and 20B; at least one of course 100, 105, or Biochemistry 100A; and permission of instructor. W. J. Tamkin, S. G. Hartsgo

187. Molecular Biotechnology Laboratory. F
An intensive molecular biology laboratory that presents procedures used in molecular and biotechnology research. Topics and procedures include DNA/RNA isolation, cloning and library construction, Southern and Northern hybridization, DNA fingerprinting, PCR, manual and automated sequencing, and computer methods for analyzing molecular data. New procedures currently being developed in biotechnology industries are presented by industry representatives. Students cannot receive credit for this course and course 118L or 287L. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, 20C, 100, and 110. Enrollment limited to 20. M. Zavainidi
189. Health Sciences Internship, F, W, S
Structured off-campus learning experience providing hands-on experience and pre-professional mentoring in a variety of health-related settings. Interns are trained and supervised by a professional at their placement and receive academic guidance from their faculty sponsor. Students spend 10–12 hours per week at their placement, participate in weekly discussion meetings on campus, keep a reflective journal, and submit a final paper. Prerequisite(s): by interview with health sciences internship coordinator; applications are due one quarter in advance to the Health Sciences Internship Office. Enrollment restricted to health sciences majors. May be repeated for credit. (F) J. Tamkun, (W) G. Hartzog, (S) L. Hinck

190. Proseminar, selected topics in biology. The Staff
191. Teaching College Biology, Course designed to provide undergraduates at the upper-division level with an opportunity to participate in planning and teaching college-level biology. May not be repeated for credit. The Staff

192. Directed Student Teaching, F, W, S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students submit petition to sponsoring agency. The Staff

193. Field Study, F, W, S
Provides for individual programs of study carried out under the direct supervision of a member of the Biology Department and using resources not normally available on campus. With permission of the department, may be repeated for credit, or two or three courses may be taken concurrently. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

193F. Field Study (2 credits), F, W, S
Provides for individual programs of study carried out under the direct supervision of a member of the Biology Department and using resources not normally available on campus. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

195. Senior Thesis Research, F, W, S
An individually supervised course, with emphasis on independent research, to culminate in a senior thesis. Students submit petition to sponsoring agency. The Staff

198. Independent Field Study, F, W, S
Provides for individual programs of study (a) by means other than the usual supervision in person, or (b) when the student is doing all or most of the course work off campus. With permission of the department, may be repeated for credit, or two or three courses taken concurrently. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

198F. Independent Field Study (2 credits), F, W, S
Provides for two units of independent field study (a) by means other than the usual supervision in person, or (b) when the student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199. Tutorial, F, W, S
Reading, discussion, written reports, and laboratory research on selected biological topics, using facilities normally available on campus. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits), F, W, S
Two unit Tutorial. Reading, discussion, written reports, and laboratory research on selected biological topics, using facilities normally available on campus. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

200A. Advanced Genetics, F
An analysis of selected topics in the primary research literature including conditional lethality, classical fine structure genetics, the coding problem, control of operon expression, phage lambda, and developmental genetics. Students cannot receive credit for this course and course 117A. Enrollment restricted to graduate students. Qualified undergraduates may enroll in course 117A. R. Ludwig, A. Chisholm

200B. Advanced Molecular Biology, W
An in-depth coverage of the structure, function, and synthesis of DNA, RNA, and proteins. Discussion of the roles of macromolecules in the regulation of information in the cell. Students cannot receive credit for this course and course 117B. Prerequisite(s): course 200A. Enrollment restricted to graduate students. Qualified undergraduates may enroll in course 117B. A. Zahler, H. Noller

200C. Advanced Cell Biology, S
An in-depth coverage of topics in cellular and subcellular organization, structure, and function in plants and animals. Emphasis on current research problems. Students cannot receive credit for this course and course 117C. Prerequisite(s): course 200B. Enrollment restricted to graduate students. Qualified undergraduates may enroll in course 117C. D. Kollog

201. RNA Processing, *
An advanced graduate-level course on the molecular aspects of RNA function and processing in eukaryotes. Lectures and discussions will be developed using the current literature. Prerequisite(s): course 200B or permission of instructor. Enrollment limited to 15. M. Ares

202. Cellular and Organismal Toxicology, W
Emphasizes biochemical, cellular, and organism system aspects of intoxication, including dose-response relationships, biotransformation of toxicants, biochemical mechanisms underlying toxicity, factors influencing toxic action, and biomarkers of exposure. Emphasizes effects of various classes of toxins, including heavy metals and persistent synthetic organics, with a focus on susceptible biocohemical/cellular processes of the central nervous, immune, hepatic, and renal target organ systems. Designed for advanced undergraduates. Taught in conjunction with course 102. (Also offered as Environmental Toxicology 202. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. D. Smith

204. Chromatin, *
Eukaryotic DNA is complexed with histones to form chromatin. This course focuses on the ways in which chromatin influences and is manipulated to regulate gene expression. Prerequisite(s): courses 105 and 115; undergraduates by permission of instructor. Enrollment restricted to graduate students. Enrollment limited to 15. Offered in alternate academic years. G. Hartzog, J. Tamkun

207. Population Genetics, W
Basic population genetics and selected topics are covered including genetics of speciation, tempo and mode of evolution, genetics of social behavior, natural selection in human populations, and the impact of molecular studies on evolutionary theory. Students cannot receive credit for this course and Biology 107. Concurrent enrollment in course 207L is required. Enrollment restricted to graduate students. Offered in alternate academic years. G. Pogson

207L. Population Genetics Laboratory (2 credits), W
A companion course to 207, Population Genetics, that applies the theory developed in that course to related disciplines including conservation biology, ecology, agriculture, and population biology. Original scientific literature relating to the theory developed in course 207 is read, and applied problem sets are solved by the students. Students cannot receive credit for this course and course 207L. Must be taken concurrently with course 207. Enrollment restricted to graduate students. Offered in alternate academic years. G. Pogson

208. Cellular Signaling Mechanisms, S
All eukaryotic cells utilize intracellular signaling pathways to control such diverse events as cell-cell communication, cell division, and changes in cell morphology. This course covers the molecular basis of these cellular signaling pathways, focusing on the most current research. Prerequisite(s): courses 105, 110, and 115. Enrollment restricted to seniors and graduate students. Enrollment limited to 15. Offered in alternate academic years. D. Kollog

228. Advanced Topics in Cellular and Developmental Neurobiology, *
Emphasizes comparative studies in both invertebrate and vertebrate nervous systems to provide rigorous, first-hand knowledge in neural development. Specific topics include neurogenesis, fate determination, migration, axonal guidance, and synaptogenesis. Students must participate actively in lectures and discussions. Students cannot receive credit for this course and course 128. Enrollment restricted to graduate students. Undergraduates may enroll by interview only. Enrollment limited to 15. Y. Jin

233. Exercise Physiology, *
Physiological and biochemical processes associated with human performance. Students are expected to be familiar with basic organ physiology, biochemistry, and human anatomy. Focuses on bioenergetics and fuel utilization, cardiovascular and respiratory dynamics during activity, and the effects of training, age, and disease on exercise. Laboratory sessions incorporated into study sections. Students cannot receive credit for this course and course 133. Prerequisite(s): by interview; course 131 or 132 recommended as preparation. Enrollment restricted to graduate students. Enrollment limited to 20. Offered in alternate academic years. T. Williams

242. Ocean Ecosystems, W
Discussion of selected topics in animal ecology of the open sea: zooplankton production, variability of pelagic populations, food webs, deep sea pelagic and benthic ecology, fisheries oceanography, and human effects on the open ocean. Students cannot receive credit for this course and course 142. (Also offered as Ocean Sciences 242. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. T. Williams

248. Quantitative Ecology for Conservation, W
Lecture covers the application of ecology and genetics to conservation biology. Emphasizes mathematical analysis and quantitative thinking and features mathematical home-
work, computer lab sessions, and independent projects. Prerequisites: interview to review background. Enrollment restricted to graduate students. D. Oak

250A. Advanced Organismal Biology. F Consists of lectures focusing on pivotal topics in ecology and evolution. Relevant background material is developed followed by a critical analysis of readings from the primary literature. D. designed to give graduate and advanced undergraduate students direct contact with the major areas of research that are currently at the forefront of organismal biology. Offered in alternate academic years. B. Lyon, L. Fox

250B. Scientific Skills. W Exposes graduate students to teaching skills, understanding the scientific method, searching and organizing literature, grant proposal and scientific writing, data management and presentation, and scientific speaking. Students are evaluated on their participation and the quality of a written research proposal. Enrollment restricted to graduate students. M. Carr

252. Community Ecology. S develops the major themes of community ecology: structure, trophic dynamics, succession, complex interactions among species, herbivore, evolution, and coevolution. Uses case histories of well-studied marine and terrestrial systems. Students cannot receive credit for this course and course 152. Enrollment restricted to graduate students. L. Fox

253. Topics in Population and Community Ecology (2 credits). W Each year, this seminar will focus on one topic in ecology, including community interaction models, movement analysis, demographic modeling, or stability-diversity relationships. Students will lead discussions and complete independent projects tied to the course material. Prerequisites: interview to review background. Enrollment limited to 15. Offered in alternate academic years. D. Oak

260. Marine Ecology. W Paradigms and designs in marine ecology. A review of the paradigms that have shaped our understanding of marine ecology; analysis and discussion of experiments with these paradigms. Students cannot receive credit for this course and course 160. Enrollment restricted to graduate students.

260L. Experimental Marine Ecology. * Supervised individual research projects in experimental marine biology. Students carry out a complete research project, including (1) the formation of hypotheses, (2) the design and implementation of experiments; (3) collection, analysis, and interpretation of data, and (4) the write-up of an oral presentation. Prerequisites: course 260, and interview to assess ability to carry out field project. Enrollment limited to 20. Offered in alternate academic years.

269L. Field Methods in Plant Ecology Laboratory. F Hands-on exploration of the concepts and techniques of plant ecology. A combination of lab, greenhouse, and field-based exercises (irrespective of weather conditions), statistical analysis, and scientific writing. One required weekend field trip. Students cannot receive credit for this course and course 169. Concurrent enrollment in course 269 is required. Enrollment restricted to graduate students. Enrollment limited to 2. The Staff

274. Evolutionary Game Theory. * Reviews static equilibrium concepts, games of incomplete information, and the traditional theory of dynamic games in discrete time. Develops recent evolutionary game models, including replicator and best reply dynamics, and applications to economics, computer science, and biology. (Also offered as Computer Science 272 and Economics 272.) Prerequisites: upper-division math courses in probability theory are strongly recommended. The Staff

279. Evolutionary Ecology. F Analysis of the ways in which ongoing evolution and co-evolution shape the ecological structure and dynamics of populations, species, and species interactions across geographic landscapes. Enrollment restricted to graduate students. J. Thompson

280A. Topics in Research on Molecular Genetics of Yeast (2 credits). F, W, S Intensive research seminar on the structure and function of the gene expression machinery in the simple eukaryote Saccharomyces cerevisiae and its relationship to the human gene expression machinery. Enrollment restricted to graduate students. Prerequisites required; qualified undergraduates may enroll with approval of instructor. May be repeated for credit. M. Ara

280C. Developmental Genetics of C. elegans (2 credits). F, W, S An intensive seminar concerning genetic and molecular analysis of development of the nematode worm C. elegans. Participants are required to present results of their own research and to review relevant papers. Enrollment restricted to graduate students. Prerequisites required; qualified undergraduates may enroll with permission of the instructor. May be repeated for credit.

280D. RNA Processing (2 credits). F, W, S A discussion of current research and literature concerning the regulation of precursor messenger RNA processing. Enrollment restricted to graduate students. Prerequisites: qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit. A. Chisholm

280F. Development of Vertebrate Nervous Systems (2 credits). F, W, S A discussion of current research and literature concerning the regulatory roles of various genes in nervous system development. Enrollment limited to 20. May be repeated for credit. H. Noller

280G. Plant-Bacterial Interactions (2 credits). F, W, S Intensive seminar focusing on mechanisms of bacterial pathogens of the ulcer-causing bacterium Helicobacter pylori. Participants are required to present results from their own research and relevant journal articles. (Also offered as Environmental Toxicology 281D. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Prerequisites required; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 20. May be repeated for credit. K. Ottmann

280H. Topics in Research into Chromatin and Transcription (2 credits). F, W, S An intensive seminar focusing on current research on the molecular mechanisms that control cell division. Participants are required to present results of their own research or to review journal articles of interest. Enrollment restricted to graduate students. Prerequisites required; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit. G. Hartzog

280L. Topics in Neuro Development (2 credits). F, W, S Seminar covering research into the development of the embryonic nervous system. Enrollment restricted to graduate students. Enrollment limited to 12. May be repeated for credit.

280M. Structure and Function of Ribosomes (2 credits). F, W, S An intensive and advanced course focusing on the structure and function of ribosomes. Participants present research findings in an organized, critical fashion, in the context of current research literature in the ribosome field. Enrollment restricted to graduate students. Prerequisites required; qualified undergraduates may enroll with permission of the instructor. Enrollment limited to 20. May be repeated for credit. H. Noller

280N. Topics in Bacterial Pathogenesis (2 credits). F, W, S An intensive seminar concerning the molecular genetics of bacterial pathogens of the ulcer-causing bacterium Helicobacter pylori. Participants are required to present results from their own research and relevant journal articles. (Also offered as Environmental Toxicology 281D. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Prerequisites required; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 20. May be repeated for credit. K. Ottmann

280T. Molecular Biology of Drosophila Development (2 credits). F, W, S An intensive seminar concerning the molecular genetics of Drosophila. Recent research is discussed weekly, with an emphasis on gene regulation and development. Students present their own research or critical reviews of recent articles at least once during the quarter. Prerequisites required; see the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 10. May be repeated for credit. J. Tamkun
Involved a two-hour weekly meeting in which the students discuss topics concerning the cell cycle, early embryonic development, and the cytoskeleton. These discussions critically evaluated ongoing research in this area. Material is drawn from student research and recently published journal articles. Students are expected to meet individually with the instructor two hours weekly. In addition to a three-five page research proposal, each student gives two one-hour oral presentations. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. W. Sullivan

280V. Genetic Responses to Metal Ions (2 credits). F, W, S
Focuses on metal ion responsive gene transcription regulation and regulated protein degradation in metal ion homeostasis. The importance of these cellular mechanisms in human health and heavy metal ion detoxification is discussed. (Also offered as Environmental Toxicology 281Z. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Enrollment limited to 18. May be repeated for credit. Z. Zhu

280W. Membrane Proteins (2 credits). F, W, S
Seminar on recent research on membrane proteins, with an emphasis on ion-pumping ATPase. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 20. May be repeated for credit. B. Bowman

280X. Concepts in Experimental Endocrinology (2 credits). M
Meets twice a week for two hours each session. Participants are required to read scientific journals in their respective area of interest in endocrinology, present the findings in detail, and show how they relate to their research using overheads and slides. Students make approximately four presentations per quarter. Active participation in all discussions is required. Prerequisite(s): course 113. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 20. May be repeated for credit. The Staff

280Y. Developmental Neurobiology of C. elegans (2 credits). F, W, S
An intensive seminar concerning molecular genetic analysis of neural development and plasticity of the nematode worm. C. elegans Participants are required to present results of their own research and to review relevant research. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 18. May be repeated for credit. Y. Jin

280Z. Cell Biology of Immune Response (2 credits). F, W, S
Reading and critique of primary research articles and research in progress in immunology. Topics include biosynthesis and assembly of immunological effector molecules, enzymatic pathways involved in antigen processing, signal transduction via immunological effector molecules, and endotoxins and fate of endotoxins in mammalian tissues. Enrollment restricted to graduate students in biology and biochemistry and molecular biology; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit. M. Zuniga

281A. Topics in Basic and Applied Marine Ecology. F, W, S
Seminar focusing on concepts in basic and applied ecology. Structure rotates quarterly between graduate student research and readings of journal articles and textbooks. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. M. Carr

281B. Topics in Molecular Evolution (2 credits). F, W, S
A discussion of current research and literature review on the subject of molecular evolution. Primary focus on recent results on molecular phylogenetics and molecular population genetics. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. G. Bernardi

281C. Topics in Physiological Ecology. F, W, S
An intensive seminar focusing on the interaction between physiological constraint and life history options and solutions employed by animals. Topics vary from comparative physiology to ecological theory. Participants are required to present results of their own research or review papers of interest. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. D. Coza

Involves readings of recent papers in population and community ecology of interest to the group, as well as manuscripts and grant proposals authored by student participants. Students will lead some discussions and participate in all meetings. May be repeated for credit. D. Doak

281F. Ecological Research Topics. F, W, S
Intensive research and discussions on plant-animal interactions. All students undertake a research project and meet weekly with the faculty sponsor to monitor progress. The group meets weekly to discuss experimental design and analysis, specific problems related to the students' research, relevant research papers, or manuscripts that the group members are writing. Each student gives a formal presentation of research plans or progress each quarter. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit. L. Fox

281G. Molecular Biology of Algae (2 credits). F, W, S
An intensive seminar covering the major research being done in molecular, cellular, and evolutionary studies of algae. Recent research and publications in the field are discussed weekly. Students must participate in all reading discussions and present their research at least once per quarter. Prerequisite(s): consent of the instructor. Enrollment restricted to graduate students. Enrollment limited to 20. L. Goff

281J. Topics in Research on Biochemical Ecology. F, W, S
Seminar in which students give critically evaluated presentations regarding current research on selected topics in plant ecology with an emphasis on biochemical ecology. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 12. May be repeated for credit. J. Langenheim

281L. Topics in Behavioral and Evolutionary Ecology. F, W, S
An intensive seminar on selected topics in behavioral and evolutionary ecology. Students are expected to discuss the current literature and present literature reviews, research proposals, and preliminary results from their ongoing research. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. B. Lyon

281N. Topics in Marine Vertebrate Ecology. F, W, S
Seminar on the ecology of marine vertebrates. Topics vary from the factors that explain the distribution of marine predators to island biogeography and the ecosystem effects of introduced vertebrates on islands. Enrollment restricted to graduate students. Enrollment limited to 12. May be repeated for credit. D. Croll

281O. Topics in Vertebrate Physiology (2 credits). F, W, S
Seminar and discussion of selected topics in mammalian and vertebrate physiology. Special attention is given to anatomical and physiological adaptation of aquatic vertebrates. Enrollment restricted to seniors and graduate students. May be repeated for credit. C. Ortiz

An intensive seminar on selected topics in plant ecology and population biology. Students present results from their own research and discuss recent advances from the literature. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 12. May be repeated for credit. T. Staff

281Q. Topics in Molecular Evolutionary Genetics. F, W, S
An intensive seminar on selected topics in molecular evolutionary genetics. Students are required to present results from their own research projects, present a critical review paper at least once during the quarter, and submit a written research proposal. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit. G. Pogson

281R. Topics in Marine Ecology and Evolutionary Biology. F, W, S
An intensive seminar series focusing on fundamental concepts in marine ecology. Emphasis changes quarter to quarter. At least one-quarter per year is devoted to discussion of student research. Other quarters involve reading and evaluating current and classic literature on marine ecology and evolutionary biology. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit. P. Raimondi

281S. Cellular and Organismal Responses to Toxicants. F, W, S
Intensive research seminar on the concepts, theory, and techniques in deriving physiologically based pharmacokinetic models of toxin exposure, metabolism, and efficacy of therapeutic treatment in mammalian models of human metal toxicity. (Also offered as Environmental Toxicology 281S. Students cannot receive credit for both courses.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. D. Smith
Business Management Economics

Students wishing to pursue a course of study in business management economics should consult the business management economics major under Economics, page 174.

Chemistry and Biochemistry

389 Thimann Laboratories
(831) 459-4125
http://chemistry.ucsc.edu

Faculty and Professional Interests

Professor

ROGER W. ANDERSON
Experiments and theory for low temperature, light-activated chemical vapor deposition, chroomation of molecules with external electric fields, discrete orthogonal polynomials in molecular collision theory, fractal geometry structural measures for large molecules

FRANK C. ANDREWS
Theoretical statistical mechanics and thermodynamics, science and human values, and general problem solving

ILAN BENJAMIN
Theoretical chemistry, molecular dynamics of chemical reactions in liquids and at interfaces

CLAUDE F. BERNASCONI
Kinetic studies of fast reactions, organic reaction mechanisms, acid-base catalysis, proton transfers, nucleophilic reactions, organometallic reactions, ab initio molecular orbital calculations

ROBERTO A. BOGMOLNI
Biophysical chemistry, photobiology, light energy conversion and signal transduction in biological systems

JOSEPH F. BUNNETT, Emeritus

PHILIP CREWS
Marine natural products chemistry, bioorganic chemistry, organic structural analysis by NMR, natural products of marine macro- and microorganisms

ÖLAF EINARSDOTTIR
Time-resolved spectroscopy, biophysics, and bienergetics, ligand binding and electron transfer dynamics of relax metalloproteins, heme-copper oxidases, proton translocation

ANTHONY L. FINK
Molecular basis of protein deposition diseases—e.g., Parkinson’s disease and amyloidosis; development of drugs to prevent protein deposition, protein folding, and aggregation; biophysical studies of protein structure

DAVID S. KLEGER
Time-resolved laser spectroscopy, biophysics, studies of visual transduction, protein function, and protein folding

JOSEF P. KONOPESKI
Synthetic organic chemistry; heterocyclic chemistry; bio-organic chemistry
A. Russell Flegal (Environmental Toxicology)

Secondary perturbations of biogeochemical cycles

Associate Professor

Donald R. Smith (Environmental Toxicology)
Organismal responses and therapeutic treatment of toxins

Assistant Professor

Carol Rohr (Biomolecular Engineering)
Protein design, protein structure and function prediction; protein-protein interactions

Program Description

Chemistry occupies a key position in the modern sciences. Ultimately, most phenomena in biology, medicine, geology, and the environmental sciences can be described in terms of the chemical and physical behavior of atoms and molecules. Because of the wide appeal and utility of chemistry, UC Santa Cruz offers many lower-division courses, differing in emphasis and style, which meet diverse needs. Students should also note the numerous upper-division course offerings and select those most suitable to their academic interests. The curriculum in chemistry exposes the student to the principal areas of modern chemistry, including organic, inorganic, physical analytical, and biochemistry. The curriculum is designed to meet the needs of students who plan to end their formal education with a bachelor of arts or bachelor of science degree, as well as those who wish to go on for an advanced degree. The UC Santa Cruz chemistry B.A. or B.S. graduate is well prepared to pursue a career in chemistry or an allied field.

Research in chemistry at UC Santa Cruz is closely interwoven with graduate and undergraduate education. The chemistry and biochemistry program is active at the graduate level, and the faculty also encourages undergraduates to become involved in research. Research work is done for academic credit in courses 180A-B-C, Senior Research; or in course 199, Tutorial. There are also opportunities for interdisciplinary research spanning, for example, chemistry/physics, chemistry/geology, chemistry/oceanography, chemistry/biology, and computer science. It is not uncommon for students to see their original work published in research journals.

Chemistry and biochemistry faculty and approximately 80 graduate students and 30 postdoctoral fellows are housed in two well-equipped buildings near the Science Library. Standard and specialized spectroscopic equipment, a number of instruments devoted to structural studies, instrumentation for specialized analytical purposes, and computer facilities used in studies of structure and reactivity are all available. The Science Library has an excellent collection of current journals, in print and electronic form, and reference works, as well as earlier volumes of all the major journals going back several decades. Additional source material can be readily and rapidly obtained on interlibrary loan.

A degree in chemistry opens the door to a wide variety of academic careers. Some UC Santa Cruz graduates are working as researchers in industry in areas such as electronic materials, biotechnology, medicinal chemistry, and petrochemicals. Others have entered government service, as research chemists in the Food and Drug Administration, the Environmental Protection Agency, or law enforcement crime laboratories. Fields such as patent law, commercial development, and scientific writing are open to graduates. Many chemistry majors go on to university graduate programs across the nation to prepare for careers in research, teaching, or a combination of the two. The degree in chemistry also provides a strong disciplinary background in preparation for a career in the important and much needed area of science teaching in high school. A major in chemistry is also an excellent beginning for one of the many opportunities in the health sciences.

The U.C. Santa Cruz Chemistry and Biochemistry Department offers both B.S. and B.A. degree programs. The B.S. program has more requirements, and a student in this program earns a degree that meets the requirements of an American Chemical Society certified program. The B.S. degree should be the choice if a student is interested in getting a job in chemistry immediately after receiving his or her college degree. The B.S. program also provides a good background for graduate work in chemistry. The B.A. program has fewer requirements and should be considered by students who wish to take more science courses outside of chemistry to enter an interdisciplinary area. Examples might be chemical oceanography, geochemistry, chemical physics, environmental chemistry, and health sciences. The B.A. might also be a good choice for students who wish to become high school teachers. However, for either degree, the courses stress the fundamentals of chemistry and allow students to pursue independent research.

Opportunities for Nonmajors

In addition to its regular course offerings for majors, the Chemistry and Biochemistry Department offers several courses for the nonmajor. These include 80A, Chemistry of Nutrition: Concepts and Controversy; 80G, Bioethics in the Twenty-First Century: Science, Business, and Society; 180H, Introduction to Wines and Wine Chemistry. These courses are taught by chemistry faculty and are designed to present various aspects of chemical science to the nonmajor. A minor in chemistry is also offered for those who wish to have a strong complementary program in chemistry while majoring in another course of study.

Requirements for the B.A. Degree

The requirements for the bachelor of arts in chemistry have been kept to a minimum so that students may tailor their program to their own purposes, for example to pursue a double major, to study areas of the humanities or social sciences, to complete major requirements late in their college career, or to concentrate study in a specific branch of chemistry. The minimum requirements (including prerequisites) constitute 54 percent of a student’s total undergraduate program; consequently, there is ample time to explore and discover other interests within the university. In order to plan wisely, students are advised to refer to each course description for a detailed listing of prerequisites. Students who decide they want a professional career in chemistry are advised to meet with the chemistry undergraduate staff advisor.

Lower-Division Requirements

Chemistry 1B/M and 1C/N

Mathematics 11A-B and 22 or 19A-B and 22

Physics 5A/L, 5B/M, and 5C/N; or 6A/L, 6B/M, and 6C/N

Upper-Division Requirements

Chemistry 108A/L and 108B/M; or 112A/L, 112B/M, and 112C/N
Chemistry 151A/L, 163A, 163B, 164A, 164B, and one of the following: 146A, 146B, 146C, 146D

Electives. At least two if 108A/L and 108B/M are taken; or at least one if 112A/L, 112B/M, and 112C/N are taken from the following list:

Chemistry 103 (can be used as elective only if Biochemistry and Molecular Biology 100A, 100B, and 100C are not taken as electives)

Chemistry 122, 143, 151B, 163C, and graduate-level lecture courses in chemistry

Biochemistry and Molecular Biology 100A, 100B, 100C

Computer Science 12A or 60N

Environmental Toxicology 135

Ocean Sciences 120

Physics 110A-B, 116A-B-C

Comprehensive Requirement. There are two options for satisfying this requirement:

• Senior thesis. A senior research project based on original experimental or theoretical research (courses 180A-B-C). At the conclusion of the project, the student submits a satisfactory formal research paper to the faculty sponsor. Students arrange for a faculty sponsor by consulting with a relevant faculty member within the chemistry or the biochemistry and molecular biology major program. In some cases, faculty outside of these major programs (for example, in biology, ocean sciences, or Earth sciences) may be an appropriate sponsor. Students who select a sponsor outside the chemistry or the biochemistry and molecular biology major programs should have the title and description of the proposed thesis reviewed by the undergraduate adviser in the Department of Chemistry and Biochemistry. Students, usually working in the laboratory of the faculty sponsor, acquire experimental and/or theoretical research experience and skills in the laboratory as well as instruction in the writing of a research paper. Students are expected to make satisfactory academic progress and be in good academic standing while they take 180 courses

• Senior essay. An essay based on literature research (course 199). After agreeing in advance on an appropriate topic of interest and a format, the student submits a satisfactory essay on the topic. Students arrange for a faculty sponsor by consulting with a relevant faculty member within the chemistry or the biochemistry and molecular biology major program. In some cases, faculty outside of these major programs (for example, in biology, ocean sciences, or Earth sciences) may be an appropriate sponsor. Students who select a sponsor outside the chemistry or the biochemistry and molecular biology major programs should have the title and description of the proposed essay reviewed by the undergraduate adviser in the Department of Chemistry and Biochemistry. Students acquire experience and skills in scientific literature research as well as in the writing of a research paper.

Chemistry Major B.A. Planner

The following is the recommended academic plan for students to complete during their first two years as preparation for the B.A. degree.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Chem 1A</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Math 11A</td>
<td>Math 11B</td>
<td>Math 22</td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 112A/L or Chem 112B/M or Chem 112C/N</td>
<td>Phys 6A/L</td>
<td></td>
</tr>
<tr>
<td>(soph)</td>
<td>Chem 108A/L or Chem 108B/M or Chem 108C/N</td>
<td>Phys 6B/M</td>
<td>Phys 6C/N</td>
</tr>
</tbody>
</table>

Requirements for the B.S. Degree

The bachelor of science major program is designed for students who intend to pursue a professional career in chemistry. It is rigorous and broadly based, appropriate to that purpose. The course requirements for the B.S. major are as follows; please refer to each course description for a detailed listing of prerequisites.

Lower-Division Requirements

Chemistry 1B/M and 1C/N

Mathematics 19A-B, 22

Physics 5A/L, 5B/M, and 5C/N; or 6A/L, 6B/M, and 6C/N

Upper-Division Requirements

Chemistry 122A/L, 112B/M, and 112C/N; or 108A/L, 108B/M, and 143

Chemistry 103

Chemistry 151A/L, 163A, 163B, 163C, 164A, 164B, and one of the following: 146A, 146B, 146C, 146D

Electives. At least two from the following list (to receive certification from the American Chemical Society, you must complete Chemistry 122 as one of the two electives):

Chemistry 122, 143 (if not taken for the organic chemistry requirement), 151B, graduate-level lecture courses in chemistry (5 credits or two 3-credit lecture courses)

Biochemistry and Molecular Biology 100A, 100B, 100C (can substitute for Chemistry 103)

Biological/Environmental Toxicology 135

Computer Science 12A or 60N

Environmental Toxicology 135

Ocean Sciences 120

Physics 110A-B, 116A-B-C

Comprehensive Requirement. Same as for the B.A. (see above)

B.S. Degree with Environmental Chemistry Concentration

A concentration within the biology, chemistry, and Earth sciences degree programs, collectively identified as the environmental sciences program, is offered. Students will develop a core competence suitable for pursuing graduate work in the environmental chemistry area or in graduate environmental sciences programs.

Lower-Division Requirements:

Biology 20A and 20B

Chemistry 1B/M and 1C/N

Earth Sciences 20L, 10L, or 5L

Environmental Studies 25

Mathematics 11A-B and 22; or 19A-B and 22

Physics 5A/L, 5B/M, and 5C/N; or 6A/L, 6B/M, and 6C/N

Upper-Division Requirements:

Biology/Environmental Toxicology 134, Comparative Toxicology

Chemistry 103, Biochemical Structures, Reactions, and Energies

Chemistry 108A/L, 108B/M, Organic Chemistry I

Chemistry 122, Principles of Instrumental Analysis

Chemistry 151A/L, Chemistry of Metals/Organic Lab

Chemistry 163A, Quantum Mechanics and Basic Spectroscopy; and 163B, Thermodynamics and Kinetic Theory; and 146A or 146B or 146C, Advanced Laboratory

Earth Sciences 110B/M, Earth as a Chemical System/Laboratory

Ocean Sciences 120, Aquatic Chemistry: Principles and Applications or 220, Chemical Oceanography

Comprehensive Requirement (choose one of the following):

Senior thesis: 180A, 180B, 180C, Senior Research

Senior essay: 199, Tutorial

Environmental Chemistry Planner

The following is the recommended academic plan for students who wish to pursue the environmental chemistry concentration.
Senior Research Program (courses 180A-B-C) offers an opportunity to participate in the process whereby knowledge is discovered; it is recommended to students, regardless of their ultimate career interest. Students should note, however, that the time demands of Senior Research are greater than those of the usual course.

Requirements for the Minor
The course requirements for the minor, including electives, are the same as for the B.A. degree, with the exclusion of courses 151A-151L, 164A, 164B, 146A, 146B, 146C, and 146D. The minor has no senior comprehensive requirement.

Advising and Chemistry Curriculum Guide
The chemistry and biochemistry advisor provides counsel to undergraduate majors. Students are encouraged to pick up a declaration of major form at their college office and declare their major at an early date so that advising and planning can commence. To assist with this advising, the Chemistry and Biochemistry Department has prepared a curriculum guide. Copies are available at the office.

Prerequisites
Students who wish to obtain permission to take a course without having completed the listed prerequisites must make prior arrangements with the instructor. Courses are designed for students who have met all the prerequisites; those who have not are at a disadvantage.

High School Preparation
Prospective chemistry majors are encouraged to get a solid foundation in high school mathematics, familiarity with algebra, logarithms, trigonometry, and analytic geometry is particularly recommended. High school study of chemistry is not necessary in order to major in chemistry. Students without high school chemistry start their program with course 1A, whereas those with some preparation start in courses 1B and 1M. Experience shows that starting with course 1A does not cause any impediment to progress in the major.

Transfer Students
The Chemistry and Biochemistry Department encourages the admission of students from community colleges. Students who intend to transfer from other institutions, particularly community colleges, are urged to develop a strong background in general chemistry, organic chemistry, calculus, and physics. If the institution offers a physics course based on calculus as well as a non-calculus-based course, the student should take the calculus-based course. Prospective transfer students should consult with a college advisor regarding details of course transferability, and soon after arrival at UC Santa Cruz, they should meet with a UCSC advisor in order to clarify their transfer credit status.

Program for Students of the Health Sciences
Students intending to enter medical, dental, or another health science professional school can satisfy entrance requirements with a major program in chemistry supplemented with further courses, especially in biology, as specified by the particular school. Students are urged to contact the Health Sciences Career Advising Office. A brochure about preparing for careers in the health sciences is available from that office on request.

Biochemistry Program
See page 128 for the biochemistry and molecular biology program description and major requirements.

American Chemical Society Certification
The American Chemical Society (ACS) recognizes certain undergraduate programs, including those of UC Santa Cruz, to be of such quality as to entitle graduates to become ACS members immediately upon graduation. Graduates must be individually certified to the ACS by the Chemistry and Biochemistry Department chair if they have satisfactorily completed an approved program of study. ACS certification standards are rigorous, a graduate who has met them carries a distinction that is well recognized in the profession. Broadly speaking, ACS certification requirements are satisfied by completing a B.S. major program at UC Santa Cruz, including course 122 as an elective. A year of study in a major modern foreign language (preferably German) is recommended. More information is available from the chemistry undergraduate advisor.

Graduate Programs
With most of the 80 currently enrolled students engaged in doctoral research, the Chemistry and Biochemistry Department offers three graduate degrees: the Ph.D., a thesis M.S., and a course work M.S. The Ph.D. and thesis M.S. programs are designed to help students develop into independent scholars while pursuing the excitement of scientific research in a personal, supportive environment. Both the Ph.D. and the research M.S. programs prepare students for careers in academia, industry, government laboratories, and other settings requiring an advanced education in chemistry and related disciplines. The course work M.S. does not require research and is suited to teachers and those wishing to update or broaden their chemical expertise.

Within the Ph.D. program, students have the flexibility to design a course of study focused on personal research interests and are also expected to maintain the high intellectual standards associated with the doctoral degree. Research options include biochemistry, biophysical chemistry, bioorganic chemistry, organic chemistry, physical chemistry, and physical chemistry. Collaborative research is encouraged, both intra- and inter-departmentally. The interdisciplinary Center for Biomolecular Science and Engineering emphasizes bioinformatics, nanotechnology, and computational approaches to chemistry. Biochemists join geneticists, computer scientists, and biologists in the Center for the Molecular Biology of R.A. Productive interactions have also developed between Chemistry and Biochemistry and Environmental Toxicology; Molecular Cell, and Developmental Biology; and the School of Engineering.

Ph.D. requirements include a minimum of six lecture courses, a seminar presentation, an oral examination, original lab research, a dissertation, and dissertation seminar.

Before beginning course work, Ph.D. students take attainment exams to confirm their level of preparation in four areas: organic, inorganic, physical, and biochemistry. First-year students take 292 and 296 and select an adviser and research committee in spring quarter. In the first two years, students enroll in core and other courses according to their specialization. Core courses are 200A, 200B, and 200C for biochemistry and biophysical chemistry; 234 and 256A, 256B, or 256C for inorganic and bioinorganic chemistry; six of the 240 series for organic chemistry; and 261, 262, and 263 for physical chemistry. Organic students must pass four cumulative exams based on assigned reading in current research journals. The Ph.D. candidates research committee meets formally with the student to evaluate research progress at least once a year. Students are expected to finish all Ph.D. requirements in five to six years.

The research M.S. requires attainment exams, five lecture courses, 292, 296, and original research leading to a thesis. The course work M.S. requires attainment exams, nine courses including seven lecture courses from three chemistry subdisciplines, 296, and presentation of a capstone literature seminar.

M.S. students and Ph.D. students who have not advanced to candidacy attend a weekly seminar (291A, 291B, 291C, or 291D). Speakers from UC Santa Cruz, other universities, and research labs expose students to advances at the frontiers of chemical research offering the opportunity for personal contact with leading scientists. Teaching assistantships provide both financial support and the opportunity to put into practice the required pedagogical training offered in 296 (presentation techniques, discussion strategies, lab teaching skills, lab safety procedures, time management). Advanced doctoral students can also be supported as graduate student researchers.

Materials Fee
Chemistry students should be aware of the materials fee required for some courses. The fee is billed to the student's account for specific laboratory materials purchased by the Department of Chemistry and Biochemistry through the university. Fees generally range from $20 to $40 per course. Students may incur additional expense purchasing individual supplies.

Lower-Division Courses

1A. General Chemistry
First term of an integrated study of general chemistry. Course 1A is suitable for people who have not studied chemistry. Covers a range of topics including the atomic structure of matter, molecules, chemical reactions, acids and bases, gases and nuclear chemistry. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. Students are expected to use algebra to solve problems. Prerequisite(s): completion of the Chemistry Placement Examination. (General Education Code(s): IN, Q.) T. Schlech
18. General Chemistry, F, W
Second term of an integrated study of general chemistry. Coverage includes quantum mechanics, the hydrogen atom, many-electron atoms and chemical periodicity, and elementary covalent bonding. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s): course 1A or passing the 1B placement exam, or a preparatory chemistry course at another college or university, or a grade of 4 on the AP chemistry examination. (General Education Code(s): IN, Q.) F. Andrews, E. Switkes

1C. General Chemistry, W, S
Third term of an integrated study of general chemistry. Coverage includes thermochemistry, thermodynamics, chemical kinetics, chemical equilibrium in solution, oxidation-reduction and electrochemistry, nuclear chemistry. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s): course 1B. (General Education Code(s): IN, Q.) F. Andrews

1M. General Chemistry Laboratory (2 credits), F, W
Laboratory sequence illustrating topics covered in courses 1B-1C, respectively, and important experimental techniques. Laboratory: 3 hours; lecture: 1-1/4 hours. Students are billed a materials fee. Course 1M offered fall and winter; 1N offered winter and spring. Prerequisite(s): course 1A or passing the 1B placement exam, course 1B or concurrent enrollment in 1B; satisfaction of the Subject A writing requirement is highly recommended. Enrollment limited to 144. T. The Staff

1N. General Chemistry Laboratory (2 credits), W, S
Laboratory sequence illustrating topics covered in courses 1B-1C, respectively, and important experimental techniques. Laboratory: 3 hours; lecture: 1-1/4 hours. Students are billed a materials fee. Course 1M offered fall and winter; 1N offered winter and spring. Prerequisite(s): course 1A or passing the 1B placement exam, course 1B or concurrent enrollment in 1B; satisfaction of the Subject A writing requirement is highly recommended. Enrollment limited to 144. T. The Staff

80A. Chemistry of Nutrition: Concepts and Controversy.* A brief description of the relevant chemical and physical properties of the main classes of foods, vitamins, and minerals. Discussion of their digestion, sources, metabolism, recommended daily allowances, and effects of deficiencies. High school chemistry strongly recommended as preparation. Offered in alternate academic years. (General Education Code(s): T2-Natural Sciences.) A. Fink

80G. Bioethics in the Twenty-First Century: Science, Business, and Society, F
Serves science and non-science majors interested in bioethics. Guest speakers and instructors lead discussions of major ethical questions having arisen from research in genetics, medicine, and industries supported by this knowledge. (Also offered as Philosophy 80G and Molecular Engineering 80G.) (General Education Code(s): T2-Natural Sciences.) E. Sudol

80H. Introduction to Wines and Wine Chemistry. Introduction to scientific aspects of winemaking and wine sensory evaluation. Overview of wines emphasizing chemical and biological principles appropriate for both non-science and science students. Aspects of wine presented including history, viticulture, fermentation, winery operations, and physiology of wine consumption. Students are billed a materials fee. (General Education Code(s): T2-Natural Sciences.) P. Crevs

80L. Introduction to Chemistry of Wines and Musts (2 credits).* An integrated course exploring elementary aspects of wine evaluation and modern winemaking. Topics: effects of grape varieties, vineyard locations, production techniques, aging practices on wine quality, and winemaking. Survey of commercial wine styles and lab methods of wine component analysis provide insights on how fine wines are made and analyzed. Students are billed for a materials fee. Prerequisite(s): concurrent enrollment in or completion of course 80H. Enrollment limited to 32. P. Crevs

99. Tutorial, F, W, S Students submit petition to sponsoring agency. May be repeated for credit. T. The Staff

99F. Tutorial (2 credits), F, W, S Students submit petition to sponsoring agency. T. The Staff

Upper-Division Courses

103. Biochemical Structures, Reactions, and Energy 112W. *Introduction to biochemistry, focusing on structure and function relationships in chemical components of cells, primary enzyme-catalyzed reactions of metabolism. Chemical principles of cell function at molecular level; molecular structure of nucleic acids discussed. Prerequisite(s): courses 1B and 1C; 108A-B or 112A-B-C or 7B. Schleich

108A. Organic Chemistry, F, W
An integrated study of fundamental organic chemistry, with emphasis on materials especially relevant to the biological sciences. Students with credit for course 112A cannot receive credit for course 108A; students with credit for 112B or 112C cannot receive credit for 108B. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s): course 1C or 4B or a grade of 5 on the AP chemistry examination. J. Konopiski, C. Bernasoni

108B. Organic Chemistry, W, S
An integrated study of fundamental organic chemistry, with emphasis on materials especially relevant to the biological sciences. Students with credit for course 112A cannot receive credit for course 108A; students with credit for 112B or 112C cannot receive credit for 108B. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s): course 108A or 112A. P. Crevs, T. The Staff

108L. Organic Chemistry Laboratory (2 credits), F, W
Laboratory experience in organic chemistry associated with courses 108A-108B, respectively. Prerequisite(s): concurrent enrollment in course 108A or 112A. Students should be concurrently enrolled in course 108B. Enrollment limited to 100. D. Pallaro

108M. Organic Chemistry Laboratory (2 credits), W, S
Laboratory experience in organic chemistry associated with courses 108A-108B, respectively. Prerequisite(s): concurrent enrollment in course 108A or 112A. Enrollment limited to 100. D. Pallaro

112A. Organic Chemistry, F
An integrated study of fundamental organic chemistry, including principles, descriptive chemistry, synthetic methods, reaction mechanisms, and compounds of biological interest. These courses are coordinated with 112L-M-N respectively and are to be taken concurrently with them. Students with credit in course 108A can receive credit for courses 112B and 112C but not for 112A; students with credit in 108B cannot receive credit for 112B or 112C. Lecture 3-1/2 hours optional discussion section: 1-1/4 hours. Prerequisite(s): course 1C or 4B or a grade of 5 on the AP chemistry examination. M. Crawford, T. The Staff

112B. Organic Chemistry, W
An integrated study of fundamental organic chemistry, including principles, descriptive chemistry, synthetic methods, reaction mechanisms, and compounds of biological interest. These courses are coordinated with 112L-M-N respectively and are to be taken concurrently with them. Students with credit in course 108A can receive credit for courses 112B and 112C but not for 112A; students with credit in 108B cannot receive credit for 112B or 112C. Lecture 3-1/2 hours optional discussion section: 1-1/4 hours. Prerequisite(s): courses 108A/L or 112A/L (preferred). Students should be concurrently enrolled in course 112B. Enrollment limited to 100. R. Brasad

112C. Organic Chemistry, S
An integrated study of fundamental organic chemistry, including principles, descriptive chemistry, synthetic methods, reaction mechanisms, and compounds of biological interest. These courses are coordinated with 112L-M-N respectively and are to be taken concurrently with them. Students with credit in course 108A can receive credit for courses 112B and 112C but not for 112A; students with credit in 108B cannot receive credit for 112B or 112C. Lecture 3-1/2 hours optional discussion section: 1-1/4 hours. Prerequisite(s): courses 112B/M. Students should be concurrently enrolled in course 112N. Enrollment limited to 100. R. L. Keye

112L. Organic Chemistry Laboratory (2 credits), F
Laboratory experience in organic chemistry and associated principles. Experiments involve the preparation, purification, characterization, and identification of organic compounds and make use of modern as well as classical techniques. These courses are coordinated with 112A-B-C respectively, and are to be taken concurrently with them. For courses 112L and 112M: lecture 1-1/2 hours and laboratory: 4 hours; for course 112N: lecture 1-1/4 hours and laboratory: 8 hours. Students are billed a materials fee. Prerequisite(s): courses 1C/N. Students should be concurrently enrolled in course 112A. Enrollment limited to 100. D. Pallaro

112M. Organic Chemistry Laboratory (2 credits), W
Laboratory experience in organic chemistry and associated principles. Experiments involve the preparation, purification, characterization, and identification of organic compounds and make use of modern as well as classical techniques. These courses are coordinated with 112A-B-C, respectively, and are to be taken concurrently with them. For courses 112L and 112M: lecture 1-1/2 hours and laboratory: 4 hours; for course 112N: lecture 1-1/4 hours and laboratory: 8 hours. Students are billed a materials fee. Prerequisite(s): courses 108A/L or 112A/L (preferred). Students should be concurrently enrolled in course 112B. Enrollment limited to 100. D. Pallaro
112N. Organic Chemistry Laboratory (2 credits). S
Laboratory experience in organic chemistry and associated principles. Experiments involve the preparation, purification, characterization, and identification of organic compounds and make use of modern as well as classical techniques. These courses are coordinated with 112A-B-C respectively, and are to be taken concurrently with them. For courses 112L and 112M: lecture: 1-1/2 hours and laboratory: 4 hours; for course 112N: lecture 1-1/4 hours and laboratory: 8 hours. Students are billed a materials fee. Prerequisite(s): courses 112B/M. Students should be concurrently enrolled in course 112C. Enrollment limited to 100. D. Palleros

122. Principles of Instrumental Analysis. F
A laboratory course designed to develop familiarity with techniques and instrumentation used in analytical chemistry, emphasizing determination of trace inorganic species. Primary emphasis on applications utilizing absorption or emission of electromagnetic radiation and on voltammetry. Topics include molecular UV-visible absorption and fluorescence spectrometry; atomic absorption, emission and fluorescence; spectrometry; and various forms of voltammetry. Lecture 2 hours; laboratory 8 hours. Students are billed materials fee. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 108B or 112C. (General Education Code(s): W.) P. M. Masharack

143. Organic Chemical Structure and Reactions. F
Advanced topics such as the chemistry of terpenes, steroids, synthetic polymers, alkaloids, reactive intermediates, and reaction mechanisms are treated. Lecture: 4 hours. Prerequisite(s): course 108B or 112C. B. Singaram

146A. Advanced Laboratory in Organic Chemistry (2 credits). S
Designed to expose students to advanced laboratory techniques in organic chemistry. Experiments carry a research-like format and cover the areas of natural products and reaction chemistry. Modern methods of organic analysis are emphasized including chromatographic methods and organic structure determination by spectrophotometry. Laboratory: 8 hours. Students billed a materials fee. Prerequisite(s): courses 108B/M or 112C/N. Enrollment limited to 16. R. Braslau

146B. Advanced Laboratory in Inorganic Chemistry (2 credits). S
Designed to expose students to advanced synthetic and spectroscopic techniques in inorganic chemistry. Examples include anaerobic manipulations, characterization of inorganic materials through spectral assignments and synthesis of coordination and organometallic complexes. Lecture 1-1/4 hours; laboratory: 4 hours. Students billed a materials fee. Prerequisite(s): courses 108B/M or 112C/N. J. Zhang

146C. Advanced Laboratory in Physical Chemistry (2 credits).
Provides advanced and more open-ended laboratory experience in the areas of thermodynamics, kinetics, spectroscopy, and computer simulations. Lecture 1-1/4 hours; laboratory: 4 hours. Students billed materials fee. Prerequisite(s): course 161B and 163B. Enrollment limited to 20. J. Zhang

146D. Advanced Laboratory in Computational Chemistry (2 credits). *
Designed to give experience in advanced computational chemistry through open-ended research-type problems solving. Covers molecular graphics, molecular mechanics, semi-empirical and ab initio calculations applied to conformational analysis, reaction predictions, and drug design. Prerequisite(s): course 108B or 112C. Enrollment limited to 40. T. Holman

151A. Chemistry of Metals. S
Fundamental topics of inorganic chemistry are presented at the level of the standard texts of field. Special emphasis is given to maintain breadth in the areas of metallic, nonmetallic, and biological aspects of inorganic chemistry. Lecture 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s): courses 108B/M or 112C/N; 163A; students should be concurrently enrolled in course 151L. T. Holman

151B. Chemistry of the Main Group Elements. F
Fundamental aspects of inorganic chemistry of main group elements are discussed. The emphasis is placed on the chemistry of nontransition elements including noble gases and halogens. In addition, students are exposed to the concepts of extended structures, new materials, and solid-state chemistry. Lecture 3-3/4 hours. Prerequisite(s): courses 108B/M or 112C/N, and 163A. Recommended for chemistry majors. S. Williamson

151L. Inorganic Chemistry Laboratory (2 credits), S
Laboratory experience in inorganic chemistry. Experiments involve the preparation, purification, and characterization of inorganic compounds. In addition, experiments are designed to illustrate fundamental principles in inorganic chemistry and are coordinated with lectures in course 151A. Laboratory: 4 hours per week. Students are billed a materials fee. Prerequisite(s): courses 108B/M or 112C/N; 163A; students should be concurrently enrolled in course 151A. T. Holman

163A. Quantum Mechanics and Basic Spectroscopy. F
A detailed introduction to quantum theory and the application of wave mechanics to problems of atomic structure, bonding in molecules, and fundamentals of spectroscopy. Prerequisite(s): course 1C or 4B, Physics 5A-5B-C or 6A-6B-C and Math 11C or 22 or 23B. Physics 6C can be taken concurrently. G. M. Ililhauer

163B. Thermodynamics and Kinetic Theory. W
Fundamentals of thermodynamics and applications to chemical and biochemical equilibria. Prerequisite(s): course 1C or 4B, Physics 6A or 5A, and Math 11C or 22. I. Benjamini

163C. Kinetic Theory and Reaction Kinetics, Statistical Mechanics, Spectroscopic Applications. S
Introduction to statistical mechanics, kinetic theory, and reaction kinetics and topics in spectroscopy. Prerequisite(s): courses 163A and 163B. J. Zhang

164A. Physical Chemistry Laboratory I: Data Analysis (2 credits). F
Introduction to data analysis and statistical treatment of errors for physical chemistry experiments. Emphasizes use of computers for problem solving and data analysis of one required laboratory report. Lecture 1 hour; laboratory: 4 hours. Prerequisite(s): course 1C or 4B, Physics 5A-5B-C or 6A-6B-C, and Math 11C or 22. R. Anderson

164B. Physical Chemistry Laboratory II (2 credits). W
Provides laboratory experience in the areas of thermodynamics, kinetics, and spectroscopy. Lecture 1 hour; laboratory: 4 hours. Students are billed a materials fee. Prerequisite(s): course 164A. J. Zhang

180A. Senior Research. F
An individually supervised course with emphasis on independent research. M. multi-term course extending over two or three quarters; the grade and evaluation submitted for the final quarter apply to all previous quarters. Students submit petition to sponsoring agency; may not be repeated for credit. T. Staff

180B. Senior Research. W
An individually supervised course with emphasis on independent research. M. multi-term course extending over two or three quarters; the grade and evaluation submitted for the final quarter apply to all previous quarters. Students submit petition to sponsoring agency; may not be repeated for credit. T. Staff

199. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. T. Staff

199F. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. T. Staff

Graduate Courses

200A. Advanced Biochemistry: Biophysical Methods. F
An introduction to the theory, principles, and practical application of biophysical methods to the study of biomolecules, especially proteins and nucleic acids. Emphasis on spectroscopic techniques. Topics include magnetic resonance, optical spectroscopy, fast reaction techniques, crystallization, and mass spectrometry. R. Bogomolni

200B. Advanced Biochemistry: Protein Structure and Function. W
A detailed discussion of protein chemistry, ranging from the structure, thermodynamics, and folding of proteins to the relationship between structure and function, and encompassing the methods used to determine such information. G. M. Ililhauer

200C. Advanced Biochemistry: Structure and Function of Nucleic Acids. *
A variety of contemporary problems in biochemistry and molecular biology are investigated in a detailed manner. Lecture 3-1/2 hours. The Staff

231. Enzyme Mechanisms and Kinetics. *
A study of enzyme kinetics, mechanisms, and factors involved in enzymatic catalysis. Lecture 3-1/2 hours. Offered in alternate academic years. A. Fink

234. Bioinorganic Chemistry. W
The role played by transition metals in biological systems is discussed through application of the principles of coordination chemistry and inorganic spectroscopy. Topics include metalloproteins involved in oxygen binding, iron
storage, biological redox reactions, and nitrogen fixation, as well as metal complexes of nucleic acids. Lecture 4 hours. Prerequisite(s): courses 151A/L, 163A; and Biochemistry and Molecular Biology 100A. P. M. azharak

238. Topics in Biophysical Chemistry. *
A discussion of the application of selected topics in biophysical chemistry to contemporary problems in biochemistry and molecular biology. Lecture 3-1/2 hours. Offered in alternate academic years T. Schleich

240A. Kinetics and Mechanisms of Organic Reactions (3 credits). F
Basic principles and methods of the kinetic study of reaction mechanisms are covered, including linear free energy relationships. Theories are examined concerning how re-actions choose a mechanism. C. Bernasconi

240B. Combinatorial and High-Throughput Methods in Synthetic Chemistry (3 credits). W
Focuses on solid phase synthetic methods as applied to synthesis of compound libraries. Explores advances in laboratory automation, library synthesis, encoding and decoding schemes, and computational approaches to library design and virtual screening. (Formerly Structure and Reactivity I.) Enrollment restricted to seniors and graduate students. R. Lokey

240C. Organic Structure Analysis from Spectra (3 credits). *
Determination of 2-D and 3-D structure and functionality of organic molecules from spectroscopic properties, including nuclear magnetic resonance, infrared, ultraviolet-visible, and mass spectroscopy. P. Crews

240D. Computational Organic Chemistry (3 credits). S
Current computational methods used to predict reaction products, evaluate conformational energies, and correlate NMR spectra with conformations are examined. Molecular mechanics treatments are compared to empirical AM1 calculations. The Staff

240E. Modern Synthetic Methods (3 credits). F
An advanced study designed to provide the background and insight to enable the student to compare and contrast new reagents and reactions with existing methods. Prerequisite(s): course 143. B. Singaram

240F. Selectivity and Strategy in Organic Synthesis (3 credits). S
An advanced study on the use of chemoselectivity, regioselectivity, and stereochemistry in organic transformations. Strategic planning in approaching the synthesis of complex molecules focuses primarily on retrosynthetic analysis and stereochemical control. Prerequisite(s): course 240E. R. Bradau

240G. Bioorganic Chemistry of Amino Acids and Peptides (3 credits). C
Chemistry of amino acids and secondary structure of amino acid polymers (peptides and proteins) discussed. Special emphasis placed on structure and function of the distinct amino acid side chain functionality as it contributes to structure and function. J. Konopelski

246. Advanced Topics in Organic Chemistry. A graduate course covering advanced topics in organic chemistry. Topics vary from year to year. The Staff

246A. Organic Reactions and Molecular Orbital Theory. *
Qualitative molecular orbital concepts, especially concerning aromaticity, orbital symmetry, and perturbation theory, and their application toward interpretation of reactivity and mechanism. Lecture 3-1/2 hours. Prerequisite(s): courses 273 and 240A. Offered in alternate academic years. M. may be repeated for credit. The Staff

246B. Marine Organic Chemistry. *
A survey of organic natural products from marine sources. Organic chemical structural families unique to marine organisms are outlined. Pathways of their synthesis and interconversions; their role in the marine environment; approaches to their analysis; the distribution of organics in seawater. Lecture 3-1/2 hours. Prerequisite(s): courses 108B/M or 112C/N. Offered in alternate academic years. M. may be repeated for credit. P. Crews

246C. Computers and Information Processing in Chemistry. *
An introduction to digital computers and their applications in chemistry. Includes Monte Carlo, artificial intelligence, pattern recognition, modeling, simulation, and optimization problem-solving methods. Applications to include structural analysis, spectroscopy, organic synthesis, and kinetics. Lecture, laboratory: 3-1/2 hours. Offered in alternate academic years. M. may be repeated for credit. P. Crews

246D. Organoboranes in Organic Synthesis. *
An introduction to organoborane chemistry and its applications to synthetic organic chemistry, including principles, synthetic methods, reaction mechanisms, and asymmetric synthesis. A variety of topics including allylboration, boron-enolates, and asymmetric reductions are discussed. Enrollment restricted to seniors and graduate students. Offered in alternate academic years. M. may be repeated for credit. B. Singaram

246E. Heterocyclic Chemistry. *
Advanced study of synthesis and reactions of heterocyclic organic compounds; particular emphasis on structures with important medicinal value from natural products or pharmaceutical research. Prerequisite(s): course 143 or approval of instructor. J. Konopelski

246F. Organic Free Radical Chemistry. *
Covers a range of topics including radical stabilization, rates of fundamental radical reactions, methods of radical generation, synthetic applications of free radicals, persistent radicals, and some aspects of free radicals in biology. Prerequisite(s): course 143 or permission of instructor. R. Braslav

246G. Advanced Mechanistic Chemistry and Solution Kinetics. *
Kinetic approach to selected topics in mechanistic chemistry with emphasis on structure-reactivity relationships in organic as well as inorganic and biochemical systems. Discussion of scientific and treatment of kinetic data illustrated with examples from various branches of chemistry. Prerequisite(s): permission of instructor. C. Bernasconi

256A. Advanced Topics in Inorganic Chemistry. *
Advanced topics in inorganic chemistry are presented. Topics covered vary from year to year, and are announced in advance. Possible topics include A) organometallic chemistry; B) structural methods in inorganic chemistry; C) solid-state chemistry. Prerequisite(s): courses 151A/L and 146B or graduate standing. The Staff

256B. Advanced Topics in Organic Chemistry. *
Advanced topics in inorganic chemistry are presented. Topics covered vary from year to year, and are announced in advance. Possible topics include A) organometallic chemistry; B) structural methods in inorganic chemistry; C) solid-state chemistry. Prerequisite(s): courses 151A/L and 146B or graduate standing. The Staff

261. Foundations of Spectroscopy. *
The basic theory of time dependent processes is covered at an advanced level. The interaction of electromagnetic radiation and matter is described using both semiclassical and quantum field formulations. A variety of modern spectroscopic techniques are discussed both in terms of the basic processes and their use in the elucidation of chemical structures and dynamics. Prerequisite(s): course 163A. Offered in alternate academic years. J. Zhang

262. Statistical Mechanics. W
Theory and concepts of statistical mechanics with applications to ideal gases, condensed systems, phase transition, and non-equilibrium thermodynamics. Lecture 3-1/2 hours. Prerequisite(s): course 160B or 163A. Offered in alternate academic years. L. Benjamin

263. Quantum Mechanics. W
A rigorous introductory course: the Schrödinger equation, operator formalism, matrix mechanics, angular momentum, and spin. Perturbation and other approximate methods. Applications to atomic and molecular problems. Lecture 3-1/2 hours. Prerequisite(s): courses 163A and Physics 114A-B. Offered in alternate academic years. J. Zhang

265. Computer Simulation in Statistical Mechanics. *
A detailed introduction of the use of computer simulation methods in physical and biophysical chemistry. Includes review of thermodynamics and statistical mechanics, molecular mechanics, molecular dynamics, and Monte Carlo methods. Applications to liquid structure, reaction dynamics, and protein dynamics. Offered in alternate academic years. L. Benjamin

266. Advanced Topics in Physical Chemistry. A graduate course covering advanced topics in physical chemistry. Topics vary from year to year.

266A. Lasers and Their Chemical Applications. *
Introduces the basic theoretical principles of lasers and laser light. Various types of lasers and selected applications to chemistry are discussed. The use of lasers in photochemistry, spectroscopy, chemical kinetics, and chemical analysis is considered. Lecture: 3-1/2 hours. Prerequisite(s): course 163A and Physics 114A-B. Offered in alternate academic years. M. may be repeated for credit. The Staff

266B. Gas Phase Kinetics. *
A discussion of rate processes in gases. Descriptions of experimental and theoretical work on unimolecular, bimolecular, and termolecular reactions and energy transfer processes. Lecture: 3-1/2 hours. Prerequisite(s): course 762. Offered in alternate academic years. M. may be repeated for credit. The Staff
268. Solid State and Materials Chemistry. *
Topics include synthesis of solid-state materials and their characterization using experimental techniques XRD, TEM, spectroscopy, NMR, and their applications in technologies. Emphasis on new materials, e.g., polymer, biopolymers, nanomaterials, organic/inorganic composites, ceramics, superconductors, electronic, magnetic, and opto-electronic materials. Prerequisite(s): courses 163A and 163B. Enrollment restricted to seniors and graduate chemistry majors. J. Zhang

269. Electrochemistry. F
Designed to introduce basic principles and applications of electrochemistry to students at upper undergraduate and lower graduate levels in various fields including analytical, physical, and materials chemistry. Enrollment restricted to seniors and graduate students. S. Chen

273. Applications of Symmetry and Quantum Mechanics.
Group theory and quantum mechanics are applied to problems of the electronic structure and spectra of molecules. A variety of topics including molecular orbitals, the perturbation, reactivity, electronic structure, calculations, and spectroscopy are discussed. Lecture 3-1/2 hours. Prerequisite(s): course 160B or163A. Offered in alternate academic years. E. Switkes

Weekly meetings devoted to the study of asymmetric and/or enantio-selective synthesis of optically active organic compounds of biological and medicinal significance. Topics drawn from the current literature and the research interests of the participants. M. may be repeated for credit. B. Singaram

Weekly meetings devoted to the study of physical and mechanistic organic chemistry. Topics drawn from the current literature and the research experiences of the participants. M. may be repeated for credit. C. Bernasoni

Weekly meetings devoted to the study of synthetic organic chemistry. Topics drawn from the current literature and the research interests of the participants. M. may be repeated for credit. R. Braslau

A detailed study of molecular mechanisms of light energy conversion and light-signal transduction processes in biological systems. Student participation in critical discussion of current literature examples is emphasized. Two-hour lecture and two-hour seminar weekly. Enrollment limited to 8. M. may be repeated for credit. R. Bogomolni

286. Proseminar in Natural Products Chemistry. F, W, S
Weekly meetings devoted to the study of natural products. Topics drawn from the current literature and research interests of the participants. M. may be repeated for credit. P. Crouthers

287. Proseminar in Protein Aggregation and Protein Depletion Diseases. F, W, S
A detailed study of various aspects of protein structure, folding, and aggregation in the context of the molecular mechanisms of protein deposition diseases, with particular emphasis on Parkinson's disease and amyloidosis and the techniques involved in elucidating these mechanisms. M. may be repeated for credit. A. Fink

288. Proseminar in Bioinorganic Chemistry. F, W, S
Weekly meetings devoted to inorganic and bioinorganic research. Topics are drawn from current literature. Papers and reviews are discussed. Participants also give short seminars on topics of their research interests. M. may be repeated for credit. T. Holman, P. M. Sharma

289. Proseminar: Biophysical Chemistry. *
Weekly meetings devoted to a detailed study of the theory and applications of nuclear magnetic resonance spectroscopy and imaging and related spectroscopic techniques to problems in biophysical chemistry. Topics are drawn from the current research literature and the research experiences of the participants. Enrollment limited to 20. M. may be repeated for credit. T. Schleich

290. Proseminar in Computational Chemistry. F, W, S
Weekly meetings devoted to the study of computational chemistry. Topics include molecular modeling, synthesis, planning, drug design, and others from current literature and research interests of the participants. T. Schleich

Open to chemistry graduate students interested in organic chemistry. Weekly meetings are held to hear both local and external speakers discuss their work. Enrollment restricted to graduate students. M. may be repeated for credit. (S) B. Singaram, (F/W) R. Loke

291B. Biochemistry and Molecular Biology Research Seminar. F, W, S
A weekly seminar series covering topics on the frontiers of biochemistry and molecular biology. The speakers include experts in these fields from other institutions. Enrollment restricted to graduate students. M. may be repeated for credit. (F) G. Millhauser, (W/T) T. Schleich, (S) A. Fink

291C. Inorganic Chemistry Research Seminar. F, W, S
For those interested in following the recent developments in the various areas of inorganic chemistry. External speakers: weekly discussion based on personal research or recent literature, led by the inorganic chemistry faculty, post-doctoral fellows, and students. Enrollment restricted to graduate students. M. may be repeated for credit. (F) T. Holman, (W) T. Holman, (P) M. Shachar, (S) O. Novik

291D. Physical Chemistry Research Seminar. F, W, S
A weekly seminar series covering topics of current research in physical chemistry. Weekly meetings are held to hear both local and external speakers discuss their work. Enrollment restricted to graduate students. M. may be repeated for credit. (F) R. Anderson, (W/E) E. Switkes, (S) S. Chen

292. Seminar (2 credits). F
Enrollment restrictions: graduate standing or approval of the graduate adviser. E. Switkes

296. Teaching Chemistry (3 credits). F
University-level pedagogy in chemistry: examines the role of preparation, assessment, and feedback in teaching chemistry discussion and laboratory sections. Effective classroom techniques and organizational strategies discussed; oral presentations analyzed critically. Required of entering chemistry graduate students. D. Palleros

297. Independent Study. F, W, S
A topic will be selected with faculty tutorial assistance to satisfy a need for the student when a regular course is not available. Students submit petition to sponsoring agency. The Staff

Students submit petition to sponsoring agency. The Staff

Chinese

Language Program
239 Cowell College
(631) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Associate Professor

CHRISTOPHER CONNERY (Literature)

World literature and cultural studies, globalization and geographical thought, the 1960s, Marxism, pre-modern and modern Chinese cultural studies, cultural revolution

Lecturer

DAVID KEENAN

Chinese language, fiction, and history

JACQUELINE KU

Chinese language pedagogy, modern Chinese drama, drama as pedagogical tool

Programs

Students interested in acquiring proficiency in Chinese can enroll in language courses from beginning to advanced levels. Students may choose a major or minor in language studies (page 275), a minor in East Asian studies through the Language Program (page 274), an individual major in East Asian studies through their college, or a global economics major (page 177).

The sequence of lower-division courses 1–6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills. Instruction takes place mostly in Chinese from the second half of the first quarter.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 274, under Language Program.

Study Abroad

Students may apply to study intensive Chinese language at one of China’s finest universities— in Taipei, Hong Kong, or Beijing—for periods ranging from a summer up to a full year through the UC Education Abroad Program. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For more information on the program, see UC Education Abroad Program (page 40). For information on credit applied to a major, please contact the appropriate department.
Lower-Division Courses

1. Elementary Chinese (Mandarin). F
Instruction in elementary spoken and written Chinese (Mandarin). Conversation, structural analysis, and an introduction to character texts. Elementary sequence (1-2-3) begins in fall quarter only. Students interested in these courses who have not taken the prerequisite should meet with the instructor, prior to the first class meeting. The Staff

2. Elementary Chinese (Mandarin). W
Instruction in elementary spoken and written Chinese (Mandarin). Conversation, structural analysis, and an introduction to character texts. Students interested in this course who have not taken the prerequisite should meet with the instructor, prior to the first class meeting. Prerequisite(s): course 1, or placement by examination. The Staff

3. Elementary Chinese (Mandarin). S
Instruction in elementary spoken and written Chinese (Mandarin). Conversation, structural analysis, and an introduction to character texts. Students interested in this course who have not taken the prerequisite should meet with the instructor, prior to the first class meeting. Prerequisite(s): course 1, or placement by examination. The Staff

4. Intermediate Chinese (Mandarin). F
Instruction in intermediate spoken and written Chinese (Mandarin). Conversation, composition, and the reading of modern texts. Intermediate sequence (4-5-6) begins in fall quarter only. Students interested in these courses who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 3, or placement by examination. (General Education Code(s): H. ) The Staff

5. Intermediate Chinese (Mandarin). W
Instruction in intermediate spoken and written Chinese (Mandarin). Conversation, composition, and the reading of modern texts. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 4, or placement by examination. (General Education Code(s): H. ) The Staff

Instruction in intermediate spoken and written Chinese (Mandarin). Conversation, composition, and the reading of modern texts. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 5, or placement by examination. (General Education Code(s): H. ) The Staff

50. Preadvanced Chinese. F
Places additional emphasis in the areas of specialized vocabulary, sentence structure, and translation as well as conversational and compositional skills in preparation for advanced courses. Offered fall quarter only. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 6, or placement by examination. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): H. ) The Staff

94. Group Tutorial, F, W, S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

99. Tutorial, F, W, S
Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

107. Introduction to Classical Chinese.
Introduces the grammar and lexicon of classical Chinese and the language of Chinas pre-modern canonical writings in philosophy, religion, history, music, visual art, and literature. Reading from the Han and pre-Han era is featured. Prerequisite(s): course 50 or equivalent. (General Education Code(s): I. H. ) The Staff

108. Introduction to Classical Chinese.
Introduces the grammar and lexicon of classical Chinese and the language of Chinas pre-modern canonical writings in philosophy, religion, history, music, visual art, and literature. Reading from the Han and pre-Han era is featured. Prerequisite(s): course 107. (General Education Code(s): I. H. ) The Staff

194. Group Tutorial, F, W, S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

199. Tutorial, F, W, S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. The Staff

Graduate Courses

207. Accelerated Introduction to Classical Chinese.
Introduces the grammar and lexicon of classical Chinese and meets with course 107. An additional class session permits an accelerated pace and engagement with additional materials, including basic Sinological reference tools, and pursuit of individual student projects. Prerequisite(s): course 50 or equivalent, graduate standing or strong native speaker background. Enrollment restricted to graduate students and qualified undergraduates. The Staff

208. Accelerated Introduction to Classical Chinese.
Introduces the grammar and lexicon of classical Chinese and meet with course 108. An additional class session permits an accelerated pace and engagement with additional materials, including basic Sinological reference tools, and pursuit of individual student projects. Prerequisite(s): course 207 or equivalent. Enrollment restricted to graduate students and qualified undergraduates. The Staff

Additional Courses of Interest

History 40, The Making of Modern East Asia
History 109B/150C, History of China
History of Art and Visual Culture 114, Buddhist Visual Worlds
MusC 80A, Music of East Asia
Women's Studies 145, Racial and Gender Formations in the U.S.

Program Description

"Classics" is a traditional designation for the study of the literature, history, and culture of ancient Greece and Rome. Classical studies at UCSC combines features of traditional programs, such as solid grounding in the ancient languages, with innovative, interdisciplinary approaches (literary theory, gender studies, performance, and film).

Classical studies is an interdisciplinary field. While the core of the major is focused on courses in the ancient Greek and Latin languages, the major also includes courses in history, history of art and visual culture, linguistics, literature, philosophy, politics, religious studies, and theater arts. Students are encouraged to study the literary and material artifacts of Greece and Rome within the larger context of ancient Mediterranean and Near Eastern cultures.

The classical studies major offers an opportunity to work in small classes with a dedicated teaching faculty and excellent fellow students. Over the years, classical studies has averaged six to ten majors per year. Classical studies is an excellent preparation for further study in a wide variety of graduate and professional programs including comparative literature, English, philosophy, law, and publishing.

The basic requirements for the classical studies major allow a variety of emphases and concentrations. For example, students with an interest in contemporary philosophy and political theory might want to concentrate in Greek, taking upper-division courses in Greek, history, philosophy, and politics. Students with an interest in European literature might want to concentrate in Latin, taking upper-division courses in Latin, history, and literature in translation. Students planning on pursuing a clas-
Critical, effective approaches to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources are all explored. Prerequisite(s): permission of college advisor. Enrollment limited to 30. The Staff

61. Education for Sustainable Living Program (2 credits), S
An interactive course providing students with the opportunity to assess and revise methods of and purposes in studying critical, effective, processes to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources are all explored. Prerequisite(s): permission of college advisor. Enrollment limited to 30. The Staff

61. Education for Sustainable Living Program (2 credits), S
An interactive course providing students with the opportunity to assess and revise methods of and purposes in studying critical, effective, processes to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources are all explored. Prerequisite(s): permission of college advisor. Enrollment limited to 30. The Staff

80. Environment and Society (College Eight Core Course), F
Examine education, identity, nature, community, livelihood, and livability at local and national levels as contemporary global transformations affect them. The Core Course is required of all new College Eight students with fewer than 45 transfer credits. Enrollment restricted to first-year College Eight members. (General Education Code(s): T3-Social Sciences.) The Staff

90. College Eight Garden Internship (1 credit), F,W,S
One-credit internship in the College Eight Garden. Offers students of College Eight an opportunity to become involved in an experimental learning project focusing on application of concepts of sustainable agriculture. Enrollment restricted to members of College Eight. Enrollment limited to 10. May be repeated for credit. S. Gileziman

93. Field Study, F,W,S
The Staff

99. Tutorial, F,W,S
The Staff

99F. Tutorial (2 credits), F,W,S
Individual study for upper-division students directed by a faculty member affiliated with College Eight. Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

161. Education for Sustainable Living Program, S
Analyzes sustainability and its application in daily life and on campus, involving collaboration between students, faculty, staff, administration, and the community. Guest lecturers, discussions, an optional UC-wide retreat, and essays allow engagement with aspects of ecological and social sustainability. Interview only. Enrollment limited to 25. J. Borrego

170A. UC Sacramento Seminar, W,S
Seminar provides a systematic understanding of the public policy and political process in California and involves students in creating a research-based paper on some aspect of public policy and/or politics in California. Interview only; enrollment in UC Sacramento program is required. Enrollment restricted to sophomores, juniors, and seniors. May be repeated for credit. The Staff

170B. UC Sacramento Internship, W,S
Provides students with a challenging opportunity to engage in experiential learning. Interview only; enrollment in UC Sacramento program is required. Enrollment restricted to sophomores, juniors, and seniors. May be repeated for credit. The Staff

170C. The Political Economy of California's Political Crisis, W
Examines the emergence and crisis of California's political economy. Develops an analytical framework which encompasses the secular and cyclical variability of Californias income, expenditure, and revenue levels. Analyzes California's economic growth and political development since 1875. Covers the Pat Brown era, Proposition 13 and the Reagan governorship, California demographic transformation, challenges of minority economic development and political representation, and the gubernatorial recall and 2002-04 fiscal crisis. Interview only; enrollment in UC Sacramento program is required. Enrollment restricted to sophomores, juniors, and seniors. May be repeated for credit. The Staff

193. Field Study, F,W,S
The Staff

193F. Field Study (2 credits), F,W,S
Provides for individual programs of study sponsored by the college and performed off campus. Must be sponsored by College Eight faculty. Approval of the student's adviser and the academic preparer is needed to enroll. May be repeated three times for credit. Students submit petition to sponsoring agency. The Staff

The Staff

College Nine

College Office
(831) 459-5034
http://college.nine.ucsc.edu/
For course description and list of faculty, see page 89.

Lower-Division Courses

80A. International and Global Perspectives: A Reading and Discussion Seminar, F
Addresses contemporary issues in the world including cultural practices, international and interethnic conflicts, human rights, and global economics. Taught in small seminar with an emphasis on discussion and developing writing skills. Enrollment restricted to first-year College Nine members who have not passed Subject A. Enrollment limited to 22. (General Education Code(s): T3-Social Sciences.) The Staff

80B. International and Global Perspectives: A Writing and Discussion Seminar, F
Addresses contemporary issues in the world including cultural practices, international and interethnic conflicts, human rights, and global economics. Taught in small seminar with an emphasis on discussion and developing writing skills. Prerequisite(s): passed Subject A. Enrollment restricted to first-year College Nine members. Enrollment limited to 22. (General Education Code(s): T3-Social Sciences.) The Staff

80H . International and Global Perspectives: A Writing and Discussion Seminar (Honors Section), F
Addresses contemporary issues in the world including cultural practices, international and interethnic conflicts, human rights, global economics, and ecology. Taught in small seminar with an emphasis on discussion and developing writing skills. Prerequisite(s): permission of instructor; first-year College Nine students selected for this honors version of first-quarter seminar on basis of application submitted prior to fall quarter; satisfaction of Subject A requirement. Enrollment restricted to first-year College Nine members. Enrollment limited to 22. (General Education Code(s): T3-Social Sciences.) The Staff

85. Exploring a World of Possibilities Workshop (2 credits), W
Series of presentations, films, and workshops that address social, cultural, political, and environmental issues both globally and within particular regions across the world. Enrollment restricted to College Nine members. Enrollment limited to 20. The Staff

86. College Leadership Development (2 credits), S
Students newly appointed into leadership positions at College Nine explore the concept of leadership relating to
College Office
(831) 459-5034
http://collegenine.ucsc.edu/
For college description and list of faculty, see page 91.

### Lower-Division Courses

#### 80A. Social Justice and Community: A Writing and Discussion Seminar, F
Examines issues of social justice including poverty and discrimination. Possible community and governmental strategies for action also considered. Taught in small seminar with emphasis on discussion and developing writing skills. Enrollment restricted to first-year College Nine students who have not passed Subject A. Enrollment limited to 22. (General Education Code(s): T3-Social Sciences) The Staff

#### 80B. Social Justice and Community: A Writing and Discussion Seminar, F
Examines issues of social justice including poverty and discrimination. Possible community and governmental strategies for action also considered. Taught in small seminar with emphasis on discussion and developing writing skills. Prerequisite(s): passage of Subject A. Enrollment restricted to first-year College Ten members. Enrollment limited to 22. (General Education Code(s): T3-Social Sciences) The Staff

#### 80H. Social Justice and Community: Writing and Discussion Seminar (Honors Section), F
Examines issues of social justice including poverty and discrimination. Possible community and governmental strategies for action also considered. Taught in small seminar with emphasis on discussion and developing writing skills. Prerequisite(s): permission of instructor; first-year College Ten students selected for this honors version of first-quarter seminar on basis of application submitted prior to fall quarter; satisfaction of Subject A requirement. Enrollment restricted to first-year College Ten members. Enrollment limited to 22. (General Education Code(s): T3-Social Sciences) The Staff

#### 85. Social Justice Issues Workshop (2 credits), W
Series of presentations, films, and workshops that address personal and cultural identity and examine social, cultural, political, environmental, and other justice concerns. Enrollment restricted to College Ten members. Enrollment limited to 20. The Staff

#### 86. College Leadership Development (2 credits), S
Students newly appointed into leadership positions at College Ten explore the concept of leadership relating to program's theme of Social Justice and Community. Prerequisite(s): current College Ten student leader; permission of instructor. The Staff

#### 89. Art for Social Justice (2 credits), S
Presents art techniques and exercises as vehicles to explore social justice issues. In-class art projects, readings, and discussions address the social construction of identity, social issues and concerns, and the role of art in activism. Enrollment limited to 20. W. Baxter

### Upper-Division Courses

#### 121B. Dialogue Facilitation in Teaching and Community Building (2 credits), *
Designed to teach skills in a multicultural, social justice-oriented context. Students begin focused practice of effective intergroup facilitation skills including identifying and assessing multicultural group dynamics. Interview only. Prerequisite(s): College Nine 121A. Restricted to juniors and seniors. The Staff

#### 121C. Engaging in Intergroup Dialogue (2 credits), *
Topics include social identity development, prejudice and stereotyping and their effect on groups, difference and dominance nature of social oppression, and basic group facilitation skills and their application in multicultural settings. Addressed through readings, videos, facilitated in-class dialogues, and other activities. Interview only: submit application to instructor. The Staff

#### 191. Teaching Social Justice, F,W
Undergraduates at upper-division level participate in teaching discussion groups for College Ten 80 (F) or College Ten 85 (W). Prerequisite(s): permission of instructor; essay describing interest in becoming course assistant, copies of evaluations, and letter of recommendation from college members. Enrollment restricted to College Ten juniors or seniors. The Staff

#### 193. Field Study, F,W,S
Provides college members opportunity to apply their academic learning in a practical setting in the community. Students earn academic credit by working as interns in a community agency or business for 10-12 hours per week. They are trained and supervised by a professional on site. A faculty sponsor also meets regularly with each student to provide supervision and guidance and works with the student in writing an academic paper relevant to the practicum. Prerequisite(s): approval of student's adviser and the provost. Enrollment restricted to sophomores, juniors, and senior college members. May be repeated for credit. A. Ahler

#### 193F. Field Study (2 credits), F,W,S
Provides college members opportunity to apply their academic learning in a practical setting in the community. Students earn academic credit by working as interns in a community agency or business for 4-5 hours per week. They are trained and supervised by a professional on site. A faculty sponsor also meets regularly with each student to provide supervision and guidance and works with the student in writing an academic paper relevant to the practicum. Prerequisite(s): approval of student's adviser and the provost. Enrollment restricted to sophomores, juniors, and senior college members. May be repeated for credit. A. Ahler

#### 199. Independent Study, F,W,S
Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of provost required. Enrollment restricted to upper-division College Nine members. May be repeated for credit. The Staff

#### 199F. Independent Study (2 credits), F,W,S
Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of provost required. Enrollment restricted to upper-division College Nine members. May be repeated for credit. The Staff

#### 199G. Independent Study (2 credits), F,W,S
Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of
The Community Studies Department maintains several unique resources for students. A media laboratory is available for majors (and others in the social sciences) to learn the use of video, radio, film, and graphic media as research and presentation tools. Two field-study coordinators work with students to develop part- and full-time field studies.

Majors Program

The program for all students in the major includes preparatory courses, the field study, post-field-study course work, electives chosen to broaden knowledge for the senior capstone requirement, and the senior capstone requirement itself.

To begin the major and declaration process, a student must be enrolled in one of the Community Studies 100(A–Z), Theory and Practice, seminars. These seminars are gateways into the community studies major. Students learn about a distinct area of social change and social justice theory and practice that will become the focus of their academic study plan, field study, and senior project. Several sections of Community Studies 100(A–Z) are offered each fall.
Admission to the Major

A general background or course work in politics, sociology, anthropology, and/or community activism is suggested for students considering the community studies major. Students are required to have enrolled in two community studies courses at the time they declare the major: one must be one of the 100(A–Z) seminars and the other may be any of the lower- or upper-division courses except for the 42 series of student directed seminars or independent field studies.

The process of declaring the community studies major properly begins when a student enrolls in a section of Community Studies 100(A–Z), the Theory and Practice seminar series. Prospective majors must choose a seminar that matches their own social justice and field-study focus. These seminars are offered during fall and winter quarters only. Because of their small size, the 100(A–Z) seminars in which students enroll are by “interview only.” Although they are open to all students, prospective community studies majors enjoy priority enrollment.

To fulfill the declarations of the major process, prospective majors must prepare a three-page essay outlining how their social justice focus matches the emphasis of their major. The essay should also describe their academic study plan, including relevant upper-division electives and their tentative field-study plans. Students then meet with the professor in charge of their 100(A–Z) seminar to review and discuss the essay and other application materials. Occasionally, a student is not accepted into the major because the student’s social justice and field-study focus are poorly matched with the department’s theory and practice areas.

Instructions for Applying to the Major

1. Attend a department orientation held at the beginning of each quarter (check the Schedule of Classes for date/location).
2. Choose and enroll in the appropriate Community Studies 100(A–Z) seminar (see enrollment procedures below).
3. Pick up a declaration of major petition from your college and obtain approval for Part 1, signed off by your college academic preceptor. Prepare an academic study plan for completing all requirements for the major including field study and upper-division electives. (We strongly suggest you consult with your Community Studies 100(A–Z) instructor when you develop your academic plan.)
4. Write a three- or four-page essay (typewritten) explaining why you want to be a community studies major. Include in this essay a description of the following:
   - the social change/social justice organization with which you expect to work;
   - the classes you have taken and/or plan to take, in addition to Community Studies 100(A–Z), which prepare you to work with this organization;
   - your social location:
     - Social location is the intersection of nationality/immigration, ethnicity/racial privilege, class, gender, age, and sexuality in your background and current social status;
     - the ways in which this will influence and be influenced by your six-month field placement.
5. Before the declaration of major deadline, meet with your Community Studies 100(A–Z) seminar professor to discuss your essay, field-study plans, and other application materials. Obtain the faculty signature on the application form. Bring any evaluations or progress reports from currently enrolled courses to support your application to the major.
6. Bring your completed Declaration of Major petition, draft study plan, signed application form, and essay to the Community Studies Department Office (202 College Eight) for final approval and processing.

Note you cannot begin course 102 without completing step 6. Failure to do so will defer you to the next year in which course 102 is offered.

A student may be directed to another department of study on campus in those instances where higher interests cannot be fulfilled by current department offerings.

Community Studies 100(A–Z) Enrollment Procedures

All Community Studies 100(A–Z) courses are “Interview Only.” Our goal is to provide access to these courses for students who plan to become community studies majors. You must attend the first day of class. Each instructor will ask you to provide information on which they base their decision as to who gets priority in the class. It is wise to meet with him/her to discuss your plans for the major prior to the beginning of course 100(A–Z) to make sure that Community Studies Department and the 100(A–Z) course you have chosen is appropriate for your needs.

Majors' Course Requirements

Summary of Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>100(A–Z) Theory and Practice (fall or winter)</td>
<td>5</td>
</tr>
<tr>
<td>102 Preparation for Field Studies (spring)</td>
<td>5</td>
</tr>
<tr>
<td>198 Independent Field Study (summer/fall)</td>
<td>30</td>
</tr>
<tr>
<td>194 Analysis of Field Materials (winter)</td>
<td>5</td>
</tr>
<tr>
<td>Three upper-division electives (all quarters)</td>
<td>15</td>
</tr>
</tbody>
</table>

100(A–Z), Theory and Practice Seminars

Each of these courses explores the relationship between theory, practice, and social justice within the particular subject area of each course. The Community Studies 100(A–Z) seminars are designed to raise questions about the relationships between different theoretical perspectives and social justice. For example, do social psychological, historical, or literary theories vary in their usefulness in helping us understand social justice work around race and racism? What is the relationship between activism and theory? How do social justice activists select, develop, and, sometimes, even seem to reject their own theoretical perspectives?

The primary course objective is demonstrating how current issues and problems can be researched by better understanding the relationship between theory and practice—how theory gives rise to certain kinds of issues and actions and, in turn, how practice can introduce new ways of thinking about the world. The goal is to expose students to different ways of perceiving and understanding the world and to engage them in an ongoing dialogue about the “practical implications of theory” and the “theoretical implications of practice.”

102, Preparation for Field Study

This course is designed to immerse community studies majors who are planning full-time field study in the practical and theoretical work of field study with a focus on activist research—that is, study conducted by and with activists as to participate in and learn from their work. A required part-time field study of six to eight hours/week with a local community-based social justice organization is a central component of the course that should ideally approximate the kind of work students intend for their full-time field study. Other course assignments are organized around this core component of the course.

Community Studies 102 engages students in a range of issues common to all field studies and focuses on the relationship between theory, field methods, and on-the-ground fieldwork. It gives students the opportunity to develop interpersonal and organizational skills and to learn how to relate issues in the fieldwork within a community/region to those within the global society. Assignments are designed to rigorously prepare students for activist research in a social justice organization by fostering specific research and organizing skills.

Upper-Division Electives

Each student in the major must complete three upper-division electives. The purpose of the elective requirement is to ensure that students have the necessary substantive background for their field studies and senior capstone requirement. At least one of these courses must be from the Community Studies Department, but the other two may be from another campus program as long as their topics are related to the full-time field study. Senior Thesis and independent studies do not fulfill the elective requirement. At least two of the three electives must be completed prior to the full-time field study. Electives must be approved by the student’s 100(A–Z) seminar professor.

198, Full-Time Independent Field Study

A distinguishing feature of the community studies major is the six-month, full-time field study, an arrangement facilitated by the student’s Community Studies 100(A–Z) instructor and the field study coor-
Student-Directed Seminar (SDS): Some students may propose to teach a student-directed seminar to fulfill their capstone requirement. Under the direction of a faculty adviser, the student develops and teaches a Community Studies 42 course that relates to the student's field study and social justice focus, accompanied by a seminar completion report.

The department selects a limited number of student-directed seminars each quarter. Selection is based on the quality of the SDS proposal, the relevance of the subject matter to the major, the student's background preparation, and the total number of proposals submitted each quarter. The Committee on Educational Policy gives the final approval.

For students interested in teaching a student-directed seminar, it is recommended that they meet with their adviser early on—prior to the full-time field study—to begin the process of obtaining course approval. A short written work providing the theoretical basis for the project, giving a brief analysis of the connection between the student's field work and the project itself, a course syllabus, a bibliography, and copies of their evaluations are required, along with a letter from the sponsoring faculty.

Students planning on teaching a student-directed seminar must apply and receive approval. Students must also take course 199. Tutorial, the quarter prior to teaching the SDS to give them time to prepare the course materials. A Student-Directed Seminar Guide giving detailed information about preparing for and teaching an SDS, is available in the department office.

Social Documentation Program
Community Studies Department is inaugurating a new Master of Arts degree program in Social Documentation and plans to welcome its first class of students in fall 2005. The program combines the development of technical skill in the production of one or more documentary genres with core skills in social science research and analysis to produce graphic expressions of people's lives and cultures, the conditions in which they work and sustain themselves, and their efforts to improve their lives and communities. The two-year curriculum is interdisciplinary and will involve faculty from Community Studies and other campus departments along with visiting professional documentarians. The new master's program will further the longstanding social justice aims of the department through its emphasis on documenting problematic and underrepresented aspects of social life. For more information regarding the program, its admissions criteria, and the application process can be found at http://communitystudies.ucsc.edu.

Lower-Division Courses

10. Introduction to Community Activism. S
Introduces the study of communities in theory and practice forces shaping past and present communities, issues defining contemporary communities, and ways students can become involved in solving community problems. Field study in the local community is a course requirement. (General Education Code(s): G-EUR, G-UMR)

42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division or graduate students under faculty supervision. (See course 192.) The Staff

70. Video Laboratory (2 credits). F,S
Trains students in the techniques of documentary film making. Through lectures, demonstrations, hands-on instruction, and review of students' work in progress, students learn the fundamentals of film/video production, pre-production, and post-production skills. Concurrent enrollment in course 80L required. Enrollment limited to 25. The Staff

71. Basic Photography Laboratory (2 credits). F,S
Provides students with photography skills. Through lectures, demonstrations, hands-on experience, and field sessions, students acquire technical and aesthetic training in basic darkroom skills, methods of photographing people, an introduction to alternative processes, and presentation of finished photographs. Concurrent enrollment in course 80L required. Enrollment limited to 20. The Staff

72. Audio Laboratory (2 credits). F,S
Trains students in the fundamental techniques of documentary audio production. Through lectures, documentary examples, demonstrations, hands-on instruction, and consultation with students regarding their work in progress, students gain the skills they need to produce their own audio documentaries. Concurrent enrollment in course 80L required. Enrollment limited to 20. The Staff

76. HIV Prevention (2 credits). S
Presents fundamental tools of HIV prevention, outreach, and support. Provides students with information and techniques necessary to do effective community work. Topics include harm reduction, youth outreach, communication, and global community issues. L. Engelen

80A. Chicano and Social Change, W
Introduction to study of Chicano political experience with selected U.S. institutions, e.g., education and health, beginning with historical overview and ending with consideration of Chicano's political future in the 1990s. Weekly guest lecturers. (General Education Code(s): T3-Social Sciences, E.) L. Trujillo

80B. Civil Rights Movement: Grassroots Change and American Society, F
The civil rights movement of the 1950s-60s was one of the most important grassroots social movements in American history. Course examines this movement, focusing especially on the experiences of rank-and-file participants and on its effects on American society. (General Education Code(s): T3-Social Sciences, E.) D. Brundage

80F. Transgressive Sexualities and Genders. F
H. I. and ethnographic examination of lesbian/gay subcultures, institutions, and politics in contemporary U.S. Topics include growth of urban gay communities, lesbian/gay people of color, family, youth, sex/gender theory, the law, and repression and resistance. General introduction to "queer studies." (Formerly Changing Sexualities and Genders.) (General Education Code(s): T3-Social Sciences, E.) N. Stoller

80H. Social Change and Asian Americans. *
Introduction to the study of social change and Asian Americans, with an emphasis on community and perspectives. Weekly film or guest lecturers. (General Education Code(s): T3-Social Sciences, E.) D. Woo

80L. Social Documentation. F,S
Examines works from various media recognized as being drawn from "real life." Through film, photography, oral history, and other examples, develops critical understanding of social documentation as a process with implicit theories and conventions. Students create beginning documentaries in production collective. (General Education Code(s): T3-Social Sciences) R. Tajima-Peña, D. Wellman
80Q. Asian American Health. *
Examines social and cultural issues relevant to Asian American health or mental health. Given implicit exclusionary biases in conventional health practices, the need is to broaden definitions of practice and prevention to encompass alternative conceptions of health care, as well as larger social problems related to social inequality, education, work, and adjustment to a racially diverse society. (General Education Code(s): T3-Social Sciences, E.) D. Woo

93. Field Study, F,W,S
Supervised research for lower-division students, conducted off campus within regular commuting distance of the campus. Petitions may be obtained in the Community Studies Office. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

93F. Field Study (2 credits), F,W,S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

93G. Field Study (3 credits), F,W,S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. For lower-division students doing part-time off-campus study. Petition must be obtained from the Community Studies Department. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

99. Tutorial, F,W,S
Individual directed study for lower-division undergraduates. Petitions may be obtained in the Community Studies Office. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

99F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Upper-Division Courses

100. Theory and Practice.
Introduces students to different ways of perceiving and understanding social phenomena in an ongoing dialogue about practical implications of theory and theoretical implications of practice. Faculty introduce and discuss their own work in these terms. Topics vary from quarter to quarter. Enrollment priority given to proposed community studies majors. Permission of instructor required; see enrollment conditions in the Schedule of Classes.

100A. Theory and Practice of Race and Racism in American Society. *
Explores four major theoretical frameworks which permit to explain the origins and functions of racism in American society in order to assess the practical and political implications that follow from each one. Will be offered in the 2005-06 academic year. Interview only; admission determined at first class meeting. Enrollment limited to 25. (General Education Code(s): IS, E.) D. Wellman

100B. Theory and Practice of Media and Social Change. F
Uses case study approach to analyze use of films and videos in relation to social change movements. Students produce a video as final project. Interview only; admission determined at first class meeting. Enrollment restricted to sophomores and juniors. Concurrent enrollment in course 170 is required. Course 80L is recommended. Enrollment limited to 25. (General Education Code(s): IS.) R. Tajima-Peña

100F. Theory and Practice of Economic Justice.
Examines how markets operate within the political economy of contemporary capitalism to generate myriad and often chronic forms of economic and social inequality in the United States. Explores different approaches to addressing inequality within the multifaceted economic justice movement. Interview only; admission determined at first class meeting. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): IS, E.) D. Wellman

100J. Theory and Practice of Immigration and Social Justice. W
Introduction to contemporary U.S. immigration patterns and policies, to major problems facing immigrant communities, and to theory and practice of immigrants and their allies in confronting these problems and working for social justice. Interview only: admission determined at first class meeting. Enrollment restricted to sophomores and juniors. Enrollment limited to 20. (General Education Code(s): IS, E.) D. Brundage

100M. Health Care Inequalities. F
Examines system and non-system that is American health care with special attention to inequalities in access, financing, and quality of care. Covers concepts such as equality, fairness, and need as well as community organizing and community building for health. Interview only; admission determined at first class meeting. Enrollment limited to 25. (General Education Code(s): IS, E.) A. Steiner

100P. Theory and Practice of Resistance and Social Movements. F
Where do ideas for democratic social change come from? How are social movements formed? Emphasis will be placed on subgroups including slaves, peasants, workers, utopians, and "second-class citizens" of the global economy from 1492 to the present. Interview only; admission determined at first class meeting. Enrollment limited to 25. (General Education Code(s): IS, E.) P. Ortiz

100Q. Theory and Practice of Feminist Organizing/Global Realities. W
Examines sexuality and gender as political forces, in dominant social orders and oppositional movements. Focus on U.S. location in global race/class relations. Emphasizes grassroots organizing on: sexual violence, abortion, arts censorship, sex work/public sex, HIV/AIDS, LGBT/queer civil rights. (Formerly Theory and Practice of Sexual Politics.) Interview only; admission determined at first class meeting. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): IS, E.) N. Stoller

100R. Theory and Practice of Asian Pacific American Activism. *
Approaches activism that is generated through working for change and social justice in Asian and Pacific American communities. Examines both the larger macro-political context in which this occurs and the specific context of the activism that contributes to this. Interview only; admission determined at first class meeting. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): IS.) D. Woo

100S. Theory and Practice of Social Documentation. W
Provides advanced understanding of history of social documentation and corresponding theories and practices of social documentation. Students also required to advance skills in a practical aspect of social documentation (i.e., video, photography, audio, oral history). Prerequisite(s): course 80L; concurrent enrollment required in lab course 170, 171, or 172; Interview only: admission determined at first class meeting. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): IS.) D. Wellman

100T. Theory and Practice of Social Justice and Sustainability in Agro-Food Systems. F
Explores current arenas of agro-food activism such as organic farming, food aid, eco-labeling, fair trade, and relocalization. Assesses both theoretical and practical efforts to links social justice, food quality, and ecological sustainability in alternative food and agriculture movements. Interview only; admission determined at first class meeting. Enrollment limited to 25. (General Education Code(s): IS.) J. Guthman

100Y. Youth and Society. *
Examines principal theories of youth “development” and role of schooling, poverty, and other influences on well-being and life outcomes of youth. Explores effective strategies for youth-related organizing and social change work. Interview only; admission determined after first class meeting. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): IS.) P. Perry

102. Preparation for Field Studies.
A practicum to prepare students for field study. Course must be successfully completed prior to the six-month field study. Prerequisite(s): completion of admissions process to the major. Enrollment restricted to majors in community studies. P. Ortiz, N. Stoller, M. Pudup

103. Field Study Practicum (2 credits).
A practicum in social change work in which the students work for a social change organization on a part-time basis. Concurrent enrollment in course 102 required. P. Ortiz, N. Stoller, M. Pudup

104. Class in the United States.
Explores politics and culture of class in contemporary U.S. from interdisciplinary perspective, drawing on social theory, political economy, and cultural forms (film, music, and literature) with special emphasis on race, ethnicity, and gender. D. Frank

111. Ageism and Activism.
Introduces students to gerontology, the study of aging. Taking a multidisciplinary approach, critically examines the theories, stereotypes, and realities of worldwide demographic transition and considers the many interesting implications for organizing social and personal life. Enrollment limited to 25. A. Steiner

114. Whiteness, Racism, and Anti-Racism. *
Examines the social, cultural, institutional, and personal ways that white privilege and racial domination are constructed, maintained, and reproduced in U.S. society. Goal is to reveal the “hidden” quality of whiteness and illuminate effective strategies for anti-racist activism. Enrollment limited to 25. (General Education Code(s): E.) P. Perry

115. Queer Arts and Activism. *
Historical exploration of both avant-garde and artistic lesbian, gay, bisexual, and transgender (LGBT) communities in the twentieth century. Selected cultures, including 1950s butch-femme, inspired artistic representations and liberations movements. Other communities, such as ACT UP,
intentionally synthesized art and activism. Focuses on literary and film arts and local activism. Enrollment limited to 25. R. Hamilton


121. Health and Human Rights in Prison. F Critical analysis of health and human rights conditions for prisoners. Includes examination of contemporary theory and practice of punishment, health care in prison, and community and legal intervention in jail and prison conditions. Previous course work or background in the criminal justice area preferred. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 25. (General Education Code(s): W.) N. Boal

122. Experiments in Community: History of Communities in California. F Traces history and flowering of urban and rural communal experiments in postwar California. Critically examines the counterculture—both alternative and revolutionary wings—and its legacy of, for example, sexual politics, child-rearing, art and culture, foodways, environmentalism, architecture, and anticapitalism. I. Boal

123. Walmart Nation. W Examines origins and growth of Walmart stores as powerful guides to understanding dynamics of contemporary global political economy and, relatedly, the changing fortunes of global social classes. M. Pudup

126. African American/Latino Communities: Histories, W Explores the histories, cultures, and politics of African Americans and Latinos since the Mexican-American War; racial oppression and civil rights, culture and identity, citizenship, labor, and public policy struggles; and contemporary politics of black and Latino relationships in the U.S. Enrollment limited to 25. (General Education Code(s): E.) R. Tajima-Peña

134. Youth Cultures and Identity Politics. F What is “youth culture”? What does it have to do with race, class, and gender politics? Combining sociology of race with cultural studies, the course addresses these questions and examines the potential of youth cultures to affect social change. (General Education Code(s): E.) P. Perry

136. Black Liberation in the African Diaspora. F Critically examines anti-slavery, anti-colonial, revolutionary, and civil rights struggles in the African diaspora from slavery to freedom: dynamics of racial oppression debates within black communities, and the impact of gender, class, and cultural differences in the shaping of contemporary protest traditions. (General Education Code(s): E.) P. Ortiz

138. Immigrants in Film: Issues of Media Production. * Analyzes the relationship between content and production processes in the documentation of immigrants in the U.S. from the perspective of the social documentarian. R. Tajima-Peña

142. Introduction to Marxism. W A close study of original texts by Marx and Engels and contemporary Marxists, focusing on the basic tenets of Marxism and their applicability to current community problems. An interdisciplinary course for students with little previous experience in Marxist method. M. Katzin

145. Politics of Obesity, S Examines various dimensions of so-called epidemic of obesity and assesses different approaches to addressing it as a problem. Exposure to a variety of social science perspectives and qualitative research methods in exploring topic. J. Guthman

148. Women’s Health Activism, * Examines concrete aspects of women’s health in social and political contexts, including such factors as environmental and occupational health, the role of race and national-, diversity, sexualities and health, American medical care systems, and international comparisons and organizing approaches. The Staff

149. Political Economy of Food and Agriculture, F Intensive reading course, focusing on key concepts in agrarian political economy and historical development of world food system. Enrollment limited to 25. J. Guthman

161A. Strategic Management and Entrepreneurship in the Nonprofit (2 credits). F Taught in conjunction with the Professions Training Program to provide students and host organizations with a meaningful learning experience. Students learn current cutting edge theory on topics of strategic management and entrepreneurship in the nonprofit sector. Special internship program sponsored by the Career Center; please contact them at 459-3973. Enrollment limited to 25. R. Walters

161B. Strategic Management and Entrepreneurship in the Nonprofit (2 credits). F Second part of class taught in conjunction with Professions Training Program to provide students and host organizations with a meaningful learning experience. Students learn current cutting edge theory on topics of strategic management and entrepreneurship in the nonprofit sector. Special internship program sponsored by the Career Center; please contact them at 459-3973. Enrollment limited to 25. R. Walters

162. Introduction to Non-Profit Organizations and Grantwriting, * This course introduces students to non-profit organizations and grantwriting. Through hands-on grantwriting experiences, students will learn how to write a successful grant. Please bring a potential fundable project idea to the first class. The Staff

163. American Cities and Social Change. * Examines the historical development of and contemporary conditions within U.S. cities by focusing on social and economic restructuring of cities, cultural and political transformations, and spatial reorganizations of the urban landscape. Goal is understanding the changing nature of urban experience. Students must also enroll in course 164. M. Pudup

164. Urban Field Study (2 credits). * Examines multifaceted processes of urban growth and restructuring during two all-day field trips in the greater San Francisco Bay Area. Goal is making urban theory and history come to life. Must be taken concurrently with course 163. Enrollment limited to 15. M. Pudup

166. Northern Ireland: Communities in Conflict. S Introduction to the so-called “troubles" in N. Irishland, from the 1960s to the present. Examination of the historical background to the conflict, the patterns of conflict in the 1970s and 1980s, and the emergence of a peace process in the 1990s. D. Brundage

168. Globalization and its Discontents. * Provides an overview of the origins and existing character of major institutions, structures, and dynamics of the global political economy. Examines some social consequences of so-called globalization as well as political responses to it. J. Guthman

170. Video Laboratory (2 credits). F,W Emphasis on the techniques of documentary film making. Through lectures, demonstrations, hands-on instruction, and review of work in progress, students learn the fundamentals of film video pre-production, production, and post-production skills. Prerequisite(s): concurrent enrollment in course 100S. D. Wellman, R. Tajima-Peña

171. Photography Laboratory (2 credits). F,W Provides students with photography skills. Through lecture, demonstration, hands-on experience, and field sessions, students acquire technical and aesthetic training, darkroom skills, methods of photographing people, introduction to alternative processes, and learn to present finished photographs. Prerequisite(s): concurrent enrollment in course 100S. D. Wellman, R. Tajima-Peña

172. Audio Laboratory (2 credits). F,W Emphasis on the techniques of documentary audio production. Through lectures, documentary examples, demonstrations, hands-on instruction, and in consultation regarding work in progress, students gain skills required to produce their own audio documentaries. Prerequisite(s): concurrent enrollment in course 100S. D. Wellman, R. Tajima-Peña

180. Video Production of the Social Documentary, W Intensive overview of the production of social-issue documentary videos covering conceptualization, research, treatment and proposed writing, interview technique, camera, editing, production, and distribution. Prerequisite(s): course 80L. Concurrent enrollment in course 180L required. Enrollment limited to 20. R. Tajima-Peña

180L. Video Laboratory (2 credits). W Further training in techniques of documentary filmmaking. Through lectures, demonstrations, hands-on instruction, and review of students’ work in progress, students learn skills in film/video pre-production, production, and post-production. Concurrent enrollment in course 180 is required. R. Tajima-Peña

185. Professions Training Program: Internship Preparation (2 credits). * For all students preparing for an internship. Exploration of career objectives, tools and resources to assist in finding and securing the ideal internship, and techniques for maximizing the benefits of the internship experience. Internships are the ticket to career choices. B. Silverthorne

189. Methods of Teaching Community Studies. F,W,S Each student serves as a facilitator for small discussion group in connection with core community studies courses. Facilitators complete course readings and meet with instructor as a group to discuss the teaching process.
May not be counted toward upper-division major requirements. Prerequisite(s): prior course work in the major. The Staff

192. Directed Student Teaching. F, W, S
Teaching of a lower-division seminar, course 42, under faculty supervision. Students submit petition to sponsoring agency. Approval by the Committee on Educational Policy the prior quarter. The Staff

193. Field Study. F, W, S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by upper-division students doing part-time off-campus study. Petitions may be obtained in the Community Studies Department Office. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

193F. Field Study (2 credits). F, W, S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. For upper-division students doing part-time off-campus study. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

193G. Field Study (3 credits). F, W, S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. For upper-division students doing part-time off-campus study. Petition must be obtained from the Community Studies Department. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

194. Analysis of Field Materials. W
A seminar for students who have completed a full-time field study. Devoted to the systematic analysis of field materials, integrating appropriate concepts and relevant literature, as well as utilizing the experience of other students. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 198. Enrollment restricted to community studies majors. (General Education Code(s): W.) D. Wellman, A. Steiner, D. Brundage

195A. Senior Thesis. F, W, S
Individual study with a faculty member to complete the senior thesis. Petitions may be obtained in the Community Studies Department Office. Students submit petition to sponsoring agency. The Staff

195B. Senior Thesis. F, W, S
Individual study with a faculty member to complete the senior thesis. Petitions may be obtained in the Community Studies Department Office. Students submit petition to sponsoring agency. The Staff

195C. Senior Thesis. F, W, S
Individual study with a faculty member to complete the senior thesis. Petitions may be obtained in the Community Studies Department Office. Students submit petition to sponsoring agency. The Staff

198. Independent Study. F
Provides for department-sponsored individual study programs off-campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Community studies majors are required to take 30 credits of field study. Students engaging in full-time field study must complete all application procedures as described in the Community Studies handbook. Students submit petition to sponsoring agency. Prerequisite(s): course 102 must be successfully completed before enrollment in this course. May be repeated for credit. The Staff, M. Rotkin

199. Tutorial. F, W, S
Advanced directed reading and research for the serious student. May be repeated for credit with consent of instructor. Petitions may be obtained in the Community Studies Department Office. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits). F, W, S
Advanced directed reading and research for the serious student. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

201. Theories of “Whiteness” and Anti-Racist Practice. *
Examines most current literature on “whiteness” emanating from legal studies, the humanities, and social sciences and analyzes insights offered for anti-racist public and educational policy, particularly, and white anti-racist practice, generally. Enrollment restricted to graduate students. Enrollment limited to 15. P. Perry

297. Independent Study. F, W, S
Either study related to a course being taken or a totally independent study. Designed for graduate students. Students submit petition to sponsoring agency. The Staff

Computer Engineering
See Engineering, page 199.

Computer Science
See Engineering, page 208.

Cowbell College
-College Office
(831) 459-2253
http://www2.ucsc.edu/cowbell
For college description and list of faculty, see page 75.

Lower-Division Courses

A workshop for beginning writers of poetry. Students generate, revise, and discuss their own work as well as study modern poems that illustrate issues and choices in contemporary poetry writing. Enrollment restricted to members of Cowbell College. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) The Staff

22. Writing Workshop: Prose (2 credits).
A workshop for novice writers of fiction in which students generate, revise, and discuss their own work as well as read stories by diverse writers. Enrollment restricted to members of Cowbell College. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) The Staff

42. Student-Directed Seminar. F, W, S
Seminar taught by upper-division students under faculty supervision. (See course 192.) The Staff

70. Book Arts. F, W
Studies in history, theory, and practice of the printer’s craft. Learn typsetting, manual press operation, aspects of design, and historical processes with particular emphasis on the book arts. Taught in conjunction with Art 111. Does not fulfill a requirement for the art major. (Also offered as Art 70. Students cannot receive credit for both courses.) Enrollment limited to 10. May be repeated for credit. (General Education Code(s): A.) G. Kane

80. The Cowbell Core Course. F
Discussion of literary and philosophical texts which develop themes of humanistic study. Emphasizes critical interpretation and expression with frequent writing assignments (including at least five essays). Syllabus revised each year. Seminar groups meet together periodically for lectures, films, or performances. Enrollment restricted to first-year college members. Enrollment limited to 25. (General Education Code(s): T 4-H humanities and Arts.) The Staff

80S. The Cowbell Core Course, Honors. F
As in course 80, deals with literary, philosophical, and sociological texts that contain important themes of humanistic study. Emphasizes critical readings, discussions, and frequent writing assignments. Uses texts mostly identical to those used in course 80, supplemented with additional material for deeper understanding of issues. Students expected to be active in leading some discussions and in setting the agenda for classroom discussions. Interview only: must be part of college Honors Program. Enrollment limited to 25. (General Education Code(s): T 4-H humanities and Arts.) The Staff

81. Faculty Conversations (1 credit). F
Group tutorial follow-up discussions with the provost, based on faculty conversations that constitute the “First Thursday at Cowbell at 4 P.M.” series, to which the Cowbell College student members of the campus Honors Program are invited. Prerequisite(s): permission of instructor; membership in campus Honors Program. Enrollment limited to 22. S. Williamson

85. Introduction to Creative Writing Systems. *
Gateway course illuminating the operation of the writing systems of greater China. Intended for students who are curious about the world’s longest continually used symbol set as well as for those who may be considering a serious commitment to learning the language. D. Kenan

93. Field Study. F, W, S
Various topics to be arranged. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

94. Group Tutorial. F, W, S
A group of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

94F. Group Tutorial (2 credits). F, W, S
A program of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency. The Staff

Various topics to be arranged. Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits). F, W, S
Various topics to be arranged. Students submit petition to sponsoring agency. The Staff
Upper-Division Courses

105. Radical Italy, S
Overview of radical, oppositional, and utopian thinking in Italy, focusing on literary and social writings spanning seven centuries, from St. Francis of Assisi and Dante through Machiavelli and Galileo; to Musolino, Gramsci, and Fa. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 20. D. Shemek

118A. American Musical Theater. *
An examination of representative works of the American musical theater in the nineteenth and twentieth centuries, with attention to ways in which they illustrate significant aspects of American life and address problems of politics, class, race, and gender. Also offered as American Studies 118A. Students cannot receive credit for both courses. Enrollment limited to 40. The Staff

136A. La Francophonie (2 credits).
Studies linguistic and cultural variation in the French-speaking world. Topics range from the linguistic (language description) to the sociolinguistic (language use in multilingual societies), from literature (poetry, fiction, drama) to history and the arts. Prerequisite(s): Three years high school or one year college-level French, or French 3, 4, 5, 6, 30, 111, 125, or 136A-B-C. Open to all students, but priority given to Cowell students. Enrollment limited to 20. May be repeated for credit. The Staff

136B. La Francophonie (2 credits).
Studies linguistic and cultural variation in the French-speaking world. Topics range from the linguistic (language description) to the sociolinguistic (language use in multilingual societies), from literature (poetry, fiction, drama) to history and the arts. Prerequisite(s): Three years high school or one year college-level French, or French 3, 4, 5, 6, 30, 111, 125, or 136A-B-C. Open to all students, but priority given to Cowell students. Enrollment limited to 20. The Staff

136C. La Francophonie (2 credits).
Studies linguistic and cultural variation in the French-speaking world. Topics range from the linguistic (language description) to the sociolinguistic (language use in multilingual societies), from literature (poetry, fiction, drama) to history and the arts. Prerequisite(s): Three years high school or one year college-level French, or French 3, 4, 5, 6, 30, 111, 125, or 136A-B-C. Open to all students, but priority given to Cowell students. Enrollment limited to 20. The Staff

184A. Leadership and Institution Building (2 credits).
Explores emerging issues in science and technology—bio-engineering, information systems, artificial intelligence, and animal rights—and examines ethical challenges faced as the world is regularly and cataclysmically transformed by the sciences. Prerequisite(s): Three years high school or one year college-level French, or French 3, 4, 5, 6, 30, 111, 125, or 136A-B-C. Open to all students, but priority given to Cowell students. Enrollment limited to 20. The Staff

199F. Tutorial (2 credits). F, W, S
Various topics to be arranged. Students submit petition to sponsoring agency. May be repeated for credit. T he Staff

93F. Field Study (2 credits). F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Students should receive plans with an appropriate fellow of the college. A proposal should be presented to the college academic preceptor no later than the seventh week of the preceding quarter. Credit is granted by the sponsor upon approval of the work performed. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

184B. Leadership and Institution Building (2 credits).
T hrough lectures by senior administrators and student consensus-and-recommendation teams, students learn how leaders work with constituent groups, build cooperation, and develop implementation plans in an institution such as the University of California, specifically, UC Santa Cruz. Enrollment restricted to undergraduates accepted in the Chancellor’s Undergraduate Internship Program. Enrollment limited to 40. W. Ladusaw

184C. Leadership and Institution Building (2 credits).
T hrough lectures by senior administrators and student consensus-and-recommendation teams, students learn how leaders work with constituent groups, build cooperation, and develop implementation plans in an institution such as the University of California, specifically, UC Santa Cruz. Enrollment restricted to undergraduates accepted in the Chancellor’s Undergraduate Internship Program. Enrollment limited to 40. W. Ladusaw

199. Tutorial, F, W, S
Various topics to be arranged. Students submit petition to sponsoring agency. T he Staff

80H. Ethical Issues in Emerging Technologies: Transgenics, Clones, Cyborgs, and Artificial Intelligence. F
Explores emerging issues in science and technology—bio-engineering, information systems, artificial intelligence, and animal rights—and examines ethical challenges faced as the world is regularly and cataclysmically transformed by the sciences. Prerequisite(s): Satisfaction of Subject A requirements for designated seats. Enrollment restricted to first-year college members. (General Education Code(s): T 6-Natural Sciences or Humanities and Arts) F. Ferguson

80S. Undergraduate Seminar in Science, Technology, and Society. *
An honors seminar for first-year students on selected topics that examine the relationship between science, technology, and society. Precise focus of each seminar varies and is announced by the college. Preference will be given to Crown College students. Enrollment restricted to first-year and sophomore students. Enrollment limited to 20. (General Education Code(s): T 2-Natural Sciences.) T he Staff

93. Field Study. F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Students should receive plans with an appropriate fellow of the college. A proposal should be presented to the college academic preceptor no later than the seventh week of the preceding quarter. Credit is granted by the sponsor upon approval of the work performed. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

123. Science and Human Values. S
Study of the impact of the natural sciences and science-based technology on the values of individuals and social groups, and on the quality of human life. A writing-intensive lecture course with weekly section meetings. Prerequisite(s): Satisfaction of Subject A and Composition requirements; permission of instructor. Enrollment limited to 110. (General Education Code(s): W.) F. Andrews

Crown College

College of office
(831) 459-2665
http://www2.ucsc.edu/crown

For course description and list of faculty, see page 79.

Lower-Division Courses

10. Becoming a Successful Student (2 credits). W
An interactive course providing students with the opportunity to assess and revise methods of and purpose in studying. Critical, effective approaches to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources are all explored. Permission of college adviser required. Enrollment limited to 24. The Staff

28. Student Development and Practicum in Higher Education (2 credits). S
An overview of theories, methods, applications, skills, and special topics focusing on college student development and support. This course uses a variety of learning modes including lecture, discussion, case studies, small group interaction and presentations. Prerequisite(s): See Coordinator during enrollment period. Enrollment limited to 24. Enrollment restricted to Crown residential assistants and residential assistant candidates. Enrollment limited to 24. May be repeated for credit. The Staff

80 TH . Ethical Issues in Emerging Technologies: Transgenics, Clones, Cyborgs, and Artificial Intelligence (Honors). *
Explores emerging issues in science and technology—bio-engineering, information systems, artificial intelligence, and animal rights—and examines ethical challenges faced as the world is regularly and cataclysmically transformed by the sciences. Requires more advanced readings than course 80H. Interview only. Enrollment restricted to first-year college members. (General Education Code(s): T 6-Natural Sciences or Humanities and Arts) F. Ferguson

184A. Leadership and Institution Building (2 credits). F
T hrough lectures by senior administrators and student consensus-and-recommendation teams, students learn how leaders work with constituent groups, build cooperation, and develop implementation plans in an institution such as the University of California, specifically, UC Santa Cruz. Enrollment restricted to undergraduates accepted in the Chancellor’s Undergraduate Internship Program. Enrollment limited to 40. W. Ladusaw

199F. Tutorial (2 credits). F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Students should receive plans with an appropriate fellow of the college. A proposal should be presented to the college academic preceptor no later than the seventh week of the preceding quarter. Credit is granted by the sponsor upon approval of the work performed. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

93F. Field Study (2 credits). F, W, S
Provides for individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff
The Digital Arts and New Media M.F.A. Program is designed to be completed in two years of study. During those two years, students will normally take two five-credit courses each term. In addition, most students will take a two-credit colloquium every quarter from courses 204A-B-C. Students will be required to complete 72 credits of academic coursework (of which up to 20 credits may come from upper-division undergraduate courses— with program approval).

A student's program in digital arts and new media will involve five kinds of academic courses: seminars, elective courses, colloquia, project groups, and thesis projects. Seminars are required of all students. The subjects of the first-year seminars are as follows:

- a history of digital arts and new media (fall quarter)
- cultural theory and research (winter quarter)
- interface design (spring quarter)

Elective Courses. These are courses on differing topics which are selectively open to all students, not exclusively those in the Digital Arts and New Media Program. The choice of electives should be selected in consultation with the students' graduate program adviser. If recommended by the adviser, students may enroll in undergraduate courses for credit in the program. Students will be expected to accomplish the coursework at a higher level than undergraduate students.

Colloquia. A time will be set aside each week during which all students and faculty in the Digital Arts and New Media Program will gather for a colloquium. These meetings will involve a research presentation by members of the faculty, invited guests, and, occasionally, student projects. Students will be given relevant reading assignments to prepare them for the colloquia and will be evaluated on their participation.

Project Groups. These groups will form the center of the program, and all students will participate in a project group starting in the third quarter of their first year. Students and faculty are grouped into small clusters based on the nature of the research project and the specific interests of the participants. Each group will have one or more faculty members and approximately six students.

The projects will be selected, in part, for the blend of artistic, technical, and theoretical components. All thesis projects will be completed under the umbrella of the various project groups and will grow out of the work done in the project groups during the three quarters prior to the thesis quarter.

This program serves as a center for innovation and exploration in the study of and application of digital technologies in the arts. With its emphasis on digital tools and enabling art for the arts, the program is designed to fall at the points of intersection of a variety of established disciplines which include the graphic arts, three-dimensional and environmental arts, music and sound design, film, video, and theater. While our focus is on the practice of these arts, it is reinforced with the study and exploration of their history and theory and of the history and theory of the new digital media and the culture they have helped create. This exploration is intended to expand the expressive possibilities of the digital media and other advanced media.

Requirements
times during their thesis quarter. All students will submit a thesis project at the time of the completion of their degree program. In most cases, the thesis will be an arts project submitted in some digital form accompanied by a paper discussing the student’s preparatory research as well as the theoretical significance of the project. In some cases, the project will consist entirely of a written research project.

Applications

Prospective students in the Digital Arts and New Media Program will have a foundation in the arts with some demonstrated interest in technology or a foundation in technology with demonstrated background in the arts. Many, but not all, entering students will have completed a bachelor of arts program in one or more of the arts disciplines (art or art history, film, multimedia, music, theater, video, etc.) or a bachelor of science program in computer science or computer or electrical engineering. Other successful applicants will have a B.A. or B.S. in another field, but will be able to show substantial achievement in the arts, in technology, or in digital arts.

In certain cases, students who demonstrate excellent potential for the program but lack proficiency in a “cross discipline” will be admitted to the program with the understanding that they will take courses during their first two quarters of study to make up that deficiency. An arts student lacking sufficient programming experience, for example, will be expected to take one or two programming courses as electives in his or her first two quarters. Similarly, a student lacking sufficient background in the arts may be required to take courses in an arts discipline.

Students will apply online through the Division of Graduate Studies web site between September 1 and February 1 for the following fall quarter. In addition to submitting an online application, students will be expected to submit a nonreturnable representative sample of their work, i.e., portfolio on a CD, CD-ROM, or DVD. Further information can be found at http://graddiv.ucsc.edu.

Graduate Courses

201. Digital Arts/New Media: History. F
Focuses on history of visual, aural, kinetic, and computational media and technologies central to the field of digital arts/new media today. Explores how digital and new media art has critically engaged with this history. Enrollment restricted to graduate students. M, M ore

202. Digital Arts/New Media: Cultural Theory and Research. W
Examination of key theories concerning digital media and cultures, especially the interaction between digital technologies and sociocultural formations. Emphasizes digital media’s connections to social networks, identity (gender, race, ethnicity, and sexuality), ownership and access, and globalization. Enrollment restricted to graduate students. Enrollment limited to 15. S Errington

203. Digital Arts/New Media: Interface Design. S
Examination of the way digital content creates context through which it is accessed by audience. In particular, explores choice of metaphors through which content is designed to be accessed and variety of interactive strategies made possible as result of choices. Explores rich variety of software interfaces including web browsers, traditional software, computer games, CD-ROM’s, and various distributed art venues. Enrollment restricted to graduate students. S. Daniel

204A. Digital Arts and New Media: Colloquium Series (2 credits). F
Weekly colloquia include presentations by invited outside guests, by U.C.S.C. faculty in DA/NM and in related fields, and by advanced students preparing thesis projects. Students required to read materials specific to each presentation. Enrollment restricted to graduate students. M ay be repeated for credit. D. M asaro

204B. Digital Arts and New Media: Colloquium Series (2 credits). W
Weekly colloquia include presentations by invited outside guests, by U.C.S.C. faculty in DA/NM and in related fields, and by advanced students preparing thesis projects. Students required to read materials specific to each presentation. Enrollment restricted to graduate students. M ay be repeated for credit. D. M asaro

219. Introduction to Electronics for Artmaking. F
Intensive introduction to electronic devices for use in artmaking. Provides hands-on experience working with sensors, motors, switches, gears, lights, simple circuits, microprocessors, and software programs to create kinetic and interactive works of art. Students produce sculptural or installation-based projects. Provides demonstrations, lectures, and critical discussion of work to develop concepts and technical skills. Presents history and theories of electronic art in lectures. Students required to have basic programming skills. Enrollment restricted to graduate students. E. Anderson

220. Introduction to Programming for the Arts. F
Learn about digital representation of text, sound, images, and movies and how to create and manipulate these representations under program control. Also learn about how computers share information over the network with the view of “the web” as a potential medium for artists. Projects are completed using conventional programming languages such as Python, Java, or C. Assumes basic computer literacy and programming experience comparable to one-quarter introductory programming course such as Computer Science 60G or Art 21. This course does not teach how to use existing applications to manipulate the various media. Enrollment restricted to graduate students. E. Anderson, C. M. D’awel

250A. Project Group in Digital Arts and New Media. S
A three-quarter project group, starting in spring of first year of study and continuing through winter of second year of study for first-year students; or starting at other times during year for second-year students. Students collaborate to develop projects and thesis ideas. Examples include music and robotics, morphing, networks and systems, interactive game design, privacy and identity, and interactivity and performance. Enrollment restricted to graduate students. M ay be repeated for credit. P. Elsa, W. Sack

250B. Project Group in Digital Arts and New Media. *
A three-quarter project group, starting in spring of first year of study and continuing through winter of second year of study for first-year students; or starting at other times during year for second-year students. Students collaborate to develop projects and thesis ideas. Examples include music and robotics, morphing, networks and systems, interactive game design, privacy and identity, and interactivity and performance. Enrollment restricted to graduate students. M ay be repeated for credit. P. Elsa, W. Sack

290. Interactivity in Performance. W
Examines use of interactive technologies to bring about collaboration among visual, performance, and sound art. Goal is to collaboratively produce an interactive live-performance work. Explores methodologies and technologies of interactivity, space, and time and addresses aesthetic and compositional concerns that arise when using interactive digital tools, including critical discussions about how technology itself shapes form and content of an artwork. Meets 3 1/2 hours/week for combination lab and lecture. Enrollment restricted to graduate students. E. Anderson

Dual-Degree Engineering

See Engineering, page 217.

Earth Sciences

A232 Earth and Marine Sciences Building
(831) 459-4089
http://www.es.ucsc.edu

Faculty, Researchers, and Professional Interests

ERIK ASHAUGH, Associate Professor
Asteroids and comets, impact modeling, spacecraft exploration

KENNETH L. CAMERON, Emeritus

PATRICK Y. CHUANG, Assistant Professor
Atmospheric aerosols, cloud physics, climate change, atmospheric chemistry, air quality

ROBERT S. COE, Professor
Geophysics, paleomagnetism, tectonics

ANDREW FISHER, Professor
Hydrogeology, crustal studies, heat flow, modeling

ROBERT E. GARRISON, Emeritus

JAMES B. GILL, Professor
Igneous petrology, geochronology of island arcs
Many laboratory activities are associated with UCSC's Institute of Geophysics and Planetary Physics (IGPP), a multidisciplinary research unit. Research scientists associated with IGPP greatly intensify tectonic investigation, adding significantly to the intellectual and teaching resources available in Earth sciences at UCSC. For more information on IGPP activities, see page 65 or the web site at http://igpp.ucsc.edu.

Earth sciences at UC Santa Cruz is also associated with the Institute of Marine Sciences, a group of physical, biological, and chemical oceanographers, with a graduate program of its own. Students often have opportunities to engage in seagoing research aboard a coastal research vessel and occasionally on the larger research vessels of the nearby U.S. Geological Survey, Monterey Bay Aquarium Research Institute, or other oceanographic institutions.

Earth sciences instruction at UC Santa Cruz encompasses geology, geochmistry, and geophysics, as applied to surficial and internal processes and to geological oceanography. Undergraduate courses integrate these subdisciplines and applications, with a focus on modern frontiers and career opportunities in the field. A core set of three foundation courses is available to all majors; these provide rigorous development of the central concepts in Earth sciences. All upper-division Earth sciences courses require the development of the central concepts in Earth sciences. All upper-division Earth sciences courses require the development of the central concepts in Earth sciences.

In addition, there is a requirement to take two upper-division courses that provide hands-on experience with data acquisition and analysis, which is also valuable training for the job market and for graduate research.

The remaining requirements for the major are designed with sufficient flexibility to tailor each degree to particular student interests and career intentions. Through appropriate selection of elective courses, students can develop a focus in any of a wide variety of areas, emphasizing, for example, environmental issues, geologic hazards, water resources, global change, or traditional areas such as geology, geophysics, or geochemistry. Of the many course combinations that can be constructed to prepare for various career directions are illustrated below.

Faculty and research staff cover many Earth sciences disciplines, including igneous and sedimentary petrology, trace element and isotope geochemistry, paleontology and paleoecology, mineral physics, geophysics, marine geology and geophysics, active tectonics, remote sensing, and environmental studies. In addition to providing meaningful instruction, UCSC's Earth sciences instruction at UC Santa Cruz encompasses geology, geochmistry, and geophysics, as applied to surficial and internal processes and to geological oceanography.
before arrival at UC Santa Cruz. It is important that students have completed as many as possible of the chemistry, mathematics, and calculus-based physics courses required. Having this course work completed elsewhere allows students greater flexibility in scheduling and completing their UCSC Earth sciences courses. Junior transfers for Earth sciences majors and prospective majors should meet with department advisors during summer orientation or shortly after their arrival on campus in order to plan their next two years’ schedule of courses.

Bachelor of Science Degree

The B.S. program is designed for students who intend to pursue professional careers in Earth sciences, engineering, policy, law, teaching, or business or who otherwise desire the broad, quantitative training available at UCSC. In addition to providing comprehensive preparation in the basic physical sciences, and particular breadth and depth in Earth sciences, the curriculum is structured to prepare students for the competitive graduate school and career marketplace.

The core of the major includes calculus, physics, chemistry, and a group of comprehensive Earth sciences courses. For the standard B.S., students then select at least four additional courses from a diverse list of upper-division electives, with at least two that involve significant laboratory or field data acquisition and analysis. These electives, often in combination with additional upper-division courses from this and related departments, provide the student with expertise in one or more subfields within Earth sciences.

Effective distributions can be designed to emphasize earthquake and faulting studies, Earth surface processes, Earth system sciences, geologic hazards, geology, crustal and deep-Earth geophysics, marine geophysics, and water resources. Three formal concentrations, all with specific course requirements and leading to an Earth sciences B.S., are available: environmental geology, ocean sciences, and planetary sciences. A senior comprehensive experience (senior thesis, geologic field camp, or exemplary performance in a graduate course) is required.

Preparation for the Standard Major (B.S.)

Chemistry 1B/M and 1C/N
Mathematics 11A-B or 19A-B
Physics 6A/L and 6B/M, or 5A/L and 5B/M, and 6C/N or 5C/N or Chemistry 108A/L or 112A/L

Requirements for the Standard Major (B.S.)

Courses 5L, 10L, or 20L; 110A/L, 110B/M, and 110C/N

At least four elective courses from upper-division Earth sciences offerings must be completed, with not more than one of either course 104 or 105. Two of the four upper-division electives must be selected from this subset of courses, which involve significant laboratory or field data acquisition/analysis: 109/L, 116, 117/L, 119, 120/L, 130/L, 142, 146, 150/L, 168. Five (5) credits of internship (course 198) or independent study (199) may be substituted for up to 5 credits of upper-division elective.

Students also complete the comprehensive requirement described below.

Students are encouraged to take more than the minimum number of elective courses and to combine additional electives from the general list of offerings to fit individual needs. Students may craft an elective distribution in any of many areas of specific research and career interests. The following are examples of elective distributions that develop expertise in important areas (* indicates that the course satisfies the lab or field data acquisition/analysis requirement).

Earth system sciences. Focuses on economic, forest, and atmospheric processes and their relations through time; may include pedologic and paleo-environmental dynamics; global change issues, and surface geological processes such as weathering, erosion, and hydrology: 100/L, 101/L, 102, 107, 109/L*, 116*, 119*, 120/L*, 121, 122, 128, 148, 208, Ocean Sciences 200

Earthquake and faulting studies. Focuses on crustal deformation and faulting processes and related phenomena such as plate motions, earthquakes, and stress in the lithosphere: 109/L*, 117/L*, 119*, 150/L*, 162, 170

Geologic hazards. Focuses on Earth processes that impact society, including earthquakes, volcanoes, coastal erosion, and landslides: 104, 105, 107, 109/L*, 142*, 170

Geology. Emphasizes a traditional broad background with field skills, rock generation and interpretation, and structural relations: 109/L*, 117/L*, 120/L*, 130/L*, 150/L*


Marine geophysics. Emphasizes a breadth of geologic and geophysical background for continuing study of the processes involved in the growth, evolution, and destruction of the ocean floor and margins: 107, 117/L*, 146*, 150/L*, 152*, 168*, 170

Surface processes. Emphasizes understanding the fluxes of energy, water, mass, and chemicals within and across Earth’s surface and the relations to climatic and tectonic forcing processes: 107, 109/L*, 116*, 119*, 120/L*, 122, 128, 134, 142*, 146*, 148*, 166, Environmental Toxicology 144

Water resources. Focuses on water resources quality and quantity and relations between climate and water in and on the crust: 105, 108/L*, 116*, 119*, 121, 142*, 146*, 148, Environmental Toxicology 144, Ocean Sciences 120

Students are not constrained to any specific focus and may develop a unique program based on combinations of various electives. Obtaining advice from the department in order to enhance career opportunities is strongly recommended.

Comprehensive Requirement (B.S.)

Students complete one of the following three options:

Satisfactory completion of courses 188A-B, Senior Field Internship

Satisfactory completion of a senior thesis, which must include a significant element of independent research or original work and can only be undertaken after agreement is obtained from a faculty member to supervise it (approximately three quarters in advance of completion)

Exemplary performance, including a major written report, in a 5-credit graduate course or seminar (which requires permission from the instructor in order to enroll)

Earth Science Standard B.S.

Major Planner

Students planning a professional career in the Earth sciences should take more than the minimum number of courses required for the major if possible. Four-year students have ample flexibility to take additional electives if they begin with the required courses in their second year. Junior transfers also have flexibility if they have taken most of their preparatory courses in calculus, chemistry, and physics before entry. Further advice can be obtained from the undergraduate adviser and from faculty members.

Not: Chemistry 1B/M and 1C/N are offered fall-winter and winter-spring. Physics 6A/L and 6B/M and 6C/N are offered fall-winter and winter-spring and fall-elective, and mathematics 11A-B and 19A-B and 22 are offered every quarter.

Earth Sciences Major with Concentration in Environmental Geology (B.S.)

The environmental geology concentration is designed to provide quantitative preparation for career pathways involving interdisciplinary study of the environment with a geological emphasis. Additional biology and environmental studies courses are required for this concentration along with other distributions of upper-division requirements and electives.

Required Lower-Division Courses

Earth Sciences 20/L (recommended) or 10/L or 5/L
Environmental Studies 25
Biology 20A, 20B, 20C
Chemistry 1B/M and 1C/N
Mathematics 11A-B or 19A-B
Physics 6A/L and 6B/M, or 5A/L and 5B/M

Required Upper-Division Courses

Courses 110A/L, 110B/M, Biology 150

At least four of the following Earth sciences courses: 101/L, 102, either 104 or 105, 107, 109/L, 110C/N, 116, 120/L, 121, 142, 146, 148
Two additional upper-division electives from biology, chemistry, Earth sciences, environmental studies, or ocean sciences

Students also complete an Earth sciences comprehensive requirement from the list described above.
Earth Sciences Major with Concentration in Ocean Sciences (B.S.)
The ocean sciences concentration is intended to provide quantitative preparation for career pathways that include ocean biogeochemistry. Additional biology and chemistry courses are required for this concentration, along with other distributions of upper-division requirements and electives.

Required Lower-Division Courses
Earth Sciences 5/L, 10/L, or 20/L
Biology 20A and 20B
Chemistry 1B/M and 1C/N
Mathematics 11A-B or 19A-B
Physics 6A/L and 6B/M, or 5A/L and 5B/M

Required Upper-Division Courses
Courses 110A/L, 110B/M, 110C/N, 119, 162, and 165 or 166 or Astronomy 118
Three electives from the following courses 107, 116, 117/L, 121, 134, 165, 166, 172, 209; Astronomy 112, 118; Mathematics 130
Students also complete the comprehensive requirement from the list described above.

Earth Sciences (Planetary Sciences) B.S. Major Planner

Bachelor of Arts Degree

The B.A. program encourages connections between the Earth sciences and other disciplines, and the degree is granted only as part of a double major or for the combined major with anthropology or environmental studies. Students can prepare for careers in environmental engineering, management, remediation, and policy; education; law; medicine; and interdisciplinary science fields. The B.A. can be granted together with any major field.

Mathematics 11A-B or 19A-B
Chemistry 1B/M and 1C/N
Physics 6A/L and 6B/M, or 5A/L and 5B/M

Required Lower-Division Courses
Anthropology 1, 2, and 3
Earth Sciences 5/L, 10/L, or 20/L
Mathematics 11A-B
Five lower-division cognate science courses (plus laboratory) chosen from the following:
Biology 20A, 20B, 20C (or 21A, 21B, 21C)
Chemistry 1B/M and 1C/N
Physics 6A/L and 6B/M (or 5A/L and 5B/M)

Required Upper-Division Courses
Anthropology 101 or 180/L or 185
Earth Sciences 110A/L
Three upper-division electives

Preparation for the Standard Major (B.A.)
Chemistry 1B/M and 1C/N
Mathematics 11A-B or 19A-B
Physics 6A/L and 6B/M, or 5A/L and 5B/M

Requirements for the Standard Major (B.A.)
Courses 5/L, 10/L, or 20/L, 110A/L, 110B/M, 110C/N, plus two additional upper-division Earth sciences courses

Comprehensive Requirement
Students complete one of the following two options:
- Satisfactory completion of courses 188A-B, Senior Field Internship
- Satisfactory completion of a senior thesis, which must include a significant element of independent research or original work and can only be undertaken after agreement is obtained from a faculty member to supervise it (approximately three quarters in advance of completion).

Combined Major in Earth Sciences/Antropology (B.A.)
The Earth sciences/anthropology combined major is intended for students with interests in Earth sciences and the laboratory-based aspect of anthropology. These include anthropology students interested in paleoanthropology who desire more intensive training in natural sciences and Earth sciences students interested in paleoanthropology or archaeology. The combined major provides a rigorous training in both anthropology and Earth sciences and will permit students to enter graduate programs in Earth sciences, archaeology, or paleoanthropology. The combined major has a significantly different set of cognate science and required lower- and upper-division courses than the standard major; therefore, students are advised to plan carefully and to contact academic advisors in the Earth Sciences or Anthropology departments early if they have questions.

Required Lower-Division Courses
Anthropology 101 or 180/L or 185
Earth Sciences 110A/L
Three upper-division electives

Preparation for the Standard Major (B.A.)
Chemistry 1B/M and 1C/N
Mathematics 11A-B or 19A-B
Physics 6A/L and 6B/M, or 5A/L and 5B/M

Requirements for the Standard Major (B.A.)
Courses 5/L, 10/L, or 20/L, 110A/L, 110B/M, 110C/N, plus two additional upper-division Earth sciences courses

Comprehensive Requirement
Students complete one of the following two options:
- Satisfactory completion of courses 188A-B, Senior Field Internship
- Satisfactory completion of a senior thesis, which must include a significant element of independent research or original work and can only be undertaken after agreement is obtained from a faculty member to supervise it (approximately three quarters in advance of completion).

Combined Major in Earth Sciences/Antropology (B.A.)
The Earth sciences/anthropology combined major is intended for students with interests in Earth sciences and the laboratory-based aspect of anthropology. These include anthropology students interested in paleoanthropology who desire more intensive training in natural sciences and Earth sciences students interested in paleoanthropology or archaeology. The combined major provides a rigorous training in both anthropology and Earth sciences and will permit students to enter graduate programs in Earth sciences, archaeology, or paleoanthropology. The combined major has a significantly different set of cognate science and required lower- and upper-division courses than the standard major; therefore, students are advised to plan carefully and to contact academic advisors in the Earth Sciences or Anthropology departments early if they have questions.

Required Lower-Division Courses
Anthropology 1, 2, and 3
Earth Sciences 5/L, 10/L, or 20/L
Mathematics 11A-B
Five lower-division cognate science courses (plus laboratory) chosen from the following:
Biology 20A, 20B, 20C (or 21A, 21B, 21C)
Chemistry 1B/M and 1C/N
Physics 6A/L and 6B/M (or 5A/L and 5B/M)

Required Upper-Division Courses
Anthropology 101 or 180/L or 185
Earth Sciences 110A/L
Three upper-division electives

Preparation for the Standard Major (B.A.)
Chemistry 1B/M and 1C/N
Mathematics 11A-B or 19A-B
Physics 6A/L and 6B/M, or 5A/L and 5B/M

Requirements for the Standard Major (B.A.)
Courses 5/L, 10/L, or 20/L, 110A/L, 110B/M, 110C/N, plus two additional upper-division Earth sciences courses

Comprehensive Requirement
Students complete one of the following two options:
- Satisfactory completion of courses 188A-B, Senior Field Internship
- Satisfactory completion of a senior thesis, which must include a significant element of independent research or original work and can only be undertaken after agreement is obtained from a faculty member to supervise it (approximately three quarters in advance of completion).
Earth Sciences Anthropology Combined Major Planner

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Anth 1</td>
<td>Anth 2</td>
<td>Anth 3</td>
</tr>
<tr>
<td>(fresh)</td>
<td>college core</td>
<td></td>
<td>Eart 10/L</td>
</tr>
<tr>
<td>2nd</td>
<td>Math 11A</td>
<td>Math 11B</td>
<td></td>
</tr>
<tr>
<td>(Soph)</td>
<td>cog sci</td>
<td>cog sci</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>Earth 110A/L</td>
<td>elective</td>
<td>cog sci</td>
</tr>
<tr>
<td>(j)</td>
<td>Anth 101 or 185</td>
<td>elective</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>elective</td>
<td></td>
<td>elective</td>
</tr>
<tr>
<td>(s)</td>
<td>sr comp</td>
<td>sr comp</td>
<td>sr comp</td>
</tr>
</tbody>
</table>

Double Majors (B.A. or B.S.)
Each Earth sciences double major is required to complete the full requirements of another UCSC major. If a student elects to major in the environmental geology concentration and the environmental biology (biological sciences) or environmental chemistry (chemistry) concentrations the lower-division preparatory courses will count toward both majors since they are identical. All other double majors in Earth sciences prohibit counting any upper-division course toward both majors.

Minor Requirements
Students can earn a minor in Earth sciences by taking courses 5/L or 10/L or 20/L and five upper-division Earth sciences courses. Two of the five upper-division courses may be substituted by up to two of courses 1, 5, 7, 65, any of the 80 series, or Environmental Toxicology 80E. Courses offering less than 5 credits may not be counted toward the minor. Courses such as Earth Sciences 190 or laboratories (under 5 credits) cannot be utilized to fill any of the minor requirements although additional course work is encouraged. Courses taken for any major may not be double-counted toward meeting the minor requirements.

Graduate Program
The graduate program in Earth sciences is designed to prepare students for careers in research and teaching. The aim is to develop habits of critical analysis and thorough documentation, skill in both field and laboratory research, and proficiency in some particular field of research. The fundamental requirement for admission to the program is substantial evidence of superior scholarship and aptitude for original research. Preparation in the basic sciences and in geology or Earth sciences is equivalent to the requirements for the Earth sciences bachelor's degree at UC Santa Cruz is expected, but graduates in chemistry, physics, engineering, biology, or other disciplines who meet the requirement of superior scholarship are eligible and encouraged to apply. Deficiencies can be made up by additional course work. Prospective students should take the Graduate Record Examination (GRE) General Test and have the scores sent to the UCSC Division of Graduate Studies.

UC Santa Cruz awards both the M.S. and the Ph.D. degrees. The M.S. degree may be the terminal degree for some of those seeking careers in industry, government, and teaching at the secondary level. It may also be an initial step toward the Ph.D. degree, in which the student gains knowledge and confidence in carrying out and completing a scientific project. The master's degree is awarded on the basis of a thesis, course work, or an examination.

Thesis Track. In their first year, all thesis-track graduate students register for courses 203, Introductory Teaching Seminar; 205, Introductory Graduate Seminar; 206, Grant Papers in the Earth Sciences and, in consultation with the graduate preliminary interview committee, choose at least one from among courses 207, Textonics 208, M. edths in Paleodimkology; 209, Solid Earth Geochmestry; or 210, Groundwater M.odeling. In subsequent years all students participate in course 293, Graduate Research Seminar. Other course requirements are tailored to the individual student's academic background, professional experience, and plans for research. No specific number of course credits is required for the Ph.D., but, ordinarily, students put more of their effort into course work during at least the first year of graduate study. It is recommended that all thesis-track graduate students attain some teaching experience while at UCSC.

Late in the fall quarter, each first-year thesis-track student has an interview with a representative committee of the faculty. The interview topics are drawn from the broad field of Earth sciences and can include elementary mathematics, physics, chemistry, or biology. The meeting is used to determine the student's understanding of basic scientific principles and ability to apply these principles to specific problems. The following fall, students meet again with this committee to assess progress on recommendations made the previous fall.

In order to qualify for candidacy in the doctoral program, each student must pass an oral examination in his or her area of specialization for the Ph.D. The exam is based on one or more research proposals, presenting a scientific question defined by the student, within the scope of a Ph.D. thesis. Students are expected to have in-depth knowledge of fields relevant to the proposal, including familiarity with the current professional literature. The Ph.D. dissertation is a scholarly contribution to knowledge which embodies the results of original and creative effort by the student. Students are urged to prepare their dissertations or their chapters of them, in a form suitable for publication. A defense of the dissertation is required.

Course Work Track. The course work master's track is designed to allow students to increase their breadth, quantitative depth, or emphasis on a particular specialty; to provide the student with a stronger background toward competition for jobs or an enhancement of skills for current employment (e.g., K-14 teaching); and to allow students from other disciplines (e.g., biology, physics, chemistry, mathematics, environmental studies) to acquire advanced training in Earth Sciences. During the first quarter of study, students have a meeting with their faculty advisor in which they develop a study plan of at least nine courses, no more than one of which may be 297 or 298, and a statement of objectives. The plan must be approved by the graduate representative. Students are also limited to one Earth Sciences 290 pro-seminar course.

Course work master's students are required to fulfill one of the following capstone options: a substantial review/research manuscript or a comprehensive oral examination based on their course work.

There is no foreign language requirement for either the M.S. or the Ph.D. degree. However, many students in the Earth sciences find knowledge of one or more foreign languages necessary in their particular research and therefore study the appropriate language.

Details regarding admission to graduate standing, financial aid, examinations, and the requirements for the master of science and doctor of philosophy degrees are available from the Division of Graduate Studies. For more information see Graduate Studies, page 45.

Lower-Division Courses

1. Oceanography, F,W
An introduction to the physical environment of the ocean. Origin, distribution, historical record, and economic significance of marine sediments; ocean currents, waves, tides, and changing sea level; beaches, shorelines, and coastal processes; marine resources, pollution, and human impacts on the oceans. Students may also enroll in and receive credit for Ocean Sciences 1. Lower-Division 1.5 hours. (General Education Code(s): IN. Q. J.) Zachos G. Griggs

2. Geology of National Parks. *
Geologic concepts and processes responsible for shaping our national parks including mountain building, volcanic and earthquake activity, sedimentation, weathering, erosion, and glaciation. An understanding of how geology impacts our lives is emphasized. Appropriate for both science and non-science majors who wish to enhance their knowledge, enjoyment, and appreciation of our national parks. Will be offered in the 2005-06 academic year. (General Education Code(s): IN ) S. Schwartz

3. California Geology, F
An introduction to physical geography emphasizing the minerals, rocks, volcanoes, mountains, faults, and earthquakes of California. In-class field trips to study the caves, rocks, and landforms of the campus and the Monterey Bay area. Discussion-1 hour. Concurrent enrollment in 5/L required for majors and minors. (General Education Code(s): IN.) J. Moore

5L. California Geology Laboratory (1 credit). F Laboratory sequence illustrating topics covered in course 5 with particular emphasis on rock and mineral identification and map interpretation. Field trip. Laboratory three hours. Students are billed a materials fee. J. Moore

6. Concepts in Environmentalism, S
Learn scientific concepts required to be an informed environmentalist. Topics include urban smog; water sources and pollution; waste treatment; acid rain; global climate change; fossil fuel, nuclear, and renewable energy; overpopulation; and how an individual can minimize his or her environmental impact. (General Education Code(s): IN.) P. Chuang

7. The History of Life. *
An examination of the major events in the history of life, from the origin of life approximately four billion years ago, to the wave of extinctions that has decimated plants and animals around the globe over the past 30,000 years. Will be offered in the 2005-06 academic year. Offered in alternate academic years. (General Education Code(s): IN.) J. Zaquis,

10. Geologic Principles, S
Introduction to the scientific study of Earth, the materials composing it, and the processes shaping it. Topics include minerals and rocks, Earth's internal structure, plate
tectonics, earthquakes and volcanoes, oceans and the atmosphere, the formation of landscapes and global change. A one-day, optional field trip is included. Concurrent enrollment in 10L required for majors and minors. (General Education Code(s): IN, Q.) P. Koch

10L. Geologic Principles Laboratory (1 credit). S Laboratory sequence illustrating topics covered in course 10, with particular emphasis on rock and mineral identification and map interpretation. Laboratory 3 hours. In-lab field trips. Students are billed a materials fee. P. Koch

20. Environmental Geology. W Introduction to aspects of geology which affect and are affected by humans. Addresses a broad range of topics including resource management, geologic hazards, air and water issues, population and land use, energy costs and effectiveness, and global change. All from a unique geologic-environmental perspective. Lectures include strategies for mitigating these issues. Includes a one-day field trip. Concurrent enrollment in 20L required for majors and minors. (General Education Code(s): IN.) S. Tulaczyk

20L. Environmental Geology Laboratory (1 credit). W Laboratory sequence illustrating topics covered in course 20, with emphasis on rock and mineral identification, geologic hazard assessment, geologic resource management, and land use planning. In-lab field trip. Laboratory 3 hours. Students are billed a materials fee. S. Tulaczyk

65. Natural History of Dinosaurus. S Origin, evolution, and extinction of dinosaurs with emphasis on paleobiology and paleocology. Covers fundamental paleontological and evolutionary principles, dinosaur anatomy and behavior, the hot-blooded/cold-blooded debate, dinosaur-bird relationships, diversity, exploits of the great dinosaur hunters, and dinosaurs' prospects. One and a half hour of discussion each week. Offered in alternate academic years. (General Education Code(s): IN.) J. H. Schwartz, P. Koch

80A. Earth Catastrophes. F The role of catastrophic processes in shaping Earth and the environment in which we live. The physical processes causing earthquakes, volcanic eruptions, tsunamis, floods, windstorms, landslides, and meteorite impacts will be described, along with the role played by these rapid processes in the geological and biological evolution of the planet. Interdisciplinary approaches to understanding these phenomena will be discussed. The entire time scale from formation of the universe to the present Earth system will be considered. (General Education Code(s): T 2-Natural Sciences, Q.) T. Lay

80B. Earthquakes: You, the Earth, and Society. W Interdisciplinary course on earthquakes, including scientific, public-policy, planning, and societal response perspectives. When is the next earthquake? Causes, prediction, human psychology, law, personal safety, response planning, problems for special populations. Expert lectures. Films. Laboratory/discussion 2 hours. Portion of requirements may or may not entail additional cost. Students are expected to complete either a course in first aid or cardiopulmonary resuscitation (CPR). Advanced algebra and geometry courses (high school level) are recommended. (General Education Code(s): T 2-Natural Sciences, Q.) The Staff

80C. Introduction to Weather and Climate. * Many meteorological phenomena are familiar to us: clouds, fog, rain, snow, wind, lightning, and severe storms. Climate is the sum of weather over long periods and is changing (e.g., greenhouse warming, ozone depletion, urban smog) due to mankind's activities. Conceptual understanding of how and why the present-day atmosphere behaves as it does and how this may change in the future is the primary goal of this course. Will be offered in the 2005-06 academic year. (General Education Code(s): T 2-Natural Sciences, Q.) P. Chuang

80D. Earth Sciences and the Cinema. W Exploration of cinematic roles in defining societal awareness of Earth sciences (underlying concepts and factual basis) for disaster and adventure movies and in more subtle presentations. Topics include evolution of life, surface environment and the planet's deep interior, natural hazards, global warming, and meteorite impacts. (General Education Code(s): T 2-Natural Sciences, Q.) T. Lay, L. Sloan

80F. Earth History and Global Change. * Over the past 4.5 billion years, planet Earth has evolved, and environments, climates, and life forms on the planet have come and gone. Examines changing surface conditions through geologic time, beginning with evolution of the earth, through changes leading to the current state of the planet, and considers prospects for the future of Earth. W hy and how the surface Earth has evolved are major themes. Optional laboratory will be offered in the 2005-06 academic year. Offered in alternate academic years. (General Education Code(s): T 2-Natural Sciences.) L. Sloan

80G. Planetary Discovery. S An introductory look at modern solar system exploration, focusing on spacecraft missions presently underway. We will examine the scientific context of each mission, the instrumentation and dynamics of each voyage, and the importance of their discoveries. Open to all students. (General Education Code(s): T 2-Natural Sciences.) E. Asaph

98. Earth Sciences Internship. F, W, S A supervised learning experience involving practical application of lower division Earth sciences knowledge while working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work, to be evaluated both by the sponsoring agency and the faculty supervisor. Consult sponsoring agency for enrollment criteria after instruction on resume preparation and interview skills. Students must have applied and been accepted into internship by approved sponsoring organizations. J. More

99. Tutorial. F, W, S, S A limited number of tutorial courses are offered for students who desire special reading and instruction leading to an upper-division course. A petition for tutorial enrollment must be submitted to the sponsoring agency. The Staff

Upper-Division Courses

100. Vertebrate Paleontology. * Introduction to vertebrate history, with an emphasis on vertebrate relationships and the co-evolution of organisms and environments. Specific topics include vertebrate origins, systems and classification, adaptive radiations, mass extinctions, and the rise and fall of dinosaurs. Will be offered in the 2005-06 academic year. Prerequisite(s): course 10, 20, S, Biology 20C, or Anthropology 1. Concurrent enrollment in course 100L is required. Offered in alternate academic years. The Staff

100L. Vertebrate Paleontology Laboratory (2 credits). * Comparative anatomy and functional morphology of vertebrates, and preservation of vertebrate hard parts, using modern and fossil specimens. Laboratory three hours and one 1-day field trip. Concurrent enrollment in course 100 is required. Will be offered in the 2005-06 academic year. Offered in alternate academic years. The Staff

101. The Fossil Record. W An introduction to paleobiology; the use of fossil evidence to pose and solve evolutionary and geologic questions. Prerequisite(s): course 10 or 5 or 20, Biology 20C, or Anthropology 1. Concurrent enrollment in course 101L is required. Offered in alternate academic years. P. Koch

101L. The Fossil Record Laboratory (1 credit). W Systematics, ecology, and evolutionary history of the major groups of fossil-forming animals. Laboratory 3 hours and one 1-day field trip. Concurrent enrollment in course 101 is required. Offered in alternate academic years. P. Koch

102. Marine Geology. F Geology of the marine environment. Topics include controls on the types, origin, and distribution of marine sediments; geology of ocean crust; evolution of continental margins and plate boundaries; introduction to paleoceanography. Discussion 1 hour. Students cannot receive credit for this course and Ocean Sciences 280. Prerequisites: course 5 or 10 or Biology 20C. M. Daney

104. Geologic Hazards. F The recognition, evaluation, and mitigation of geologic hazards: earthquakes and faulting, tsunamis, volcanism, landslides and mass movements, flooding, subsidence, and coastal erosion. Students are billed a materials fee. Prerequisites: course 10L or 5L or 20L. Offered in alternate academic years. S. Schwartz

105. Coastal Geology. S An investigation of the evolution, morphology, and processes in the coastal zone including the terrestrial (marine terraces, dunes, estuaries, sea cliffs) and marine (beaches, continental shelves, sea level changes, shoreline erosion and protection, waves, tides) components and their interaction. Laboratory: 3 hours. Students are billed a materials fee. Prerequisite(s): course 10 or 5 or 20. Course 10L or 5L or 20L is suggested as an optional preparation for non-Earth sciences majors. G. Grips

107. Remote Sensing of the Environment. W Introduction to geographic information systems (GIS) and remote sensing (RS) as valuable tools in the study of geology. Covers application of GIS/RS to study of surface processes, including landslides, hydrologic basins, coastal erosion, modern floods, volcanic activity and surface deformation. Formerly GIS and Remote Sensing. Prerequisite(s): course 5 or 10 or 20. Enrollment limited to 45. E. Silver

109. Elements of Field Geology. F S Basic tools and techniques used in geologic fieldwork. Preparation, analysis, and interpretation of geologic maps. Nine days of weekend field trips required, including a six-day geologic mapping exercise. Laboratory: 2 hours. Recommended for courses 120, 130, 150, and required for 188A-B. May not be taken concurrently with course 120. Students are billed a materials fee. Prerequisite(s): course 10 or 5 or 20, and 10L or 5L or 20L. Concurrent enrollment in 109L is required. Enrollment limited to 25. K. Cameron, H. Schwartz

109L. Field Geology Laboratory (2 credits). F S Laboratory exercises essential to the successful completion of fieldwork required in course 109. Topics include topographic maps, Brunton compass, rock identification and
110A. Evolution of the Earth. F
Investigation of the processes and mechanisms that have produced the present Earth system, with an emphasis on the temporal evolution of the earth from the Archean to the present. Specific topics covered include cyclicity in Earth processes and the evolution of, and interplay between, the planet's crust, atmosphere, hydrosphere, and biosphere. Prerequisite(s): course 10 or 5 or 20, and 10L or 5L or 20L, and M athematics 11A. Enrollment is permitted by permission code with equivalent or exceptional background, or if enrolled concurrently in course 10 and M athematics 11A. Q. Williams

110B. Earth as a Chemical System. W
The chemical properties of Earth materials and the chemical processes by which the planet has evolved to its present state. Specific topics covered include properties of minerals; the genesis of igneous, metamorphic, and sedimentary rocks; and the linkage between the solid Earth and the hydrosphere. Enrollment is permitted by permission code with equivalent or exceptional background, or if enrolled concurrently in Chemistry 1B or 4A. Prerequisite(s): course 10 or 5 or 20, and 10L or 5L or 20L, and Chemistry 1B or 4A; M athematics 11B recommended as preparation. E. Knittle

110C. The Dynamic Earth. S
Physical processes occurring in the interior of the earth, at its surface and in the oceans and atmospheres including plate tectonics, structural deformation of rocks, and material and heat transport. Prerequisite(s): courses 5/L or 10/L or 20/L; M athematics 11A or 19A; and Physics 6A or 5A. R. Coe

110L. Evolution of the Earth Laboratory (2 credits). F
Laboratory sequence illustrating topics covered in course 110A. Emphasis is on quantifying and evaluating different phenomena related to thermal, tectonic, climatic, and evolutionary processes. Prerequisite(s): concurrent enrollment in course 110A. Q. Williams

110M . Earth as a Chemical System Laboratory (2 credits). W
Laboratory sequence illustrating topics covered in course 110B. Emphasizes identification of the major rock-forming minerals and common rock types, principles of basic crystallography. Prerequisite(s): concurrent enrollment in course 110B. E. Knittle

110N. The Dynamic Earth Laboratory (2 credits). S
Laboratory sequence illustrating topics covered in course 110C. Prerequisite(s): concurrent enrollment in course 110C. R. Coe

116. Hydrology. F
An analysis of the surface portion of the hydrologic cycle, including precipitation, stream flow and watersheds, floods and flood control, hillside processes, erosion and sediment yield, and human impacts on this system. Also covers water law, management and policies in California. Laboratory/field: 3 hours. Course 10L is suggested as an optional preparation for non-Earth sciences majors. Students are billed a materials fee. Prerequisite(s): course 10 or 5 or 20, and M athematics 11A or 19A. Course 10L is suggested as an optional preparation for non-Earth sciences majors. Offered in alternate academic years. A. Fisher

117. Paleomagnetism. F
How the fossil magnetism of rocks is used to decipher Earth’s history: applications to tectonics, geochronology, stratigraphy, structural geology, geomagnetism, and archeology. Includes an overnight field trip to collect samples for a class research project. Students are billed a materials fee. Prerequisite(s): course 5, 10 or 20; M athematics 11A or 19A; course 117L must be taken concurrently. R. Coe

117L. Paleomagnetism Laboratory (2 credits). F
A hands-on research project in the Paleomagnetic Laboratory. Students collectively drill oriented cores in the field (one-two days), prepare and measure the samples, and analyze and interpret the data. Each student writes an individual final report based on the class results. Prerequisite(s): concurrent enrollment in course 117F is required. R. Coe

119. Introduction to Scientific Computing. W
Introduction to solving scientific problems using computers. A series of simple problems from Earth sciences, physics, and astronomy are solved using a user-friendly scientific programming language (IDL). Prerequisite(s): M athematics 11A or 19A. (General Education Code(s): IN.) G. Glatzmaier

120. Sedimentology and Stratigraphy. S
Stratigraphic principles used in classifying sedimentary rocks. Fundamentals of sedimentary mechanics. Analysis and interpretation of facies and depositional systems. Introduction to seismic facies and basin analysis. Course includes four Saturday field exercises. Students are billed a materials fee. Prerequisite(s): course 110A, satisfaction of the Subject A and Composition requirements. Course 110B is recommended as preparation. M ay not be taken concurrently with course 109. (General Education Code(s): W.) J. Zachos

120L. Sedimentology and Stratigraphy Laboratory (2 credits). S
Laboratory sequence illustrating topics in course 120, including sedimentary petrology, sedimentary structures, sequence stratigraphy, and geohistory analysis. Prerequisite(s): concurrent enrollment in course 120. J. Zachos

121. The Atmosphere. W
Course focuses on understanding basic atmospheric weather and climate phenomena starting from the fundamentals of physics and chemistry. Using this approach, covers topics such as atmospheric circulation, precipitation, clouds, storms, urban and regional air quality, atmospheric aerosols, and climate and global change. Prerequisite(s): M athematics 11B and 19B, and Chemistry 1C. P. Chuang

122. Paleoclimatology. *
Reconstruction of the chemistry, biology, circulation, and temperature of the ocean and of climate systems through geologic time. Emphasis on interpretation of the marine sedimentary record and geochronological dating. Discussion-1 hour. Will be offered in the 2005-06 academic year. Prerequisite(s): course 102 or 110A, or O cean Sciences 101 (may be taken concurrently) or 102. M. D e l a n ey

128. Stable Isotope Geochemistry: Applications in Earth and Marine Sciences. *
Explores theory and concepts of classical stable isotope chemistry (H/D, C, N, O, S) with applications relevant to Earth, marine, and biological sciences. Will be offered in 2005-06. Prerequisite(s): course 110B; O cean Sciences 120 recommended as preparation. Will be offered in 2005-06. J. Zachos

130. Magmas and Volcanoes. S
Introduction to the relationship between tectonic environments and the genesis of rock assemblages, primarily igneous and metamorphic. Examples from California and elsewhere are used to illustrate petrogenetic processes and characteristics of rocks from all major tectonic settings. Students are billed a materials fee. Prerequisite(s): course 110B. Concurrent enrollment in course 130L is required. J. Gill

130L. Magmas and Volcanoes Laboratory (2 credits). S
An introduction to optical mineralogy and the petrography of igneous rocks. Concurrent enrollment in course 130 required. Prerequisite(s): course 110B. J. Gill

134. Geochemistry of Geologic Systems. *
Introduction to the thermodynamic and kinetic principles with a strong emphasis on applications to Earth materials. Implications for phase equilibria, geothermometry/geobarometry, element partitioning, and physical properties of minerals, magmas, and solutions. Will be offered in the 2005-06 academic year. Prerequisite(s): course 110B. Offered in alternate academic years. Q. Williams

142. Soil Properties and Mechanics. W
Introduction to the formation, composition, and classification of soils; the chemical interaction of soil and groundwater; and basic soil mechanics: stress-strain behavior, effective stress concept, consolidation, soil testing methods. Applications to problems including slope stability, landslides, liquefaction, subsidence, soil creep, debris flows. Laboratory: 3 hours. Students are billed a materials fee. Prerequisite(s): course 110C. Offered in alternate academic years. A. Fisher

146. Groundwater. *
An overview of groundwater studies with emphasis on the basic principles of fluid flow through porous media. Presents current methods used in hydrogeologic investigations of water resources, solute transport, and saturated and unsaturated flow. Laboratory: 3 hours. Students are billed a materials fee. Will be offered in the 2005-06 academic year. Prerequisite(s): course 110C or 116 or 140; M athematics 11A or 119B. S. Tulaczyk

150. Structural Geology. W
Principles and methods of analysis of brittle and ductile deformed rocks. Includes descriptions of structures, field analysis of structures, and mechanics of deformation. Three day-long field trips on weekends. Students are billed a materials fee. Prerequisite(s): course 110A or 110B; course 109 recommended. T he Staff

150L. Structural Geology Laboratory (1 credit). W
Structural analysis of faults, folds, and map. Use of stereographic projections. Cross section construction and balancing of structures. Concurrent enrollment in course 150L is required. T he Staff

152. Active Tectonics. S
The processes, techniques, and interpretations involved in the study of active crustal movements; constraints from
164. Formation of the Solar System. F
Physics and chemistry of planetary accretion and the early morphological and dynamical evolution of the solar system. M-eteorites and the nebula: impacts large and small; formation of cores and lithospheres; atmospheric evolution and loss; resonances and planet migration; satellites, asteroids, and comets. Prerequisite(s): Mathematics 11B or 19B and Physics 5A or 6A. Offered in alternate academic years. The Staff.

165. Planetary Interiors. S
The chemical and mineral structure and evolution of the earth's interior. Topics include equation of state of mantle and core materials, thermal history of the mantle and core, dynamics of mantle convection, geophysical aspects of plate tectonics. Prerequisite(s): course 110C, 111, or M-athematics 22 or 23A-B; and course 113 or Physics 6C or 5C. E. Knittle.

166. Planetary Surfaces. *
Comparative study of surfaces and atmospheres of planetary bodies in the solar system, focusing on comparative planetology and geophysical processes at work, including on-impact cratering, atmospheric evolution, and exobiology. Explores terrestrial planets, giant planets and their moons, and trans-Neptunian objects, focusing on modern exploration. Will be offered in the 2005-06 academic year. Prerequisite(s): Mathematics 11B or 19B and Physics 5B or 6B; course 165, Astronomy 118, or previous background in planet formation strongly recommended. Offered in alternate academic years. E. Asphaug.

168. Reflection Seismology. *
Introduction to reflection seismology, presenting an overview of data acquisition, processing, and interpretation; common depth point method; velocity determinations; filtering; migration, display. Applications to seismic stratigraphy and structure of the crust and of continental margins. Laboratory: 3 hours. Will be offered in the 2005-06 academic year. Prerequisite(s): course 111 or Mathematics 11A-B or 19A-B. Offered in alternate academic years. E. Silver. J. Moore.

172. Geophysical Fluid Dynamics. *
Study of fluid flow: physical concepts, governing equations. Focuses on thermal convection and global circulation Earth's atmosphere, ocean, mantle, and core. Students develop a computer program for modeling thermal convection. Computer programming experience recommended. Students cannot receive credit for this course and course 272. Will be offered in the 2005-06 academic year. Prerequisite(s): courses 110C and 119 and Mathematics 22 or 23A and Physics 5B or 6B. Offered in alternate academic years. G. Glatzmaier.

188A. Summer Field Internship, Part A. S
Three weeks of summer field study in geologically complex regions in the White-Inyo Mountains of eastern California. Activities include geologic field mapping on topographic and photographic base maps, stratigraphy, petrology, and structure analysis. A fee is required for participation. Contact sponsoring agency for details. (Formerly Senior Field Internship.) J. Moore.

188B. Summer Field Internship, Part B (2 credits). S
One week of research and lab and office work in order to prepare a formal written report, maps, and analyses for course 188A field sites. Activities include library research, drafting of maps and cross sections, stereonet plotting, and scientific writing. A fee is required for participation. Contact sponsoring agency for details. (Formerly Senior Field Internship.) J. Moore.

190. Earth Sciences Mentorship (1 credit). F
Faculty research activity, analytic facilities, and career counseling in three separate Earth sciences laboratories are offered with varied formats including field trips, discussions, and equipment demonstrations. Three different faculty participate in each offering. Enrollment restricted to majors in Earth sciences and Earth sciences/environmental studies and Earth sciences/anthropology combined majors. Enrollment limited to 24. May be repeated for credit. The Staff.

Students submit petition to sponsoring agency. Enrollment restricted to seniors. The Staff.

196A. Introductory Teaching Seminar (2 credits). F
Training for undergraduates in practical teaching skills. Focus on preparation, assessment, and feedback. Classroom techniques, organizational and time management strategies, practice teaching sessions. Students cannot receive credit for this course and course 152. Prerequisite(s): Mathematics 11B or 19B and Physics 5A or 6A; course 165, Astronomy 118, or previous background in planet formation strongly recommended. Offered in alternate academic years. E. Asphaug.

196B. Teaching Earth Sciences in the University. F,W,S
Students facilitate laboratory and field exercises in conjunction with faculty and teaching assistants in various Earth sciences courses. May count toward upper-division major requirements. Approval of sponsoring agency and interview selection by primary instructor of specific courses required. Participation in course 196A is expected. Enrollment restricted to Earth sciences majors. The Staff.

196C. Teaching Earth Sciences in the University (2 credits). F,W,S
Students facilitate laboratory and field exercises in conjunction with faculty and teaching assistants in various Earth sciences courses. May not count toward upper-division major requirements. Approval of sponsoring agency and interview selection by primary instructor of specific courses required. Participation in course 196A is expected. Enrollment restricted to Earth sciences and environmental studies/Earth sciences majors. The Staff.

198. Earth Sciences Internship. F,S
A supervised learning experience involving practical application of Earth sciences through working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work. May not be counted toward upper-division major requirements. Contact sponsoring agency for enrollment criteria. Offered in alternate academic years. Enrollment restricted to Earth sciences and environmental studies/Earth sciences majors. May be repeated for credit. E. Silver.

198F. Earth Sciences Internship (2 credits). F,W,S
A supervised learning experience involving practical application of Earth sciences through working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work. May not be counted toward upper-division major requirements. Contact sponsoring agency for enrollment criteria. Offered in alternate academic years. Enrollment restricted to Earth sciences and environmental studies/Earth sciences majors. May be repeated for credit. J. Moore.

205. Introductory Graduate Seminar. F
Each week a different faculty member conducts a seminar or a field trip concerned with one of his or her specialties. Students will write weekly abstracts and select one of these topics for a major written report. Two weekend field trips. Students are billed a materials fee. Enrollment restricted to Earth sciences graduate students. P. Koch.

206. Great Papers in the Earth Sciences. W
Exposure to the most important ideas in the Earth sciences through exploration of the primary literature. Seminar papers in different subdisciplines of the Earth sciences are read and analyzed to provide breadth and improve students' ability to think critically. Enrollment restricted to Earth sciences graduate students. The Staff.

207. Tectonics. S
An overview of tectonic theory and processes for application to the Earth sciences. The course explores the primary tools of tectonic interpretation including plate kinematics, rheology, plate boundary dynamics, and the behavior of active fault systems. Students cannot receive credit for this course and course 152. Prerequisite(s): graduate standing or permission of instructor. E. Silver.

208. Methods in Paleoclimatology. *
Addresses methods used to reconstruct aspects of paleoclimate and paleoenvironment through the geological record, focusing primarily on terrestrial records. Topics to be covered include dendrochronology and dendroclimatology.
209. Solid Earth Geochemistry. W
Origin and distribution of the elements in the earth and meteorites; bulk and isotopic composition and differentiation of terrestrial planets, core, mantle, and crust. Sr-Nd-Pb-H-F-U isotopic tracers. Course designed for graduate students, but available to qualified earth sciences majors per instructor permission. Enrollment restricted to graduate students. Q. Williams

220. Groundwater Modeling. F
Introduction to the role and application of models to solving hydrologic problems. Discussion of modeling methods include analytical, finite difference, finite element, and analytical element. Emphasis on using models rather than the details of their functioning. Some comfort with mathematical methods and computer expected. Course designed for graduate students, but available to qualified Earth sciences majors. Prerequisite(s): graduate standing or permission of instructor required. One year of calculus is recommended as preparation. Offered in alternate academic years. A. Fisher

231. Igneous Petrology. S
Systematic study of the major igneous rock suites, combining petrography, experimental petrology, major and trace elements, and isotopic characteristics. Laboratory: three hours. Course designed for graduate students but available to qualified earth sciences majors. Course 130 is recommended as preparation. J. Gill

248. Sedimentology Field Studies (3 credits).
* Alternates between lectures, seminars, discussions, and field trips to dune fields, beaches, and other coastal, marine, and fluvial environments. Class time focuses on selected processes and structures in sedimentology; field trips emphasize observational techniques. Enrollment restricted to graduate students. D. Rubin

256. Paleoclimatic Modeling: Methods and Applications. *
* Addresses methods of paleoclimatic modeling on global and regional scales, from both surface and atmospheric perspectives. Applications of models to current significant paleoclimatic problems will be examined. Includes both lecture and seminar formats. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students; undergraduates by permission of instructor only. The Staff

269. Advanced Marine Stratigraphy: Techniques and Applications. *
* Explores concepts and methods of correlating marine sediments and their significance. Emphasis on the integration of techniques and development of the Cenozoic stratigraphic record. One 2-hour laboratory each week. Upper-division students who have completed course 160 may enroll in this course. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. J. Zachos

270. Global Seismology. S
Introduction to quantitative earthquake and global Earth structure seismology. Topics include basic elasticity, wave characteristics, seismic ray theory, wave reflection, surface waves, normal modes, seismic instrumentation, application of seismic waves to reveal Earth structure and resulting models, representation of earthquake sources such as explosions and faulting, earthquake rupture scaling, modern methods of modeling seismic recordings to study source complexity, and an introduction to seismotectonics. Laboratory: 3 hours. Offered in alternate academic years. Students cannot receive credit for this course and course 170. Prerequisite(s): course 111 or Mathematics 22 and course 113 or Physics 5C, 6C, or 114A. Enrollment restricted to graduate students. T. Lay

271. Current Research Topics in Deep Earth Processes. *
Instructor and instructor lead discussions of recent and significant publications in geophysics and chemistry of deep Earth. Articles structured around current theme of interest are selected by participants and approved by instructor. Emphasis on understanding multidisciplinary significance of each article and its relationship to fundamental processes in deep Earth, including core, mantle and crust. Designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. May be repeated for credit. T. Lay

272. Geophysical Fluid Dynamics. *
Study of fluid flow: concepts, governing equations. Focus on thermal convection and global circulation in the Earth's atmosphere, ocean, mantle, and core. Students develop a computer program for modeling convection. Computer programming experience recommended. Students cannot receive credit for this course and course 172. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Offered in alternate academic years. G. Glatzmaier

275. Magnetohydrodynamics. F
Study of fluid dynamics and magnetic fields with a focus on convection and magnetic field generation in planets and stars. Students develop a computer program for modeling magneto-convection. Computer programming experience recommended. Enrollment restricted to graduate students. Offered in alternate academic years. G. Glatzmaier

276. Geology of the Peopling of the Americas. *
* Using a multidisciplinary approach, examines physical geology, paleoenvironment, human biology, linguistics, and culture history of America at end of last Ice Age. Particular emphasis is placed on reconstructing timing, routes, and context of first peopling of the American continents. Also offered as Anthropology 277. Students cannot receive credit for both courses. Will be offered in the 2005–06 academic year. Enrollment restricted to graduate students. Enrollment limited to 15. P. Koch

278A. Advanced Seismology. *
* Elastic wave propagation. Advanced topics in ray theory. WKB solutions in seismology, singularities and nonlinearities, surface wave theory, propagating matrices, normal modes, and inversion theory. Selected topics in time series analysis and seismic signal processing, seismic wave dispersion. Course designed for graduate students but available to qualified Earth sciences majors. Physics 110B and 114B are recommended as preparation. Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. The Staff

278B. Advanced Seismology. *
Special topics in wave propagation in heterogeneous, three-dimensional media, applications for determination of Earth's structure, kinematics and dynamics of the seismic source, near field phenomena, engineering applications, current problems. Course designed for graduate students but available to qualified Earth sciences majors. Physics 110B and 114B are recommended as preparation. Enrollment restricted to graduate students. May be repeated for credit. E. Ashbaugh

278C. Advanced Seismology. *
Special topics of interest in current research by the seismology group. Discussion of new developments in earthquake mechanics, wave propagation, tectonics, earthquake prediction. Course designed for graduate students but available to qualified Earth sciences majors. Physics 110B and 114B are recommended as preparation. Enrollment restricted to graduate students. May be repeated for credit. The Staff

290. Proseminar. 
Special topics offered from time to time by visiting professors or staff members. May be repeated for credit.

290A. Tectonic Hydrogeology. *
Analysis of tectonics and hydrogeology of modern plate boundaries and continental margins. Discussion of structural styles, physical and chemical processes from modern environments as a basis for interpretation of ancient equivalents. Topics vary from year to year. May be repeated for credit with consent of instructor. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. Offered in alternate academic years. J. M. ore

290B. Topics in Glaciology. F
Advanced review of the physics and chemistry of ice and snow. M. as and heat balance of ice masses. Motion of glaciers and ice sheets. Subglacial and englacial hydrology. Thermodynamics of ice masses and the linkage to climate. Enrollment restricted to graduate students. May be repeated for credit. S. Tulaczyk

290C. Topics in Geophysics. *
Different problems and approaches will be stressed from year to year such as geotectonics, paleomagnetism, or properties and processes in the mantle and core. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. R. Coe

290D. Petrology and Plate Tectonics. *
Selected topics illustrating relationships between igneous and metamorphic rocks and plate tectonics are explored in detail. Designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. R. Coe

290E. Topics in Planetary Science. W
We examine one well-defined topic in planetary science, beginning with a summary of current knowledge and concluding with the latest research literature. Topics will vary from year to year and may include planetary collisions, terrestrial planets, origin of planetary systems, small bodies, the New Mars, and satellites of Jupiter. Achievement will be evaluated based on class participation, exams, and a research project. Open to undergraduate majors with permission of instructor. Enrollment restricted to graduate students. May be repeated for credit. E. Ashbaugh

290F. Topics in Coastal Processes (2 credits). F, W, S
* Instructor and students lead discussions and make presentations on current research, problems, and publications in coastal processes. These topics include littoral drift, sediment transport and storage on the inner shelf,
shoreline erosion/change and its documentation, and related issues. Enrollment restricted to graduate students. May be repeated for credit. G. Griggs

290G. Topics in Global Tectonics. * 
Explores different problems of special interest in global tectonics with the approach of integrating marine and terrestrial geologic and geophysical information. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. May be repeated for credit. E. Silver

290H. Topics in Hydrogeology. 
Selected topics in groundwater, hydrothermal systems, and related subjects. Discussion of theoretical models, field and laboratory approaches, and recent research. Topics vary from year to year. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. May be repeated for credit. A. Fisher

290I. Topics in Climate Change. * 
Explores current and recent developments in the field of past, present, and future climate change. Topic is different each year, but focuses on the interaction between different components of Earth's environment and the effect of that interaction on climate change. Designed for graduate students but open to qualified undergraduates. Will be offered in 2005–06. Enrollment restricted to graduate students. Enrollment limited to 20. May be repeated for credit. L. Sloan

290J. Topics in Atmospheric Chemistry. 
Fundamentals of chemical processes determining the composition of the atmosphere on scales from urban smog to climate change. Topics include carbon, nitrogen, sulfur biogeochemical cycles, atmospheric aerosols, air pollution; greenhouse effect; stratospheric ozone depletion; impacts on humankind and ecosystems. Enrollment restricted to graduate students, undergraduates with permission of instructor. May be repeated for credit. P. Chuang

290K. Paleontology Seminar (3 credits). W 
Seminar discussion based on current readings in the literature around some topic in the history and evolution of life. Course designed for graduate students but available to qualified upper-division science students. Offered in alternate academic years. May be repeated for credit. P. Koch

290L. Topics in the Chemistry and Physics of the Earth. * 
Explores problems and current research developments in the application of physics and chemistry to planetary interiors. Topics differ from year to year and include, but are not limited to, research related to the accretion, differentiation, evolution, and structure of the terrestrial planets. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. Offered in alternate academic years. May be repeated for credit. Q. Williams

290M. Topics in the Chemistry and Physics of the Earth. * 
Explores problems and current research developments in the application of physics and chemistry to planetary interiors. Topics differ from year to year and include, but are not limited to, research related to the accretion, differentiation, evolution, and structure of the terrestrial planets. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. Offered in alternate academic years. May be repeated for credit. Q. Williams

290N. Topics in Mineral Physics. * 
Selected topics encompassing the physics and chemistry of Earth's interior, planetary physics, high-pressure experimental geophysics and material properties at high pressure and temperature. Topics vary from year to year. Designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. May be repeated for credit. E. Knittle

290O. Interdisciplinary Topics in the Earth Sciences. * 
An understanding of the chemical and physical properties and processes in the earth is sought by integrating information from several subdisciplines in the Earth sciences. Topics vary from year to year, focusing on areas of active research. Course designed for graduate student but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. Prerequisite(s): graduate standing or permission of instructor. Course designed for graduate student but available to qualified Earth sciences majors. May be repeated for credit. S. Schwartz

290P. Interdisciplinary Topics in the Earth Sciences. * 
An understanding of the chemical and physical properties and processes in the earth is sought by integrating information from several subdisciplines in the Earth sciences. Topics vary from year to year, focusing on areas of active research. Course designed for graduate student but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. Prerequisite(s): graduate standing or permission of instructor. Course designed for graduate student but available to qualified Earth sciences majors. May be repeated for credit. S. Schwartz

290Q. Topics in the History and Evolution of Life. * 
Explores current issues and recent developments in the evolution of life. Course designed for graduate students but available to qualified upper-division science students. Offered in alternate academic years. May be repeated for credit. A. Fisher

290R. Topics in the History and Evolution of Life. * 
Explores current issues and recent developments in the evolution of life. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2005–06 academic year. May be repeated for credit. A. Fisher

292. Seminar (no credit). F, W, S 
Weekly seminar attended by faculty, graduate students, and upper-division undergraduate students. May be repeated for credit. The Staff

293. Graduate Research Seminar (1 credit). W 
Weekly seminar series covering a broad spectrum of topics in the Earth sciences. Graduate students give 15- to 20-minute oral presentations on current or anticipated research. Enrollment restricted to graduate students. May be repeated for credit. The Staff

294. Special Student Seminar. F, W, S 
Permission of instructor required. The Staff

295. Independent Study. F, W, S 
Permission of instructor required. The Staff

298. Earth Sciences Internship. F, W, S 
Faculty and Professional Interests

DAVID KEENAN, Lecturer in Chinese Language 
Chinese language pedagogy, modern Chinese drama, drama as pedagogical tool

BRIAN D. LARKIN, Professor of Politics 
Global politics, disarmament, theory of war, Chinese politics and society

LISA ROFEL, Associate Professor of Anthropology 
Critical theory, anthropology of modernity, popular/public culture, gender and sexuality, cultures of capitalism, postcolonial feminisms, China

NEMER TADIR, Associate Professor of History of Consciousness 
Third World feminisms, postcolonial theory, critical theories of race and racism, literary and social theory, cultural studies of the Asia-Pacific region
Dana Y. Takagi, Professor of Sociology
Societal inequality and identity research methods, race relations, nationalism, and social movements

Alice Yang Murray, Associate Professor of History
Historical memory, Asian American history, gender history, race and ethnicity, 20th-century U.S., oral history

Judy Young, Professor Emerita of American Studies

Program Description
Students of East Asian studies at UC Santa Cruz may select from among the following programs:

• Three courses in twentieth-century subject matter
• A minor in Chinese or Japanese studies,
• A minimum of eight upper-division courses meeting may fulfill more than one breadth requirement.

1. A minor in Chinese or Japanese studies, with a major in any discipline in any division. The student is expected to acquire a speaking and reading ability in Chinese or Japanese sufficient to pursue advanced studies in China or Japan and use Chinese or Japanese source material for research. A student who wishes to complete the major in East Asian studies program should enroll in beginning Japanese or Chinese no later than the sophomore year. Requirements for the minor are outlined below. Students seeking further information about the minor should call the Language Program Office.

2. A major or minor in the Chinese or Japanese concentration of language studies. Requirements for this major are found on page 275.

3. An individual major in East Asian studies is currently available in Chinese studies only. It is designed for students who want to center their study of China on intensive study of the Chinese language, if possible including study abroad, with accompanying courses to provide historical and cultural context.

Major Requirements
1. Permission from the chair of the East Asian studies faculty when declaring the major. The chair and the students major adviser will verify a study plan of courses intended to satisfy major requirements.

2. Courses as specified below. A Chinese area course is defined as one in which half or more of the time is spent on China.

3. Either a senior thesis (translating with critical introduction and interpretation are encouraged) culminating in a one-hour exam on the subject of the thesis or an oral examination on an agreed panel of topics in fulfillment of the campus comprehensive requirement.

Lower-Division Courses
Chinese language through Chinese 50 (or equivalent, to be certified by Chinese language or literature faculty) and a lower-division survey course in East Asian history, literature, or history of art and visual culture.

Upper-Division Courses
A minimum of eight upper-division courses meeting breadth requirements below. Note that a single course may fulfill more than one breadth requirement.

• Two courses in Chinese history
• Two courses in Chinese language (three strongly encouraged)
• Three courses in pre-twentieth-century subject matter (Upper-division language courses in classical Chinese may be counted in this category)
• Five courses in twentieth-century subject matter (Upper-division language courses in modern Chinese may be counted in this category)
• One explicitly comparative course
• Comparative is defined as a course that fulfills one or more of the following conditions: treats China as one among two or more cultures or treats the Asian American experience or treats the student's primary thematic area of interest in a cultural context other than that of China or of China alone. Other Asian area courses would fulfill this requirement, as would some courses in literary theory, women's studies, or other disciplines.

Many courses satisfy the requirement for eight upper-division courses. Check with the East Asian studies adviser if you are unsure about the categories as described above.

Study Abroad
Study abroad, though not a requirement, is strongly encouraged. At present there are UC Education Abroad Programs in China, Japan, Hong Kong, and Taiwan. Prior to beginning study abroad, students should present a plan showing how they propose to complete the major requirements.

Students may apply to the Volunteers in Asia program to teach English in China; contact the Kresge College Office for more information on this program.

Senior Thesis
Students who elect to write a senior thesis normally do so as part of an independent study course (195 or 199) under supervision of their major adviser.

Requirements for the Minor
Language: nine courses of Chinese or Japanese language or equivalent.

Required courses:
• History 40, The Making of Modern East Asia (East Asian studies core course). History 80G, Popular Movements in China, may be substituted for History 40 by those minoring in Chinese studies.
• Three additional upper-division courses in the chosen area of China or Japan, one of which may be an individual study (course 199). These three courses must be in fields outside the student's major.
• The following are among the courses that meet the upper-division course requirement. (Check the Schedule of Classes or consult with the program coordinator for courses added during the academic year that meet the requirement.)

Chinese Studies
Chinese, all upper-division courses

History 150B-C, History of China
History 151, Classical Chinese Culture and Literature, 10th Century B.C. to 6th Century C.E.
History 152, Classical Chinese Culture and Literature, 6th Century C.E. to 16th Century
History 194J, Comparative Studies in Modern Asian History

History of Art and Visual Culture 114, Buddhist Visual Worlds

History of Art and Visual Culture 121C, Later Chinese History

History of Art and Visual Culture 190D, The World of the Lotus Sutra

History of Art and Visual Culture 190G, Word and Image in Chinese Culture

World Literature and Cultural Studies 123, The 1960s

Women's Studies 154, Revolutionary Tales Women in Modern China

Japanese Studies
History 159A, Ancient Japan

History 159B, Tokugawa Japan

History 159C, Modern Japan

History 194J, Comparative Studies in Modern Asian History

Ecology and Evolution
See Biological Sciences, page 134.

Ecology and Evolutionary Biology
See Biological Sciences, page 133.

Economics

417 Engineering 2
(831) 459-2743
http://econ.ucsc.edu

Faculty and Professional Interests

Professor
Robert F. Adams, Emeritus
Joshua Aizenman
International economics, economic development
Yin-Wong Cheung
Econometrics, applied econometrics, exchange rate dynamics, financial price behavior, aggregate output dynamics
Frank C. Child, Emeritus

Enzie Chinn
International finance, macroeconomics
Michael P. Dooley
International finance, monetary theory and policy
Daniel Friedman
Microeconomic theory, experimental economics, evolution and learning, behavioral economics, financial markets
K.C. Fung
International trade, foreign direct investment, international environmental economics, and economics of the Asia-Pacific
Ronald E. Grieson
Microeconomics, urban economics, public finance, energy economics, industrial organization, regulation, antitrust, and real estate
Michael M. Hutchison
International finance, macroeconomics, Japanese financial system, European monetary integration
John W. Isbister
Ethics, immigration, economic development
Lecturer

ROBERT J. SHEPHERD
Financial, managerial, cost accounting, intermediate and advanced accounting, and certified public accounting examinations

DAVID GOODMAN, Professor of Environmental Studies
Political economy of international environmental issues, global agri-food systems, technology, North-South relations and sustainable development, Brazilian economy and society

PAUL M. LUBECK, Professor of Sociology
Political sociology, political economy of development, globalization, labor and work, logic of methodology, religion and social movements, Islamic society and identities, information and networks

MANUEL PASTOR JR., Professor of Latin American and Latino Studies
Urban poverty and regional development, Latinos in the urban U.S., macroeconomic stabilization in Latin America; distribution, democracy, and growth in the developing world; Cuban economic reform; Mexican economic reform

HELEN SHAPIRO, Associate Professor of Sociology
Political economy, Latin American and Latin American history and development (with an emphasis on Brazil), industrial policy, the auto industry, the state and transnational corporations

Program Description
An understanding of economics is a vital component of a liberal arts education and a necessity for anyone interested in such areas as business, environmental policy, welfare reform, unemployment, international competitiveness and trade, or transformations in the global economy. The programs offered by the U.C.S.C. Economics Department are designed to acquaint students with the broad range of issues studied by economists and with the tools they use. The department offers four majors:

Economics B.A.
Business management economics B.A.
Global economics B.A.
Information systems management B.S.

Requests for entry into the major will be reviewed within two weeks of receipt. Equivalent courses may be taken at other universities or at community colleges. Transfer students may have these requests reviewed by the department prior to matriculation at U.C.S.C.

All students with a combined grade point average (GPA) of 2.8 in courses 1 and 2 will be allowed to declare the major. Students with a GPA below 2.8 in these courses may be allowed to declare at the discretion of the department.

Students should take courses 1 and 2 for letter grades. Students should take courses 1 and 2 for letter grades. Students should take courses 1 and 2 for letter grades.
their undergraduate career. Mathematics 11A-B and 22, or 19A-B and 22, are acceptable equivalents to Economics 11A and 11B. Students should not attempt to meet the requirement by combining courses from the economics and math sequences. Students must complete whichever sequence they begin. Students planning to do graduate work in economics or business should seriously consider more intensive mathematical training (consult adviser).

**Comprehensive Requirement**

The comprehensive requirement may be satisfied in one of the following ways: (1) by passing a comprehensive examination, administered by the Economics Department several times during the academic year; (2) in exceptional cases and with consent of an instructor, by completion of a senior thesis.

**Minor Requirements**

Students earn a minor in economics by completing all of the requirements for the major with the following differences:

- The number of additional upper-division courses is reduced from five to three.
- There is no comprehensive requirement.
- Courses 191, 192, 193, 193F, 198, and 198F may not be used to meet minor requirements. (As for the major, course 195 may be counted only once toward the upper-division minor requirements.)

**Independent Study**

Students are encouraged to petition for independent study on topics of special interest to them. Economics 199, Tutorial, may be used as only one of the upper-division courses required for the major. The department encourages group tutorial study in which a small number of students join together in a seminar to pursue a common interest with faculty assistance. Such enterprises make economical use of faculty resources, and they also make it possible for students to learn from each other.

**Field-Study Program**

The Economics Department offers the majors the opportunity to integrate their academic knowledge with career-related work. The field-study program places students in internships under the supervision of a faculty sponsor and a professional at the workplace. Students can select from a wide variety of field placements such as accounting firms, community non-profits, government agencies, brokerage firms, marketing agencies, banks, and businesses in Santa Cruz and beyond. Students apply and prepare for field study a quarter in advance. Acceptance into the field-study program is determined by academic standing, class level, and successful completion of courses 100A, 100B, and 113. Students may earn a maximum of 10 academic credits and complete up to two quarters in a field placement.

Along with the training and supervision by a professional at the workplace, students receive guidance from a faculty sponsor who directs their academic project. Students earn credit through the completion of this project and the job supervisor's evaluation of performance. Economics field-study courses (193 and 198) do not satisfy any upper-division requirements for the major and are available as Pass/No Pass only.

Interested students should make an appointment or stop by the Economics Field Study Office at 217A, Social Sciences 1; or call (831) 459-2028; or e-mail econintern@ucsc.edu. Web address: http://econ.ucsc.edu.

**Transfer Students**

A student transferring to UCSC may fulfill some of the requirements for the major by completing equivalent courses with a grade of C or better, at another recognized institution. Transfer students must present their Transfer Credit Summary (available from college offices) and course syllabi or descriptions to an Economics Department adviser. The department approves courses applicable for economics prerequisites and major requirements. All transfer students must complete the comprehensive requirement at UCSC. Economics and global economics majors must take at least three of their upper-division economics electives at UCSC. Business management economics majors must take at least four of their upper-division economics electives at UCSC, one of which must be 101, 133, or 135. Courses taken for credit elsewhere may not be repeated for credit here.

**Combined Majors**

The Economics Department offers a combined major in environmental studies (see page 229). Global economics is offered in a combined major with Latin American and Latino studies (see page 279). Information systems management, a stand-alone major combining elements of business management, economics, and computer science, is administered by the Computer Science Department and leads to a bachelors of science degree (see page 223). Requirements for these majors may be reviewed under their separate entries in this catalog.

**Major Disqualification Policy**

Students are expected to maintain good academic standing in the major. Only courses with a grade of P or a minimum letter grade of C or better will satisfy the major requirements. Students who fail any of the upper-division core courses (courses 100A, 100B, and 113) twice will be disqualified from the major. Students who are disqualified will be notified by the first day of instruction in the subsequent quarter following the disqualifying failure. The Office of the Registrar and the students' college will be notified of the disqualification. Students may appeal their disqualification within the appeal period by submitting a letter to the economics undergraduate programs coordinator. This appeal must be filed no later than 15 days after the disqualification notification was mailed, or the 10th day of classes in the quarter of their disqualification, whichever is later.

**Economics Program Description**

Economics is the study of a vast range of human behavior and its social implications, ranging from how individuals make (or should make) personal financial and consumption decisions to how the business of organizing society's production and trade changes with time and place. Economists are at the forefront of understanding and trying to grapple with some of the most important issues faced by the world. Economics majors study a substantial core of economic theory and mathematical and statistical methods. The required core courses may be combined with electives in a general economics major program especially suitable for students who plan either to enter law school or to go into more specialized programs emphasizing areas such as applied economics, environmental economics, public policy, political economy, international economics, third world issues and economic development, and quantitative methods.

**Economics Major Requirements**

Students who major in economics are required to take the following courses:

1. Introductory Microeconomics Resource Allocation and Market Structure
2. Introductory Macroeconomics Aggregate Economic Activity
3. Mathematical Methods for Economists (or equivalent)
4. Mathematical Methods for Economists (or equivalent)
5. Intermediate Microeconomics
6. Intermediate Macroeconomics
7. Introduction to Econometrics
8. Five additional upper-division economics courses, at least three of which must be selected from the following:

**Courses in Environmental Economics**

- Is There Truth in Numbers: The Role of Statistics in Economics
- Evolutionary Thought in the Social Sciences
- Economic Justice
- Advanced Quantitative Methods
- Economic Development
- Economic History of the U.S.
- Why Economies Succeed or Fail
- Poverty and Public Policy
- Money and Banking
- International Financial Markets
- Performing Arts in the Public and Private Economy
- International Trade
- International Finance
- Advanced Topics in International Finance
- Latin American Economics
- The Economics of East and Southeast Asia
- Public C Finances
- Setting Domestic Priorities
- Cost-Benefit Analysis
- Industrial Organization
- Economics as an Experimental Science
- Economic Analysis of the Law
- Environmental Economics
- Natural Resource Economics
- Energy Economics
- Women in the Economy
- Labor Wars in Theory and Film
- Political Economy of Capitalism

Courses 191, 192, 193, 193F, 198, and 198F may not be used to meet major requirements. Either course 195 or 199 may be used to fill one of the five upper-division major requirements.

**Business Management Economics Program Description**

The business management economics major provides students who are interested in careers in business or management with a foundation in economics and a selection of applied fields related to business management. Particular areas of strength of the program are accounting, finance, and technology management. This course of study prepares students for entrance into the business world or admission to graduate programs—either the master's program in applied economics and finance at
UCSC or graduate programs in business and management at other universities.

The program provides a business and management education embedded within a broader economics and liberal arts context and is closely tied to the economics and global economics majors and the information systems management major (page 223).

The UCSC business management economics curriculum begins at the introductory level; no specific high school preparation is required. All majors study a substantial core of economic theory and mathematical and statistical methods. Introductory microeconomic ability and the information systems management major (page 223).

This major has several important elements. First, it combines the strong analytic approach of economics with the technical aspects of management. Second, it recognizes that computing is intrinsic to business and is an essential skill for those who wish to enter this field. Students in this major gain knowledge about using computing as a tool of analysis for economic, statistical, and financial data. Third, the major offers field placements (arranged with the economics field-study program coordinator) which provide an excellent way to apply academic economics, business, and management to issues and problems in the real world: they provide marketable skills as well as important job contacts. And fourth, students gain written and verbal communication skills, which are vitally important in business.

In cooperation with the UC Education Abroad Program (EAP), opportunities are available for students to take some business courses (taught in English) in Europe, Mexico, and Hong Kong. Students should ask the Economics Department for additional information about these programs.

Students who are committed to the major early in their academic career or who are considering the combined B.A./M.S. program should plan to complete courses 1, 2, 10A, 10B, 11A, and 11B no later than the end of their sophomore year.

**Business Management Economics Major Requirements**

**Introductory and core requirements.** Students who major in business management economics are required to take the following courses:

1. Introductory Microeconomics Resource Allocation and Market Structure
2. Microeconomics Aggregate Economic Activity
3. Economics of Accounting (or equivalent, see General Requirements)
4. Economics of Accounting (or equivalent, see General Requirements)
5. Mathematical Methods for Economists (or equivalent)
6. Intermediate Microeconomics
7. Intermediate Macroeconomics
8. Introduction to Econometrics
9. Computer Science 12A, Introduction to Programming
10. Computer Science 60G, Beginning Programming: Social Sciences and Humanities
11. Computer Science 60N, Beginning Programming: Natural Sciences
12. Computer Science 608, Systems and Simulation
13. Information Systems Management 50, Business Information Systems
15. Linguistics 60G, Nature and Language of Computers
16. Economics 216, Applied Econometric Analysis (with permission of instructor)

**Upper-division electives.** Students are required to take six additional courses: four in business management and two other economics electives. Students must choose four courses from the following list: at least one of these four must be a course designated with an asterisk (*).

- M101: Managerial Economics
- M102: Forecasting
- M110: Managerial Cost Accounting and Control
- M11A: Intermediate Accounting I
- M11B: Intermediate Accounting II
- M115: Introduction to Management Sciences
- M117: Tax Factors of Business and Investment
- M119: Advanced Accounting
- M133: Security Markets and Financial Institutions
- M135: Corporate Finance
- M136: Business Strategy
- M138: The Economics and Management of Technology and Innovation
- M193A: Economics of Electronic Commerce
- M193B: E-Commerce Strategy
- M161: Marketing
- M162: Legal Environment of Business
- M164: Economics and the Telecommunications Industry
- M180: Labor Economics
- M181: Economics of Real Estate
- M188: Management in the Global Economy

Students must choose the remaining two courses from the upper-division economics electives listed for the economics major (see page 176). Courses 191, 192, 193, 193F, 197, and 198F may not be used to meet major requirements. Either course 193 or 199 may be used to fill one of the five upper-division major requirements.

Field study. One quarter of field study is strongly recommended. Placements and credit for course 193 or 199 are arranged through the economics field-study coordinator. See above under Field-Study Program description.

**Global Economics Program Description**

Global economics is an interdisciplinary major designed to prepare students to participate in the global economy: the program aims to deepen the student's knowledge of economics within a culturally and linguistically diverse world. The major is particularly useful for students contemplating careers at home or overseas in international relations, in international business, or with international organizations. Hence the major requires overseas study, regional area study, and second-language proficiency in addition to the basic economics requirements.

The UCSC global economics curriculum begins at the introductory level; no specific high school preparation is required. The global economics major program is closely tied to the economics major program. See above under the general economics program description for more information.

**Global Economics Major Requirements**

**Introductory and core requirements.** Students who major in global economics are required to take the following courses:

1. Introductory Microeconomics Resource Allocation and Market Structure
2. Introductory Macroeconomics Aggregate Economic Activity
3. Mathematical Methods for Economists (or equivalent, see below)
4. Mathematical Methods for Economists (or equivalent, see below)
5. Intermediate Microeconomics
6. Intermediate Macroeconomics
7. Introduction to Econometrics
8. Students are strongly urged to complete courses 100A, 100B, and 113 prior to study abroad. In addition, majors must have language study, area study, and overseas study, as described below. Courses 191, 192, 193, and 198 may not be used to meet major requirements. Either course 195 or 199 may be used to fill one of the five upper-division major requirements.

**Upper-division electives.** Five additional upper-division courses are required. These may include approved courses offered by other departments.

**Latin American and Latino Studies**

1. Rural Mexico in Crisis
2. Political Economy of Crises and Transition in Latin America
3. Economic History of Latin America
4. Latin American Industrialization in a Global Perspective Past, Present, Future

**Politics**

1. Comparative Post-Communist Politics
2. The New Europe
3. International Political Economy

**Sociology**

1. Global Corporations and National States
2. Development and Underdevelopment

The three required upper-division electives are determined by the student's interests. The global economics major has three additional elements:

1. Foreign Language Study: The global economics major requires a foreign language since students who plan to work in the larger world must have fluency in a language other than English. This language should
be relevant to their regional area of interest. Students can meet this requirement by completing two years of university-level language courses or by demonstrating an equivalent level of competence through a recognized language test.

2. Area Study: The major requires students to take two additional courses selected from the offerings of departments and units outside departments and units on campus in order to learn about the history, political economy, or culture of some other part of the world. These can be lower- or upper-division courses; the courses should focus on the area of the student's language study and overseas study. The Economics Department provides a list of approved courses, and substitute courses are welcome when approved by the adviser.

3. Study Abroad: All students are required to spend at least one term abroad in an approved course of study in their regional area of concentration; students may also choose a year-long program. Typically, a student will do this through the UC Education Abroad Program (EAP). Numerous overseas study sites are available through EAP. Students desiring to fulfill their required study abroad through EAP must apply directly to the EAP Office for the selected program and are subject to the admission requirements determined by UC EAP. In countries and at universities where EAP programs are not available, students may make their own arrangements for study with the permission of the director of the program. Students may use the time abroad to further their language study, to meet the area study course requirements, to meet some of the upper-division economics course requirements, or to take courses unrelated to the major.

Students who are not accepted to an overseas program or who cannot meet the language or area course requirements are advised to complete the general economics major as an alternative.

Graduate Programs

Master's Program in Applied Economics and Finance

The master's science program in applied economics and finance is designed for students who wish to supplement their undergraduate work in economics with analytical graduate training that prepares them for careers in business, government, international and domestic banking, consulting firms, and nonprofit organizations. The program is unique in its focus on graduate-level economics training for practical application and its emphasis on communication skills. The curriculum stresses the application of micro and macro concepts, statistical techniques, finding and using data sources, working out substantial practical applications, developing writing and reporting skills, and presenting material orally before an audience.

The program differs from typical M.B.A. programs by preparing students to meet the increasing technical demands of private and public sector employers through comprehensive course work in economic analysis. Requirements for admission include an undergraduate degree in economics or successful completion of undergraduate courses in intermediate microeconomics, microeconomics, and statistics and adequate preparation in mathematics. At least two quarters of calculus and one of linear algebra are strongly recommended. Students are also expected to have basic computer skills.

Students normally complete the master's program in two years. All students must complete 12 courses (60 credits) of graduate study, including the following core courses which are taken in the first three quarters:

- 200 Microeconomic Analysis
- 201 Applications in Microeconomics
- 202 Microeconomics
- 216 Applied Econometric Analysis I
- 217 Applied Econometric Analysis II
- 233 Finance

In addition, a student enrolls in a 2-credit workshop (course 294A or 294B): first-year students take 294A in fall and 294B in winter; second-year students take 294B in winter. The number of credits considered a full load for a master's student at UCSC is 12. In quarters when they are not enrolled in 294A or 294B, students take another economics course or a course in another discipline. Courses that have already been approved include the following: Economics 110, 119, 138, 149, 169, 170, 183, Fried Study, and Ph.D. courses. In the fourth and fifth quarters, students must take four elective courses; at least two must be numbered 200 or higher. Students may choose from among the following courses: finance (courses 234, 235, 236, and 239), international economics (courses 249A, 249B), and public economics (courses 259A, 259B). Note that not all of these courses will be offered every year; elective courses vary from year to year and are dependent on the staffing capabilities of the Economics Department.

Second-year master's students may count one or two upper-division undergraduate economics courses toward the four elective requirements with the proviso that the instructor will require extra work from students who receive master's credit for such courses. Also note that some undergraduate courses have a graduate-level course that is taught concurrently.

Students may also satisfy elective requirements by taking relevant courses from another discipline. In both of these cases, students will need to file a departmental petition for review and approval of either their upper-division undergraduate economics courses and/or courses from a related discipline. Students should begin the approval process at least a quarter in advance.

In the final quarter, each candidate completes a major project in conjunction with course 291, Workshop in Applied Economics, and course 297, Independent Study. Students with graduate credit from other institutions may submit a written request for course substitution and/or credit to the graduate committee for review.

Applied Economics and Finance B.A./M.S. Dual-Degree Program for Undergraduates

Students entering UCSC as undergraduates may complete a combined B.A./M.S. in applied economics and finance in five years. To qualify for this program, students must complete all of the core courses for their specific major (courses 1, 2, 10A, 10B for business management economics majors only, 11A, 11B, 100A, 100B, and 113) and are strongly advised to complete a minimum of three upper-division economics electives (business management economics majors must complete four) as well as the general education requirements before the end of their junior year. Students are also advised to take a course in linear algebra (Mathematics 21). Students majoring in business management economics or global economics should refer to those sections for the respective dual-degree requirements.

Students must also take the Graduate Record Examination General Test during the fall quarter of their junior year. Advance planning for the program is essential, and interested students should consult with a faculty adviser well in advance of applying to the dual-degree program.

A student in the program begins the first-year M.S. courses in the senior year while continuing to maintain undergraduate status. In the fifth year, the student is officially enrolled as a graduate student and completes the remaining graduate coursework, culminating in the M.S. degree.

Admission to the dual-degree program is by formal application directly to the Department of Economics; the application deadline is February 15 of the junior year. Undergraduates who plan to apply to quantitative-oriented Ph.D. programs at other institutions may take some of the first-year M.S. classes with the permission of the instructor.

Ph.D. Program in International Economics

The Ph.D. program in international economics provides students with training in modern microeconomics, macroeconomics, and econometrics, combined with specialized training in the fields of international finance and international trade. Students learn to bring an international perspective to all areas of economics and to conduct research on current and emerging international economic issues. The program offers more intensive course work in international trade and finance, as well as greater faculty depth in various aspects of international economics, than do traditional Ph.D. programs in economics that offer international economics as a single subject.

The large number of internationally recognized faculty in the department who are actively engaged in research in international economics provides a unique focus to the program and the department. While the core emphasis is on international trade and finance, the program also offers courses in economic development and in special topics, and students in the program have conducted research on a wide variety of topics in other areas; examples include monetary economics, experimental economics, environmental economics, and economic growth and development. This makes graduates of the program particularly well prepared for academic careers and for research careers in both domestic and international policy institutions.

Degree Requirements

Students are normally expected to complete the Ph.D. program within five years, although a full-time student with normal preparation should be able to finish in four years. Students are required to pass four written examinations: two on microeconomic and macroeconomic theory at the end of the first year, and two covering international trade and international finance at the end of the second year. Also required are two courses in econometrics during the first year and a second-year econometrics project demonstrating independent, original research and a command of modern techniques in empirical economic research. Also required is a course in the history of the international economy.

Early in the third year, students, working with a faculty adviser, prepare a dissertation proposal. An oral examination is required for advancement to candidacy for the Ph.D. degree. This is taken after the dissertation prospectus has been written and covers the student's area of research specialization. The degree is awarded upon successful completion of the dissertation.
Lower-Division Courses

For all interested students as well as prospective economics majors. Examines how markets allocate resources in different kinds of economies. Topics include competitive markets, monopoly, financial markets, income distribution, market failures, the environment, and the role of government. (General Education Code(s): IS.) The Staff

For all interested students and prospective economics majors. Examines how the overall level of national economic activity is determined, including output, employment, and inflation. Explores the roles of monetary and fiscal policies in stabilizing the economy and promoting growth, with a focus on contemporary policy debates. (General Education Code(s): IS.) The Staff

10A. Economics of Accounting, F,W,S
Introduction to accounting principles and practice. Preparation and analysis of financial statements. Study of internal control procedures. Courses 10A and 10B satisfy the Accounting 1A-B requirement at UC Berkeley. The Staff

10B. Economics of Accounting, W,S
Managerial accounting emphasizing analyses and control; accounting for corporations; introduction to taxation, budgeting, and equity/debt financing; management decision making. Courses 10A and 10B satisfy the Accounting 1A-B requirement at UC Berkeley. Prerequisite(s): course 10A. The Staff

11A. Mathematical Methods for Economists. F,W,S
An introduction to mathematical tools and reasoning, with applications to economics. Topics are drawn from precalculus and calculus and include functions and graphs, techniques of differentiation, relative extrema, logarithms and exponents, and differentials. Students who have already taken Mathematics 11A and 19A should not take this course. Also offered as Applied Math and Statistics 11A. Students cannot receive credit for both courses. Prerequisite(s): score of 31 or higher on Math Placement Exam. Students who do not place into precalculus should enroll in Mathematics 1. (General Education Code(s): Q.) The Staff

11B. Mathematical Methods for Economists. F,W,S
Mathematical tools and reasoning, with applications to economics. Topics are drawn from integral calculus, multivariable calculus, and linear algebra and include definite integrals, partial derivatives, Lagrange multipliers, matrix algebra, and solving systems of linear equations. Prerequisite(s): course 11A or Applied Mathematics and Statistics 11A. (General Education Code(s): Q.) The Staff

42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80A. The Theory, Hope, and Crisis of Capitalism. S
Assessment of modern-day capitalism from the three major economic paradigms—liberal, conservative, radical. Theories of Smith, Marx, and Keynes are examined in contemporary writing, with focus on the U.S. from WW II to present. Students cannot receive credit for this course and course 189. (General Education Code(s): T3-Social Sciences.) D. Kaun

80G. Money and the Arts: Two All-Consuming Passions. S
Analysis of the performing arts: a commodity providing a rich and varied source of satisfaction, an occupation for thousands of talented and creative individuals, and an activity whose funding (public versus private) is the source of significant controversy. Students cannot receive credit for this course and course 137. (General Education Code(s): T3-Social Sciences.) D. Kaun

80H. Wall Street and the Money Game. W
Provides a demystifying introduction to financial markets. Examines the theory of stock market investment, the workings of the international money market, the implications of corporate takeovers, and the regulation of the economy by the Federal Reserve Board. (General Education Code(s): T3-Social Sciences.) The Staff

80J. Value and Support of the Arts: Challenges and Opportunities in American Society. F
Considers the value of the arts in an era of increasing fiscal austerity. Along with focus on specific funding concerns arising in such an environment, students cannot receive credit for this course and course 185. (General Education Code(s): T5-Humanities and Arts or Social Sciences.) D. Kaun

93. Field Study, F,W,S
Supervised fieldwork experience, off campus, in an area connected with economics or business. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

93F. Field Study (2 credits). F,W,S
Supervised off-campus fieldwork experience in an area connected with economics or business. Prerequisite(s): permission of instructor; students submit petition to sponsoring agency. The Staff

The Staff

Upper-Division Courses

100A. Intermediate Microeconomics. F,W,S
Covers major theoretical issues arising in the study of resource allocation, the function of markets, consumer behavior, and the determination of price, output, and profits in competitive, monopolistic, and oligopolistic market structures. Also considers issues of welfare and public policy. Prerequisite(s): courses 1, 2 and 11A or Applied Mathematics and Statistics 11A or Mathematics 11A or 19A; Course 11B is strongly recommended. The Staff

100B. Intermediate Microeconomics. F,W,S
Covers major theoretical issues arising in the study of income, employment, interest rates, and the price level. Examines the role of monetary and fiscal policy in economic stabilization. Also considers issues as they relate to the global economy. Prerequisite(s): courses 1, 2, and 11A or Applied Mathematics and Statistics 11A or Mathematics 11A or 19A. The Staff

100M. Intermediate Microeconomics. F,W,S
Covers major theoretical issues arising in the study of income, employment, interest rates, and the price level. Examines the role of monetary and fiscal policy in economic stabilization. Also considers issues as they relate to the global economy. Prerequisite(s): courses 1, 2, and 11A or Applied Mathematics and Statistics 11A or Mathematics 11A or 19A. The Staff

100N. Intermediate Macroeconomics, Math Intensive. *
Provides rigorous, mathematical-intensive treatment of topics covered in course 100B. Core is devoted to model-based analysis of questions in macroeconomics. Use of mathematical tools allows study of advanced topics and data-intensive applications. See course 100B for specific topics. Prerequisite(s): courses 1, 2, and 11A or Engineering 11A or Mathematics 11A or 19A. The Staff

101. Managerial Economics. F,W,S
Analysis of the theory and practice of decision making in business firms, applying the concepts and techniques of microeconomics. Topics may include pricing schemes, non-price competition, internal organization of firms, incentive contracts, asymmetric information, and game theory. Case studies are used to illustrate some topics. Prerequisite(s): courses 100A and 113. The Staff

102. Forecasting. F,W,S
Theory and analysis of long-run and short-run forecasts of economic activity. Emphasis on empirical applications. Applications of forecasting techniques in organizational settings. Prerequisite(s): courses 100B and 113. The Staff

104. Is There Truth in Numbers: The Role of Statistics in Economics. S
Applies the techniques of econometrics and experimental economics to the understanding of economics. A "hands-on" course where real economic data is used in an interactive way so that students develop the art of empirical analysis. Prerequisite(s): courses 100A, 100B, and 113. The Staff

105. Topics in Macroeconomic Theory. F,W,S
A seminar in advanced macroeconomics focusing on a selection of theoretical issues. Emphasis on detailed modeling and analysis of macroeconomic processes. Course 100B is strongly recommended as preparation. The Staff

106. Evolutionary Thought in the Social Sciences. *
Emphasizes class discussion and term papers for social science, philosophy, and biology majors. Covers the development and recent trends of evolutionary thought in biology and social sciences including social Darwinism, sociobiology, evolutionary psychology, and evolutionary game theory. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code(s): W.) D. Friedman

Theories of justice, equity, and rights in economics and their applications to such issues as wages, taxation, property rights, welfare programs, and globalization. Students get extensive practice in writing persuasive, argumentative essays. Prerequisite(s): course 1, satisfaction of the Subject A and Composition requirements. (General Education Code(s): W.) J. Bader

110. Managerial Cost Accounting and Control. S
Focuses on how cost data are used by managers in the planning and control of both private- and public-sector organizations. Specific topics include organization of the management and control function, use of cost data for the pricing of goods and services, the effect of cost systems on management performance, and capital budgeting. Prerequisite(s): course 10B. R. Shepherd
111A. Intermediate Accounting I. F
Principles, control, and theory of accounting for assets; accounting as an information system; measurement and determination of income. Projects involving spreadsheet software required. Prerequisite(s): course 108. R. Shepherd

111B. Intermediate Accounting II. W
Principles, control, and theory of accounting for liabilities and equities; preparation and analysis of cash flow statements and earnings per share computation. Projects involving spreadsheet software required. Prerequisite(s): course 108. R. Shepherd

113. Introduction to Econometrics. F,W,S
Topics include the economics of slavery, the rise of big business, and the causes of the Great Depression. Prerequisite(s): courses 1 and 2. Related course work in history also helpful. B. Elbaum

126. Why Economies Succeed or Fail: Lessons from Western and Japanese History. W
Examines the emergence of capitalism and the world's first industrial revolution in Britain, continental Europe industrialization, Soviet economic growth and collapse, and the Japanese economic miracle. Asks about the historical sources of long-run economic development, stagnation, and decline. Draws lessons for current debates over free market versus more interventionist policies, economic reform in the former Communist nations, and economic rivalry between the U.S. and Japan. Prerequisite(s): courses 1 and 2. Related course work in history also helpful. B. Elbaum

128. Poverty and Public Policy. W
Studies the causes, consequences, and governmental response to urban poverty in the U.S. Topics include how public policy, the macroeconomy, race, gender, discrimination, marriage, fertility, child support, and crime affect and are affected by urban poverty. Emphasizes class discussion and research. Also offered as Legal Studies 128. Prerequisite(s): course 110. W. E. The Staff

130. Money and Banking. W
The institutional structure of central banking and of bank and nonbank financial intermediation in the U.S.; theoretical and empirical investigations of the role of monetary policy in macroeconomic stabilization and economic growth. Prerequisite(s): courses 100B and 113. The Staff

International financial management analyzes the key financial markets and instruments that facilitate trade and investment activity on a global scale. Topics include: (1) international capital markets and instruments, including production scheduling, optimal transportation assignments, and optimal inventory policy. Prerequisite(s): course 100A. The Staff

An examination of all major financial markets: equities, bonds, options, forwards, and futures. Uses modern financial theory, including pricing models such as CAPM and APT. Prerequisite(s): courses 100A and 113. The Staff

135. Corporate Finance. W,S
Analysis of financial policies of business enterprises. Topics include: (1) international capital markets and instruments, including production scheduling, optimal transportation assignments, and optimal inventory policy. Prerequisite(s): courses 100A and 113. The Staff

The strategic management process, techniques for analyzing single-business and diversified companies, implementing strategy, organization, business planning, financial strategy, competitive analysis, entrepreneurial skills. Prerequisite(s): courses 10A and 100A. The Staff

136L. Laboratory Business Strategy (2 credits). F,W
Laboratory sequence discussing business simulation games associated with course 136. One three-hour session on microcomputer lab. Prerequisite(s): concurrent enrollment in course 136. The Staff

137. Performing Arts in the Public and Private Economy. S
Analysis of the performing arts: a commodity satisfying a rich and varied source of satisfaction, an occupation for thousands of talented and creative individuals, and an activity whose funding (public versus private) is the source of significant controversy. Economics 1 is strongly recommended as a preparation. Students cannot receive credit for this course and course BOG. D. Kaun

Examines the analytics of issues in technology and innovation, including cooperation in research and development (R&D), standardization and compatibility, patents and intellectual property rights, and strategic management, using economic models and firm case studies. Prerequisite(s): course 100A or permission of instructor. The Staff

139A. The Economics of Electronic Commerce. W
Analysis of the broad spectrum of issues affecting commercial use of the Internet and the next-generation information infrastructure. Uses economics to examine market structure, pricing quality, intellectual property rights, security, electronic payments and currencies, and public policy implications. Prerequisite(s): course 100A, or permission of instructor. N. Singh

139B. E-Commerce Strategy. *
Introduction and review of economic principles for e-commerce. Online retailing of physical products; digital products; financial services; housing and related markets. Online business-to-business transactions. Internet infrastructure industry. Government regulation of e-commerce and business strategy responses. Prerequisite(s): course 139A. N. Singh

140. International Trade. F,W
The theory of international production and trade. The effects of tariffs and quantitative trade restrictions; the nature of economic integration; multinational firms; effects of trade and protection on economic stability and welfare. Prerequisite(s): course 100A. The Staff

141. International Finance. W
Topics include national accounting, balance of payments theories, parity conditions in international finance, exchange rate determination models, forward-looking financial instruments, international monetary systems, country interdependence and exchange rate regimes, international monetary integration, and Eurocurrency market. Prerequisite(s): 100B. The Staff

142. Advanced Topics in International Economics. S
Selected issues in contemporary international economics: theory, empirical evidence, and public policy. Seminar emphasizing discussion and individual research. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 100A and 100B; course 113 strongly recommended. (General Education Code(s): W.) The Staff
148. Latin American Economies.  S  This course is designed to familiarize students with the economic and business environment in Latin America. Prerequisite(s): courses 1 and 2. The Staff

149. The Economies of East and Southeast Asia.  S  Examines the pattern of international trade, investment, and industrial structure in Asia. Examines competing explanations of rapid growth of Japan, Korea, and Taiwan; presents an overview of economic developments in China, Hong Kong, and Taiwan. Concludes with an analysis of high technology trade and multinationals in Asia in 2000 and beyond. Prerequisite(s): courses 1 and 2. The Staff

150. Public Finance.  Economics of taxation, including incidence, equity issues, efficiency, and supply-side effects. Close attention to taxes in the U.S. system and tax reform issues. Prerequisite(s): course 100A and 100B. T. The Staff

152. Setting Domestic Priorities.  * Analysis of the economics and political economy of a number of contemporary policy issues facing the U.S.: immigration, affirmative action programs, health care reform, welfare reform, income inequality, education and training, entitlement spending, taxes, and government budgets. Students cannot receive credit for this course and course 80E. Prerequisite(s): course 100A. Course 100B strongly recommended as preparation. The Staff

153. Cost-Benefit Analysis. W Study of techniques used in evaluating expenditures in the public sector, including the identification and measurement of benefits and costs and a survey of welfare-theory concepts underlying the analysis. A substantial part of the course is assigned to specific case studies. Prerequisite(s): courses 100A and 100B. T. The Staff

156. Health Care and Medical Economics. W Health economics theory and review of studies of the health industry, including current topics. Focuses on the structure of the U.S. health care system, including analyses of health policy issues. Relationship to models of perfect competition and efforts at reform. Prerequisite(s): courses 100A and 113. C. Dobkin

160A. Industrial Organization. W The structure and conduct of American industry with strong emphasis on the role of government, regulation, anti-trust, etc. The evolution of present-day industrial structure. The problems of overall concentration of industry and of monopoly power of firms. Pricing, output decisions, profits, and waste. Approaches include case study, theory, and statistics. (Formerly course 160J.) (Also offered as Legal Studies 160. Students cannot receive credit for both courses.) Prerequisite(s): course 100A. T. The Staff

160B. Government and Industry. S The influence of government regulation on industry and the allocation of resources is rigorously examined using theory and statistics. Areas of regulation include transportation and power, pollution and congestion, rent control, and liability insurance regulation. Both optimal and actual regulation are examined from the point of view of effectiveness, efficiency, social welfare, and re-distribution. Prerequisite(s): course 100A. T. The Staff

161. Marketing. W,S The evolution of markets and marketing; market structure; marketing cost and efficiency; public and private regulation; the development of marketing programs including decisions involving products, price, promotional distribution. Prerequisite(s): course 100A. T. The Staff

162. Legal Environment of Business. F A study of law and the legal process, emphasizing the nature and function of law within the U.S. federal system. Attention is given to the legal problems pertaining to contracts and related topics, business association, and the impact of law on business enterprises. (Also offered as Legal Studies 162. Students cannot receive credit for both courses.) Prerequisite(s): course 100A. R. Wise

164. Economics and the Telecommunications Industry. F Covers the economics of the telecommunications industry including telephone, cellular telephone, and data communications. Particular emphasis on the Internet, satellite, paging, cable television, radio and television broadcasting. Examines the industry structure and implications of moving from a regulated environment to competition. Topics examined from a competitive market standpoint as well as public policy perspective. Prerequisite(s): course 100A and 113. T. The Staff

165. Economics as an Experimental Science. F The design, execution, and analysis of laboratory experiments in economics. Students study experimental methodology, critically survey the published literature, and design an experiment. Literature includes lab studies of investigations in auctions, markets, social choice theory, and game theory. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 100A. Enrollment limited to 20. (General Education Code(s): W.) D. Friedman

169. Economic Analysis of the Law. W The application of the theories and methods of neoclassical economics to the central institutions of the legal system, including the common law doctrines of negligence, contract, and property; bankruptcy and corporate law; and civil, criminal, and administrative procedure. (Also offered as Legal Studies 169. Students cannot receive credit for both courses.) Prerequisite(s): course 100A or permission of instructor. D. Wittman

170. Environmental Economics. S Economic analysis of environmental issues. Environmental pollution and deterioration as social costs. Economic policy and institutions for environmental control. Influences of technology, economic growth, and population growth on environmental quality. Prerequisite(s): courses 100A and 113. T. The Staff

171. Natural Resource Economics. W The application of economic analysis to the use of renewable and nonrenewable natural resources. Efficiency and distributional aspects of natural resource scarcity. Measurement of the benefits and costs. Optimal extraction or use policies. Common property and externalities. Government policies. Prerequisite(s): course 100A. T. The Staff

175. Energy Economics. W Applications of micro, welfare, and international economic theory and methodology to the energy field. Questions considered include optimal allocation of natural resources pricing and investment; regulations and taxes; import and export control; redistributional policies. Prerequisite(s): course 100A. T. The Staff

180. Labor Economics. S A study of the changing nature and composition of the U.S. labor force. Topics include the demand for and supply of labor; wage determination; the role and impact of unions in the labor market; racial, ethnic, and gender differences in job and income opportunities and the role of discrimination in explaining these differences; and the theory of human capital, all considered from the traditional neoclassical as well as institutionalist and radical perspectives. Prerequisite(s): courses 1 and 2; courses 100A and 113 are strongly recommended as preparation. T. The Staff

181. Economics of Real Estate.  * The economics of real estate, including development, financing, construction and land costs, zoning, land use, externalities, and planning. Also considers speculation and real estate appreciation. Prerequisite(s): course 100A and 100B. T. The Staff

183. Women in the Economy.  * Study of gender roles in economic life, past and present. Topics include occupational structure, human capital acquisition, income distribution, poverty, and wage differentials. The role of government in addressing economic gender differentials is examined. (Also offered as Legal Studies 183. Students cannot receive credit for both courses.) Prerequisite(s): satisfaction of Subject A and Composition requirements; courses 1, 2, and 100A; course 113 strongly recommended. (General Education Code(s): W.) T. The Staff

184. Labor Wars in Theory and Film. W This seminar focuses on the impact of trade unions and labor-market discrimination on the U.S. workforce. The neo-classical, institutional, and radical/Marxist approaches to these questions are employed in the analysis. Films, both fictional and documentary, are utilized as primary source material. Prerequisite(s): permission of instructor based on quality of work in economics; courses 100A, 100B, and 113; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) D. Kaul

185. Value and Support of the Arts: Challenges and Opportunities in American Society. F Considers the value of the arts in an era of increasing budgetary duress, along with focus on specific funding concerns arising in such an environment. Students cannot receive credit for this course and course 80J. Course 1 is strongly recommended as preparation. D. Kaul

186. Mathematical Methods for Economic Analysis. F Presents mathematical methods commonly used in graduate-level economic analysis: basic matrix algebra, real analysis, functions, continuity concepts, differentiation, Taylor expansions, and implicit function theorem and optimization. Prerequisite(s): interview only: admitted to M.S. or Pathway Programs. T. The Staff

188. Management in the Global Economy.  * An overview of how firms do business in the global economy. Focus is on the firm, but also explores the impact of corporate decision-making on national welfare. Emphasizes how national economic policies and international institutions influence firm strategy and industrial structure. Prerequisite(s): courses 2 and 100A; course 100B strongly recommended as preparation. T. The Staff

189. Political Economy of Capitalism. S An assessment of modern day capitalism from the three major economic paradigms: liberal, conservative, radical. Theories of Smith, Marx, and Keynes are explored in contemporary writing, with focus on the U.S. from W W II to
190. Senior Proseminar. Courses focus on problems of interest to advanced students of economics. They offer a flexible framework, so those interested in specific issues can read, present papers, and develop their ideas. The Staff

191. Economics Teaching Practicum. F, W, S Each student serves as facilitator for small discussion groups in connection with core economics courses. Facilitators complete course readings and meet with instructor as a group to discuss the teaching process. May not be counted toward upper-division major requirements. May be repeated for credit. The Staff

192. Directed Student Teaching. F, W, S Teaching of a lower-division seminar, course 42, under faculty supervision. May not be counted toward the upper-division major requirements. Students submit petition to sponsoring agency. The Staff

193. Field Study. F, W, S Provides for department-sponsored individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor (in contrast to course 198 where faculty supervision is by correspondence). May not be counted toward the upper-division major requirements. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial. F, W, S Specialized study with individual faculty. May not be applied toward the major requirement. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

200. Microeconomic Analysis. F Survey of partial equilibrium analysis, market distortions, consumer choice, and production and trade theory, perfect and imperfect competition, price discrimination, and intertemporal choice theory. The Staff

201. Applications in Microeconomics. S Applies concepts and tools developed in course 200 to problems encountered in private- and public-sector output and labor markets. The focus is empirical; topics include analysis of labor supply and labor demand and the role of government labor market policies, analysis of pricing policies and regulation, estimation of the returns to schooling, estimation of demand and cost functions, and the role of unions in the economy. Course 200 is strongly recommended as preparation. The Staff

202. Macroeconomic Analysis. W Aggregate economic analysis: determinants of aggregate expenditures and output, the roles of monetary and fiscal policy, recent developments in macro theory; macro policy issues. The Staff

204A. Advanced Microeconomic Theory. F Economic theory of individual and market behavior, including constrained optimization, duality, theory of the consumer, theory of the producer, dynamic optimization, behavior under uncertainty, intertemporal choice, asymmetric information, game theory, partial and general equilibrium, pure and applied welfare economics, public goods and externalities. Illustrative examples emphasize international applications. Courses must be taken in sequence. The Staff

204B. Advanced Microeconomic Theory. W Economic theory of individual and market behavior, including constrained optimization, duality, theory of the consumer, theory of the producer, dynamic optimization, behavior under uncertainty, intertemporal choice, asymmetric information, game theory, partial and general equilibrium, pure and applied welfare economics, public goods and externalities. Illustrative examples emphasize international applications. Courses must be taken in sequence. The Staff

205A. Advanced Macroeconomic Theory. F Modern macroeconomic theory: determination of national income; employment, inflation, and exchange rates; theories of growth and business cycle fluctuations; international transmission of inflation and other disturbances; recent developments in the analysis of macroeconomic policy; modern theoretical and empirical analysis of aggregate relationships. Courses must be taken in sequence. The Staff

205B. Advanced Microeconomic Theory. W Economic theory of individual and market behavior, including constrained optimization, duality, theory of the consumer, theory of the producer, dynamic optimization, behavior under uncertainty, intertemporal choice, asymmetric information, game theory, partial and general equilibrium, pure and applied welfare economics, public goods and externalities. Illustrative examples emphasize international applications. Courses must be taken in sequence. The Staff

209A. Accounting 1. F Principles, control, and theory of accounting for assets; accounting as an information system; measurement and determination of income. M.S. level projects required. Enrollment restricted to graduate students. R. Shepherd

209B. Accounting II. W Principles, control, and theory of accounting for liabilities and equities; preparation and analysis of cash flow statements and earnings per share computation. M.S. level projects required. R. Shepherd

210A. Mathematical Methods for Economic Analysis. F Mathematical methods commonly used in economic analysis are discussed. Covers basic matrix algebra, real analysis, functions, continuity concepts, differentiation, Taylor expansion, implicit function theorem, and optimization. Prerequisite(s): qualifications as determined by instructor; inquire at department office. The Staff

210B. Mathematical Methods for Economic Analysis. F A course in introductory mathematical economics which covers standard optimization problems, difference and differential equations, optimal control theory, decision under uncertainty, game theory, and stochastic calculus. Course 210A or equivalent is strongly recommended as preparation. The Staff

211A. Advanced Econometrics. W Advanced econometric methods are introduced. Topics include the standard regression analysis, simultaneous equation estimation, nonlinear models, qualitative response models, panel data analysis, and univariate and multivariate time-series analysis. The Staff
211B. Advanced Econometrics. S
Advanced econometric methods are introduced. Topics include the standard regression analysis, simultaneous equation estimation, nonlinear models, qualitative response models, panel data analysis, and univariate and multivariate time series analysis. Course 211A is strongly recommended as preparation for course 211B. The Staff

211C. Topics in Empirical Research. F
A topic course in econometrics designed for graduate students interested in quantitative analysis. Selected topics, including standard and recently developed econometric techniques, are critically and thoroughly discussed. In addition to methodology, focuses on exploring the research potential and applications of advanced econometric techniques. Courses 211A and 211B are strongly recommended as preparation. The Staff

212. Empirical Project in Econometrics (2 credits). *
Empirical project or paper in econometrics to demonstrate student's ability to conduct applied econometric analysis. Ph.D. requirement to be completed by beginning of student's third year of study. Prerequisite(s): courses 211A and 211B. May be repeated for credit. The Staff

216. Applied Econometric Analysis I. F
The use of statistical techniques for the testing of economic hypotheses and the estimation of parameters, with emphasis on regression analysis. Includes methods of dealing with serial correlation, errors in variables, multicollinearity, and heteroscedasticity. Experience with common statistical packages. The Staff

217. Applied Econometric Analysis II. W
Focuses on the application of advanced econometric and time series techniques to economic issues. Computer assignments and empirical applications are used to discuss and illustrate the practical aspects of simultaneous equation systems, nonlinear models, qualitative response models, time series model specification, unit root test, and cointegration analysis. Course 216 is strongly recommended as preparation. The Staff

220A. Development Economics: Theory and Cases. *
Surveys traditional development economics and the neoclassical resurgence in development theory. Topics include sources of growth, income distribution, population and human capital development, savings, fiscal and monetary mobilization and allocation, foreign investment and aid, and macroeconomic policies. Case study focus in the second quarter. Courses 204A and 205A are strongly recommended as preparation. The Staff

220B. Development Economics: Theory and Cases. *
Surveys traditional development economics and the neoclassical resurgence in development theory. Topics include sources of growth, income distribution, population and human capital development, savings, fiscal and monetary mobilization and allocation, foreign investment and aid, and macroeconomic policies. Case study focus in the second quarter. Courses 204A and 205A are strongly recommended as preparation. The Staff

233. Finance I. S
Applications of economic analysis in private finance. Topics include risky choice and intertemporal choice theory, asset pricing models, efficient market hypotheses, market institutions, and derivative securities. Course 200 is strongly recommended as preparation. The Staff

234. Financial Institutions and Markets. F
This course examines the evolving microstructure of financial markets, instruments, and institutions. Topics include the role of banks and other financial intermediaries and the trading practices for domestic and international financial instruments, including equity, debts, futures, and options. Prerequisite(s): course 233. The Staff

235. Corporate Finance. W
Application of modern financial theory to corporate decision making. Topics covered include capital budgeting and the firm's investment decision, capital structure, dividend policies, and the implications of corporate governance for enterprise financial goals. Prerequisite(s): course 233. The Staff

236. Financial Engineering. *
This course surveys the financial risks faced by corporations, banks, and other financial institutions that arise from changes in interest rates, foreign exchange rates, commodity prices, and stock prices. It examines the characteristics, payoffs, and pricing of financial derivatives and other instruments for managing risk, including options, forwards, futures, swaps, structured notes, and asset-backed securities. Several cases will be used to illustrate how actual firms solve financial risk management problems. Prerequisite(s): course 233. The Staff

239. Current Topics in Finance. *
Topics in finance selected by the instructor. Prerequisite(s): course 233. The Staff

240A. Advanced International Trade Theory I. F
The theory of international trade and commercial policy. Both traditional analyses and recent developments are covered. Topics include both normative and positive theoretical analyses, as well as empirical testing of theory. Enrollment restricted to graduate students. Courses 204A-B-C are strongly recommended as preparation. The Staff

240B. Advanced International Trade Theory II. W
This is the second quarter of a two-quarter sequence. It deals with most major current advanced research topics in trade. It is both theoretical and empirical and is designed to acquaint students with recent research in the field. Research topics include models of political economy of trade policies; trade and labor markets; regionalism and multilateralism; trade and environment; theories, determinants, and implications of foreign direct investments; economic geography. Prerequisite(s): course 240A. The Staff

240C. Advanced International Trade Theory III. S
Covers the empirical aspects of international trade issues. Topics include the testing and estimation of various trade models such as the Ricardian model, Heckscher-Ohlin-Vanek model, intra-industry trade models, trade models associated with multinational corporations, models of trade and intellectual property rights, the impact of trade on income inequality, and trade between developed and developing economies. Prerequisite(s): course 240B. Enrollment restricted to graduate students. The Staff

241A. Advanced International Finance I. F
Financial aspects of aggregate capital and trade flows and income determination in open economies. Specific topics include financial risk in the international setting, international borrowing and lending, money and exchange rate regimes, income determination and macroeconomic policy, current issues in international monetary reform. The Staff

241B. Advanced International Finance II. W
An examination of the formulation and implementation of international economic policy from both theoretical and empirical perspectives. Topics include case studies in fiscal, monetary, exchange rate, tariff, and other regulatory policies. The Staff

241C. Advanced International Finance III. S
Focuses on empirical applications in international finance. Topics include structural and reduced form models of exchange rates, interest parity conditions, purchasing power parity, capital controls, capital flows to emerging markets, and government intervention in foreign exchange markets. Courses 202 and 203 or 205A-B-C strongly recommended as preparation. The Staff

Studies the evolution and functioning of the international economy from the days of the gold standard to the present. Particular attention is paid to the interwar period with its problems of structural transformations and their relation to the Great Depression and its immediate aftermath, the rise and fall of the Bretton Woods system, the experience of floating exchange rate regimes, the rise of the "new industrial countries," and the problems of international indebtedness. Courses 204A and 205A are strongly recommended as preparation. The Staff

249A. International Trade and Development Policy I. W
Focuses on a range of real-life issues in international trade and development. Topics include North American Free Trade Agreement (NAFTA), the semiconductor industry, the Boeing-Airbus aircraft trade problems, World Trade Organization (WTO) and developing countries, U.S./Japan trade, trade and the environment, and U.S./China trade. Enrollment restricted to graduate students. The Staff

249B. International Trade and Development Policy II. *
Emphasizes government policies to promote growth. Topics include the "Washington Consensus," the "East Asian model," and recent policy changes in East Asia, Latin America, Eastern Europe, and the former Soviet Union. Prerequisite(s): course 249A. Enrollment restricted to graduate students. The Staff

250. Advanced Public Finance.
The theory of the role of public sector expenditures and taxes in market economies. Analyzes efficiency and equity arguments for government intervention. Topics include the role of public debt and deficits in economies, international effects of tax and spending policies, and economic theories of public sector decision making. Courses 204A and 205A are strongly recommended as preparation. The Staff

259A. Cost-Benefit Analysis. W
Applications of economic analysis in public finance, largely from the revenue side: taxation. The issues considered include the effects of taxation on consumer welfare, consumption, labor, capital, production, growth. Course 200 is strongly recommended as preparation. The Staff

259B. Public Policy Analysis.
Applications of welfare and microeconomic theory and methodology to the public expenditure question: cost-benefit. Effects of the taxes discussed in course 259A and sophisticated tools used in the face of these other distortions with regard to measurement of benefits, costs, and the dead weight cost. Course 200 strongly recommended as preparation. The Staff
270. Advanced Topics in Microeconomic Theory. *
Advanced topics and current research in microeconomic theory, including game theory and general equilibrium analysis. Courses 204A-B and 205A are strongly recommended as preparation. The Staff

271. Advanced Topics in Macroeconomic Theory.
Advanced topics and current research in macroeconomic theory, including DSGE models, empirical issues, and optimal policy analysis. Prerequisite(s): courses 204A-B-C, 205A-B-C, and 211A-B-C are strongly recommended as preparation. The Staff

272. Evolutionary Game Theory. *
Reviews static equilibrium concepts, games of incomplete information, and the traditional theory of dynamic games in discrete time. Develops recent evolutionary game models, including replicator and best reply dynamics, and applications to economics, computer science, and biology. (Also offered as Computer Science 272 and Biology 274.) Prerequisite(s): upper-division math courses in probability theory are strongly recommended. D. Friedman

290. Topics in International Economics. *
Covers several advanced topics in the history of international economics, international trade, and international finance. Topics include imperfect competition and trade, strategy trade policies, increasing returns, and the pattern of trade, economic geography, exchange rate target zones, and balance of payment crises. Topics vary from year to year. Courses 204A-B-C and 205A-B-C are strongly recommended as preparation. The Staff

291. Workshop in Applied Economics. S
Experience in applied projects, report writing and presentation, drawing on previous course work. The Staff

293. Field Study, F.W.S
Students will undertake analytical projects in public or private institutions. May be taken once to meet course requirements for the master's degree. The material covered must be different from that of the thesis topic. The Staff

294A. Applied Economics Laboratory (2 credits). F
Practical experience in managing computerized data sets and running statistical packages. Covers SAS, RATS, TSP, Bridge Equity System, LIMDEP, GAUSS, and MAPLE programs and Internet, IFS, OECD, and SPSS EconLit databases. May be repeated for credit. The Staff

294B. Applied Economics Seminar (2 credits). W
Weekly seminar designed to present students with current working applications in various fields of applied economics and finance. Enrollment restricted to graduate students. May be repeated for credit. The Staff

295A. Directed Reading. F
Reading in research area of student interest, with faculty supervision through weekly discussion. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

295B. Directed Reading. W
Reading in research area of student interest, with faculty supervision through weekly discussion. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

295C. Directed Reading. S
Reading in research area of student interest, with faculty supervision through weekly discussion. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

296A. Third Year Ph.D. Seminar, F
Student presentations of current research in areas of student research interest. Student discussion of presentations under faculty supervision. Prerequisite(s): courses 204C, 205C, 211B, 240A, 240B, 241A, and 241B are required preparation. The Staff

296B. Third Year Ph.D. Seminar, W
Student presentations of current research in areas of student research interest. Student discussion of presentations under faculty supervision. Prerequisite(s): courses 204C, 205C, 211B, 240A, 240B, 241A, and 241B are required preparation. The Staff

296C. Third Year Ph.D. Seminar, S
Student presentations of current research in areas of student research interest. Student discussion of presentations under faculty supervision. Prerequisite(s): courses 204C, 205C, 211B, 240A, 240B, 241A, and 241B are required preparation. The Staff

297. Independent Study.
Independent study and research under faculty supervision. Students submit petition to sponsoring agency. The Staff

298. Dissertation Research. F.W.S
Research toward Ph.D. dissertation. Students submit petition to faculty supervision. Prerequisite(s): courses 204C, 205C, 211B, 240A, 240B, 241A, and 241B are required preparation. The Staff

299. Thesis Research.
May be taken once to meet course requirements for the master's degree. Students submit petition to sponsoring agency. The Staff

Education

212 Crown College
Advising: (831) 459-2589
http://education.ucsc.edu
email: education@ucsc.edu

Rodney Ogawa, Department Chair

Faculty and Professional Interests

Professor
Margaret (Greta) A. Gibson
Immigrants and education; minority status and schooling; community-school relationships; ethnic, class, gender, and educational processes; qualitative research methods

Rodney Ogawa
Educational leadership, educational reform, and the impact of social institutions on the structure of school organization

Art Pearl, Emeritus
Aesthetic education, educational philosophy, creative writing, poetry, pedagogy, literary theory

Roland G. Tharp, Emeritus
C. Gordon Wells
Language and literacy development, analysis of discourse in learning and teaching, inquiry-oriented curriculum; socio-cultural theory and education, collaborative action research

Associate Professor
June A. Gordon
Urban education of working-class and ethnic minority students in East Asia, Britain and the U.S. and related issues in teacher education

Judith Moschkovich
Mathematics learning and teaching, student conceptions of linear functions, discourse in mathematics and science classrooms, language and literacy mathematics education, informal mathematics learning

Lucinda Pease-Alvarez
Language and literacy development, language minority education, bilingualism, informal learning

Judith Scott
Language and literacy learning: academic language, reading, writing, vocabulary development; teachers professional development through collaboration and inquiry

Trish Stoddart
Teacher education, science education, educational reform

Kip Tellez
Preparation of teachers for linguistic and cultural diversity, second language learning, studies of the school curriculum, educational assessment

Assistant Professor
Julia Aguirre
Mathematics teaching and learning with an emphasis on teacher cognition, school organization and culture, mathematics literacy, equity issues in mathematics educational reform

Doris Ash
Informal science learning, teacher professional development, science discourse in and out of the classroom

Lora Bartlett
George Bunch
Teacher development (with emphasis on knowledge and identity), English education, and sociolinguistics

Jeremy Shaw
Scientific inquiry, specifically examining the science education experiences of English language learners and their teachers. This includes examining ways in which assessments in English measure content knowledge versus language proficiency.

Director of New Teacher Center
Ellen R. Moir
Bilingual education, English language development, new teacher development and support

Professor
Catherine R. Cooper (Psychology)
Cultural perspectives on child and adolescent development; linkages among families, peers, schools, and work; issues of diversity, ethnicity, and gender in identity, research, practice, and policy in university outreach programs; linking qualitative and quantitative research
Education

Bruce N. Cooperstein (Mathematics)
Group theory; combinatorics, particularly, Chevalley groups and their associated geometries; environmental economics; theories of value

Barbara Rogoff (Psychology)
Human development in sociocultural activity; informal and formal arrangements for learning; adult/child and peer communication in families and schools in diverse cultural communities learning through observation; varying forms of participation in problem solving; cognitive development, especially problem solving, planning, and attention

Senior Lecturer
Donald L. Rothman (Writing)
Director, Central California Writing Project; literacy education and democracy. UC K-12 partnerships; writing, persuasion, and nonviolence; writing pedagogy; connections between beauty and justice

Program Description
The purpose of the Education Department's instructional programs is to prepare all students, undergraduates and graduates, to engage in the analysis and integration of educational theory, research, and practice, for an increasingly diverse society. Our primary intellectual and practical focus is on fostering equitable and effective schooling for all students. In working toward this goal, we are committed to the development of teachers with theoretical and practical perspectives responsive to the diverse cultural, social, and linguistic backgrounds of the children who comprise the current and future populations of K-12 students in California's schools. This commitment is reflected in principles addressed in the course work, placements, and advising that constitute our programming in teacher education.

Minor in Education
The UCSC undergraduate program in education engages students in a course of study that explores the history of educational thought and philosophy, the politics and economics of education, learning theory and pedagogy, and issues of cultural and linguistic diversity in education. Undergraduate students are welcome to take any education course and can also declare a minor in education. Please note that the UCSC teaching credential program is a graduate program. Course work for the minor cannot be substituted for credential requirements.

In order to complete a minor in education, students take courses 92A, 92B, and 92C, as well as course 80, which is to be taken concurrently with 92A, 92B, or 92C, or after at least one of these courses has been taken. In addition, students must complete two courses selected from a list (available from the Education Department) of upper-division electives. Students who wish to pursue a minor in education may seek advising and file a Proposed Study Plan and Declaration of M (minor) form at the department office.

Graduate Programs
Master of Arts in Education Teacher Preparation Program
The master of arts in education teacher preparation program prepares teachers for California's culturally and linguistically diverse children and youth. The M.A. in education degree is earned by completion of a five-quarter program comprising two summers and one academic year. Graduates of the program are prepared to teach K-12 English language learners. The program also offers the Bilingual, Crosscultural, Language, and Academic Development (BCLAD) emphasis teaching credentials. The BCLAD emphasis authorizes primary language instruction and dual language immersion education. The BCLAD language of emphasis is Spanish.

Master of Arts in Education: Teaching
The preliminary multiple subject teaching credential for elementary school teachers (used in self-contained elementary classrooms—typically grades K-6—where all subjects are taught by the same teacher) and the preliminary single subject teaching credential for secondary teachers (used in a departmentalized setting where the teacher is generally responsible for one subject, typically grades 7-12) are available. The single subject program offers the following subject areas: mathematics, English, social science, and science. Programs of study are subject to change.

Prerequisite Admission Requirements
Graduate Record Exam (GRE): Applicants to the UCSC M.A. in education teaching program must take the GRE General Exam and submit a score by January 15 with the application; in addition, all candidates must have preparation in the following areas:
1. A course, or equivalent experience, that addresses cultural and linguistic diversity. The following UCSC undergraduate education courses are examples of courses that meet this requirement: 128, Immigrants and Education; 140, Language, Diversity, and Learning; 164, Urban Education; and 181, Race, Class, and Culture in Education.
2. A documented field experience with children or youth in a multicultural educational setting. Experiences working in a responsible role with children in the age group or in the subject area you intend to teach are preferred.

Application Selection Criteria
Admission to the teaching program is competitive. Candidates for admission are selected, in part, on the following criteria:
Academic record
College course work is evaluated with attention to content and grades or narrative evaluations. The appropriateness of courses taken for the credential sought is also taken into consideration. For the multiple subjects credential, students should have an extensive breadth of courses in the core subject areas taught in elementary school—math, science, social science, and English. For the single subject credential, students should have an extensive body of course work in the content area.

Testing and language requirements
All required exams and language requirements must be met by the stated deadlines.

Statement of purpose
The statement of purpose should discuss the following (no more than two typed pages):
- an explanation of why you want to become a teacher;
- how your experience has contributed to your motivation and potential to be an educational leader; and
- a description of your experiences related to youth, cultural and linguistic diversity, and community involvement.

Writing sample, letters of recommendation, and résumé
Information provided in these documents is used in the selection of candidates. All documents must be submitted by the application deadline.

Writing Sample, a sample of your writing (no more than 10 pages), ideally on an educational or related topic. You may submit an academic paper or other work previously written; alternatively, you may choose to write a brief piece specially for this application.

Letters of Recommendation. Three letters of recommendation are required.

Résumé, a résumé that includes an employment history; any relevant volunteer or community work, especially in schools and/or with children; and experiences in multicultural and multilingual settings. Include information on languages (other than English) in which you have competence.

Admission Requirements
Testing
California Basic Educational Skills Test (CBEST): All admitted applicants must verify completion of the CBEST requirement and submit a passing score in order to enroll in the program by June 1.

Subject Matter Competence
Multiple Subjects: The California Subject Exam for Teachers (CSET): A multiple subjects requirement from the applicant's undergraduate institution is required. Admitted applicants must submit verification of having passed the required CSET multiple subject exams by June 1 in order to enroll in the program. It is recommended that documentation be submitted with the application.

Single Subject: Appropriate California Subject Exams for Teachers (CSET) or verification of an approved subject matter program from the applicant's undergraduate institution is required. Admitted applicants must submit verification of having passed the required CSET exams or 100 percent completion of an approved subject matter program by June 1 in order to enroll in the program.

It is strongly recommended that all testing be completed prior to January 15, the application deadline. Admission priority may be given to applicants with test scores and/or subject matter programs completed and submitted at the time of the application.

Language Requirements
BCLAD Candidates
The BCLAD language requirement is met by passing Test 6, The language of Emphasis: Spanish, of the BCLAD exam administered by National Evaluation Systems (NES). Admitted BCLAD candidates must take, at the latest, the first available exam after enrolling in summer quarter.

Admission priority may be given to applicants with test scores and language requirements completed and submitted at the time of application.

Program and State of California Requirements (Not Required for Admission)
These requirements may be met prior to or while enrolled in the program.

U.S. Constitution Requirement
A course on the U.S. Constitution (or completion of an exam offered by the Education Department to enrolled students) is required. U.C. Santa Cruz-approved courses that meet this requirement are Politics 20, Democracy and Liberalism in American Politics, Politics 111, Problems in
Constitutional Law; Politics 120A, Congres, President, and the Court in American Politics and History 25A, United States History to 1877.

Reading Instruction Competence Assessment (RICA) Multiple subjects candidates are required—prior to completion of the program and in order to be recommended for a preliminary credential—to pass the RICA exam. The RICA measures the knowledge, skills, and abilities essential to offer effective reading instruction to K–12 students. This exam may not be taken by multiple subject candidates prior to completion of the required reading instruction course in the program.

Student Teaching Course 203, taken in the fall quarter, constitutes the first classroom observation experience for students in the M.A. teacher preparation program. To enroll in this course, students must have filed with the state an application for a Certificate of Character and Identification Clearance (fingerprinting) and have provided evidence of that to the Education Department credential analyst. Students are strongly advised to submit evidence of clearance with their application to the program (deadline January 15). To apply for clearance, contact your local County Office of Education for livescan fingerprint processing and an application for Certificate of Clearance. Intermediate and advanced student teaching is a two-quarter experience (winter/spring) in which student teachers are placed with cooperating teachers in area schools. Students gradually assume more responsibility for preparation, instruction, and evaluation of the class during this two-quarter period. Weekly supervision and seminar meetings are provided by university faculty and mentor teachers. M.A. candidates in education teacher preparation programs may take classroom experience at two different grade levels—in primary and middle school grades for multiple subject candidates and in middle schooljunior high and senior high grades for single subject candidates.

Admission to course 283, Intermediate Student Teaching, and courses 284A–B, C. Advanced Student Teaching, is based on an assessment of academic performance, experience, leadership, and initiation shown in public school settings, as well as successful completion of Education 203.

For Further Information Phone the Education Department Advising Center at (831) 459-2859, send e-mail to education@ucsc.edu, or view the department's home page on the web at http://education.ucsc.edu for dates and times of workshops where potential applicants can obtain full details about the programs.

Ph.D. in Education

The goal of the Ph.D. in education program is to support graduate students in becoming creative scholars who engage in research focused on the educational needs of students from linguistic and cultural groups that have historically not fared well in our nation's public schools. To achieve this goal, this program provides students with grounding in the varieties of interdisciplinary theorizing, research methods, and applications needed to advance the study of learning and teaching for diverse student populations. The courses and research experiences are closely related to practice in K–12 classrooms with student populations from diverse cultural and linguistic communities. Students in this interdisciplinary program apply tools and perspectives from education, anthropology, linguistics, philosophy, psychology, sociology, cognitive science, and cultural historical activity theory. The program integrates the theory and practice to examine learning and teaching within the multiple contexts of classroom, school, family, and community. Education faculty members utilize both macro- and micro-level frameworks and draw on both qualitative and quantitative methodologies in their research.

Graduates of this program will be qualified to teach and to conduct the kinds of educational research demanded by tenure-track positions in research and regional universities. Graduates may also work in non-university based institutions that focus on teacher professional development, curriculum development, and related areas of educational research and development. Although applications for a master's degree are not accepted, students in the Ph.D. program may obtain a M.A. degree after fulfilling specific requirements during the first and second year. The program requires full-time enrollment as a graduate student.

Admissions requirements and recommended preparation for the Ph.D. in education program depend on the area of specialization. The program offers three specialization areas: social context of education, language and literacy studies, and mathematics and science education. Each student is primarily associated with one of these specializations. Graduate work in social context of education focuses on the institutional, social, and cultural structures in which teaching and learning are embedded. Graduate work in language and literacy studies focuses on language learning as it emerges through social interaction and on how language and culture are implicated in teaching and learning. Graduate work in mathematics and science education focuses on cognition, learning, and teaching in mathematics or science with an emphasis on equity, informal learning, and language issues in these two content areas.

Ph.D. Program Requirements During the first two years of study, all students are expected to enroll in a set of required core courses, research methodology course, a first-year seminar, and a second-year research apprenticeship. The student and his/her advisor will also design a course of study within one of the three areas of specialization. The number of specialization courses and seminars varies, depending on the student's preparation, interests, and plans and is determined in consultation with relevant faculty and the department chair. The program encourages interdisciplinary work and involves working closely with individual faculty members.

To achieve Ph.D. candidacy, students are expected to pass an annual review of their written work, maintain satisfactory academic progress, attend department colloquia, complete a second-year research project, pass a qualifying examination, and meet the specific requirements of the Division of Graduate Studies. The qualifying exam, normally taken during the third year of enrollment, involves both written and oral components designed to demonstrate the candidate's ability to do extended, dissertation-level research and analysis. The final requirement for the Ph.D. degree is the preparation and defense of a dissertation representing a significant scholarly contribution to the topic studied.

Financial support for students includes a variety of fellowships, research assistantships, and teaching assistantships in the Education Department. The education program emphasizes teaching experience, and all students are required to serve as teaching assistants for a minimum of two quarters. Students may participate in research projects under the auspices of several interdisciplinary research centers, including the Center for Informal Learning and Schools (CILS), the Center for Justice, Tolerance, and Community (CJTC), Chicano/Latino Research Center (CLRC), and the New Teacher Center (NTC).

Lower-Division Courses

42. Student Directed Seminar. Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80. Introduction to Teaching. F,W Designed to encourage students to think about teaching in new ways. Assumptions about teaching and schooling are examined as well as considering what it takes to teach so that children learn and understand. Not a course in how to teach, but an opportunity to reconsider what teaching should be like. An introduction to the philosophy of humanistic education. May be taken concurrently with courses 92A, 92B, or 92C. A practicum in the schools and/or community of up to three hours per week is required. (General Education Code(s): T3-Social Sciences.) The Staff

92A. The Evolution of Education. F Introduction to educational theory, Plato through Freire. A survey of major ideas and issues in education, ranging from the purposes of education and the organization of knowledge to the nature of teaching, in society, and questions concerning developmental theory, moral education, and aesthetic education. Course enrollment is unrestricted. (General Education Code(s): 15.) The Staff

92B. Introduction to Theories of Education. W A general survey of theories and partial theories of education organized into three recurring topics: teaching and learning, schooling, and education in society. Each is considered in terms of the partial theories of James, Dewey, and Skinner; cognitive constructivism, particularly the theoretical cognitive science; and, finally, an integrated sociocultural theory of education. (General Education Code(s): 15.) The Staff

92C. Introduction to Issues in Diversity and Education. S Examines the impact on schools and students of social/ethnic status, social class, and gender, with attention to historical, cultural, and psychological variables. An introduction to the theory, research, and reform movements in education in response to our nation's increasing diversity. (General Education Code(s): E.) The Staff

99. Tutorial. F,W,S Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

101. Instructional Activities in Physical Education (2 credits). S Designed to assist teachers in planning and implementing physical education programs for elementary grades. Topics include child development, movement concepts, instructional strategies, curriculum planning, and physical activities. Enrollment limited to 30. The Staff

111. Community Practicum (2 credits). W Students work with bilingual children in an after-school program that involves them in a variety of recreational and academic activities. During some quarters, the practicum
115. K–12 Student Assessment. * 

Provides an overview of educational testing. Appropriate use and interpretation of standardized, classroom achievement, and special needs assessments are examined. Issues on fair testing of diverse populations of students are discussed within each topic area. Prerequisite(s): Courses 80, 92A, and 92B, or permission of instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 50. The Staff

119F. California Mathematics and Science Teacher Initiative (2 credits). W, S

Students in this seminar reflect on their experiences in secondary mathematics classrooms, discuss topics in mathematics education, and make connections to relevant readings. Satisfies the requirement fulfilled by M at hematics 188. Prerequisite(s): participation in the California Mathematics and Science Teacher Initiative Program. Enrollment restricted to mathematics, sciences, engineering, and computer science majors; restricted to CMST members only by permission of the instructor. (Formerly Community Teaching Fellowship Seminar.) Enrollment limited to 40. M ay be repeated for credit. The Staff

140. Language, Diversity, and Learning. F

Class members work as a community of educators focused on their own learning as they participate in practicum experience with youth at a local agency. Teaching and learning in linguistically and culturally diverse communities becomes the focus of course discussions, readings, and collaborative projects. Concurrent enrollment in course 111 required. Concurrent enrollment in course 111 required. Enrollment restricted to junior and senior students. Enrollment limited to 32. (General Education Code(s): E.) J. L. Paez-Alvarez

141. Bilingualism and Schooling. S

Introduces participants to issues related to the schooling of students who speak languages other than or in addition to English. Uses a multidisciplinary perspective to understand the circumstances these students face in school and considers approaches and policies that best meet their needs. Enrollment restricted to juniors, seniors, and graduate students. Enrollment limited to 50. (General Education Code(s): E.) The Staff

151. Community Perspectives on Teaching and Learning. S

Students examine and explore community perspectives on learning and teaching in light of their experiences working with youngsters in the context of the Barrios Unidos/U CSC Links, an after-school program serving a culturally diverse group of children. Enrollment limited to 25. (General Education Code(s): E.) J. L. Paez-Alvarez

155. Minorities in Higher Education. * 

Historical review and contemporary examination of the educational experience of U.S. minorities in higher education. Includes historical overview of the treatment of minority groups within higher education with special attention to Native Americans, Chicanos, Latinos, African Americans, and Asian Americans. Enrollment limited to 25. (General Education Code(s): E.) F. Hernandez

160. Issues in Educational Reform. F

Explores a variety of perspectives on key educational policy issues including desegregation, bilingual education, affirmative action, charter schools, national and state curriculum standards, student assessment and the assessment and certification of teachers. Enrollment limited to 100. The Staff

164. Urban Education. S

Focuses on urban schooling through critical readings, fieldwork, group projects, and extensive writing. Students explore how socialization, marginalization, and assimilation impede or support academic success; how class intersects with “race”, and how “culture” affects one’s orientation to education. Prerequisite(s): course 92C. Satisfies American History and Institutions Requirement. (General Education Code(s): E.) J. Gordon

164L. Urban Education Fieldwork (2 credits). S

Fieldwork in diverse schools and/or communities which involves interviews and/or tutoring and research. Must be taken concurrently with course 164. (Urban Education.) J. Gordon

170. Schools and Asian Cultures. S

Focuses on a historical and contemporary study of education in East, Southeast, and South Asia as well as the negotiation of public and private schooling within the Asian immigrant population in California. Specific topics include language acquisition; the role of religious affiliation and other culturally specific schooling; patterns of family life; and the effects of socioeconomic status, career aspirations, and parental participation in schools. Enrollment limited to 20. J. Gordon

170L. Schools and Asian Cultures Fieldwork (2 credits). S

Fieldwork in diverse schools and/or communities which involves interviews and/or tutoring and research. Must be taken concurrently with course 170. Schooling and Asian Cultures. J. Gordon

173. Seminar in Critical Pedagogy. * 

Focuses on involvement in classroom practice pertaining to student and faculty diversity and looks at factors that encourage or impede academic success. Internship required—may include K–12 schools and college settings. Required theoretical readings, reflective essays, self-assessment, and supervisor evaluations. Prior coursework in education strongly recommended. Enrollment limited to 20. May be repeated for credit. J. Gordon

175. Language, Culture, and the Classroom. F

Offers students an opportunity to think about the ways that language and culture intersect with classroom learning. Includes the linguistic and cultural diversity of students and teacher alike. Implications for practice, research, and policy will be discussed. Enrollment restricted to juniors and seniors. Enrollment limited to 50. (General Education Code(s): E.) A. Wiese

176. Learning to Talk and Talking to Learn. W

Learning to talk and talking to learn are closely related. They are also the chief medium of education. Through practical work combined with reading and discussion, investigations ways in which adults can help children/students to learn. Enrollment restricted to juniors and seniors. C. Wells

177. Teaching Culturally and Linguistically Diverse Students Math and Science. W

Examines equity issues in the learning and teaching of math and science in culturally and linguistically diverse school settings. Draws on multicultural, bilingual, and math/science education perspectives. Intended for undergraduate majors considering a K–12 teaching career. Satisfies an elective requirement for the minor in education program. Prior completion of courses 92B and 80 is advised. Enrollment limited to 25. J. Aguirre

181. Race, Class, and Culture in Education. F

Examines the schooling experience and educational attainment of racial/ethnic minority students in the U.S. Focuses primarily on domestic minorities. Addresses issues of variability between and within minority groups and the role of cultural, structural, and psychological factors in the educational attainment of these students. (General Education Code(s): E.) The Staff

185. Introduction to Teaching Mathematics. W

Provides an introduction to principles and practices for teaching mathematics in secondary classrooms; examines theoretical and practical approaches to teaching mathematics provides an introduction to national and state standards and an overview of mathematics curricula and current issues in mathematics teaching. Enrollment restricted to junior and senior majors in mathematics, physics, computer science, computer engineering, and electrical engineering. Enrollment limited to 30. M. Moschkovich
187. Cognition and Instruction. W
Address the question, "How do people learn?" by examining theories of learning and research on cognition, learning, and instruction. Enrollment restricted to junior and senior education majors. Enrollment limited to 60. J. Moschkovich

192. Directed Student Teaching. F, W, S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students submit petition to sponsoring agency. The Staff

193. Advanced Field Study. F, W, S
Students submit petition to sponsoring agency. The Staff

194. Group Projects. F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

194F. Group Projects (2 credits). F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

198. Independent Field Study. F, W, S
Students submit petition to sponsoring agency. The Staff

198F. Independent Field Study (2 credits). F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199. Tutorial. F, W, S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

200A. Introduction to Educational Inquiry. F
Addresses foundational knowledge needed to understand and conduct educational inquiry and research. Topics include epistemology in the human sciences, philosophical foundations of modern research strategies, and general classes of research investigations in education. Enrollment restricted to education graduate students. Enrollment limited to 15. D. Ash

200B. Quantitative Methods in Educational Research. S
Promotes intermediate-level knowledge of quantitative research methods in educational settings. Students learn the foundations of quantitative data theory, general logic behind statistical inference, and specific methods of data analysis in educational contexts. Prerequisite(s): course 200A. Enrollment restricted to graduate students. Enrollment limited to 15. The Staff

200C. Qualitative Research Methods. S
Graduate level introduction to qualitative methods, with special attention to ethnographic research on schooling. M overs from overview of different methods, through examination of selected studies, to discussion of issues in research design, data collection, analysis, and writing. Enrollment restricted to graduate students. Priority is given to graduate students in education. Enrollment limited to 12. M. Moshkovitch

200D. Advanced Topics in Qualitative Research. F
Analyzes topics, which vary systematically from year to year, including analysis of classroom interaction, video recording and transcription, coding and analysis of discourse data, and software programs for qualitative analysis. Prerequisite(s): course 200C. Enrollment restricted to graduate students. Enrollment limited to 12. May be repeated for credit. C. Wells

201A. Philosophical Perspectives on Education (2 credits). *
This course introduces students to some of the major educational thinkers in Western culture, from Socrates and Plato to Paulo Freire. Their work is examined both historically and for its relevance to contemporary educational debates. Enrollment restricted to graduate students. May be repeated for credit. D. Swanger

203. Applied Classroom Analysis and Methods: Beginning Student Teaching. F
A required course that introduces students to the diverse cultural and linguistic settings of today's classrooms. Classroom practices, instructional strategies, and analysis are emphasized. First course in the student teaching placement series. Placements are used to examine and apply teaching methods while developing classroom management skills. Class meetings include discussion and demonstration of teaching methods. Enrollment limited to 50. The Staff

211A. Reading and Language Arts for Elementary Classrooms. F, W
This course provides both theoretical and practical foundation for literacy instruction, emphasizing reading and language arts instruction in grades K–8. Interactive instruction and field experience will be used to examine curricula, methods, materials, and literacy evaluation. Enrollment restricted to graduate students. Enrollment limited to 30. J. Scott

211B. Reading Across the Curriculum in Middle School and Secondary, F, W
Provides a theoretical and practical foundation for teaching reading within content area instruction in middle school and secondary classrooms. Field experiences and interactive instruction will facilitate learning about strategies, curricula, methods, materials, and observation. Intended for students pursuing a single subject credential. Enrollment restricted to graduate students. Enrollment limited to 30. The Staff

212A. Science Learning and Teaching in Elementary Classrooms. F
Examines constructivist and sociocultural approaches to the learning and teaching of science in elementary classrooms, including the nature of science and theories of how children learn science. Provides a critical overview of curricula, instructional theories, and multiple approaches to teaching the "big ideas" in science. Enrollment restricted to graduate students. Enrollment limited to 50. The Staff

212B. Science Education: Research and Practice. F
Examines theoretical approaches to the learning and teaching of science including the nature of scientific knowledge, theories of how children learn science, approaches to scientific discourse, and perspectives on addressing diversity in science classrooms. Course is required for single subjects science credential. Enrollment restricted to program enrollees. Enrollment limited to 50. D. Ash

212C. Teaching Science in the Secondary Classroom. W
Examines constructivist and sociocultural approaches to teaching science in secondary classrooms. Course will provide a critical overview of curricula, instructional theories, and multiple approaches to teaching the "big ideas" in science. Enrollment restricted to program enrollees. Enrollment limited to 50. The Staff

213A. Mathematics Learning and Teaching in Elementary Classrooms. F, W
This course is required for the multiple subject credential. Examines constructivist and sociocultural approaches to the learning and teaching of mathematics in elementary classrooms, including the nature of mathematics and the ories of how children learn mathematics. Provides an introduction to mathematics teaching standards and a critical overview of curricula, instructional theories, and multiple approaches to teaching the "big ideas" in elementary mathematics. Enrollment restricted to graduate students admitted to the credential program. Enrollment limited to 50. J. Aguirre

213B. Math Education: Research and Practice. F
Examines theoretical approaches to the learning and teaching of mathematics. Topics include the nature of mathematical knowledge, theories of how children learn mathematics, approaches to mathematical discourse, and perspectives on addressing diversity in mathematics classrooms. Course is required for secondary mathematics credential. Enrollment restricted to graduate students admitted to the credential program. Enrollment limited to 50. J. Moshkovitch

213C. Teaching Mathematics in the Secondary Classroom. W
Examines constructivist and sociocultural approaches to teaching mathematics in the secondary classroom. Course will provide an introduction to mathematics teaching standards and a critical overview of curricula, instructional theories, and multiple approaches to teaching the "big ideas" in secondary mathematics. Required for mathematics secondary credential. Prerequisite(s): course 213B. Enrollment restricted to graduate students admitted to the credential program. Enrollment limited to 50. The Staff

214A. English Teaching: Theory and Curriculum. F
Required for the single subject English credential student. Examines sociocultural approaches to the learning and teaching of English in secondary classrooms, including theories of how children learn English language, literature, and composition. Enrollment restricted to education graduate students. J. Scott, J. M. Aronson

214B. English Teaching for Secondary Classrooms. W
Prepares English single subject credential candidates for student teaching in winter and spring. Course focuses on developing curricula and strategies in the content area. Through classroom placements, students observe and apply techniques to develop curriculum units used in student teaching. Enrollment restricted to graduate students. Enrollment limited to 50. The Staff

215A. Social Science: Theory and Curriculum. F
Required for the single subject social science credential student. Tracks both the implicit and explicit connections between theory and practice, illustrating that theory sug-
215B. Social Science Teaching for Secondary Classrooms. W
Provides social science single subject credential candidates for student teaching in winter and spring. Course focuses on developing curricula and strategies in the content area. Through classroom placements, students observe and apply techniques to develop curricula units that are used in student teaching. Enrollment restricted to graduate students. Enrollment limited to 50. The Staff

220. Introduction to Technology in Schools (2 credits). F,S
This course is required for prospective teachers. It provides an overview of the use of technology in the K–12 classroom. Topics covered include using the Internet and the web, building a web page, and using resources for educators on the web. Students will review software applications in a particular content area, use technology to develop lesson plans, and create integrated, thematic curricula in which technology is utilized to promote higher-order thinking, creativity, and problem-solving. Enrollment restricted to graduate students admitted to the credential program. Enrollment limited to 50. The Staff

242. Promoting Biliteracy and Bilingualism. S
Designed to meet specific goals for students pursuing the Bilingual Crosscultural, Language and Academic Emphasis Credential (BC LAD). Provides a forum for students to examine the role of the bilingual teacher in the classroom and society with an overview of current bilingual methodology and philosophy for literacy and content instruction in Spanish/English bilingual classes. To enhance participants’ Spanish language development, the class is conducted in Spanish. Enrollment restricted to graduate students admitted into the credential program. The Staff

242A. Language, Literacy, and Diversity. *
Designed to prepare students to teach reading/language arts in a way that addresses the needs and circumstances of a culturally and linguistically diverse student population. Topics include the following: exploration of the literacy development of native and non-native speakers of English, understanding the theoretical perspectives on language and literacy development, learning instructional approaches that enhance development of literacy, and learn to assess students’ literacy development. Enrollment restricted to graduate students admitted into the credential program. L. Pease Alvarez

250. Teaching, Learning, and Schooling. Required for master’s in education. Three basic units comprise the subject matter: teaching/learning, with such topics as development, learning, pedagogy, and socialization theories; second, schooling, as the context of teaching/learning both in its existent structures and its reform movements; third, the sociocultural context in which educational institutions exist, topics such as cultural and historical forces, political and economic condition, family, and community structures. Enrollment restricted to graduate students. The Staff

253. Methods of English Language Development. W
This course will help future educators develop a practical theory for teaching English in the elementary and secondary schools to students who speak other languages. Topics include current trends in the field, language assessment, and the design of instructional units. Enrollment restricted to program enrollees. Enrollment limited to 30. The Staff

261. Thinking, Learning, and Teaching. F
Examines multiple theoretical perspectives on thinking, learning, and teaching; the development of the whole person in a variety of cultural contexts; the roles thinking, learning, and teaching play in that development; and how researchers and educators’ conceptions shape instruction. Enrollment restricted to education graduate students. Enrollment limited to 15. J. M. Oschikovych

262. Social and Cultural Context of Education Core Seminar. W
Application of anthropological and sociological theories to study of education. Examines social, cultural, and linguistic context of schooling with particular attention to role of race, class, culture, power, and language in influencing schooling outcomes. Enrollment restricted to graduate students. Enrollment limited to 15. J. M. Oschikovych

263. Foundations of Educational Reform. S
Core course in Ph.D. program in education providing students with multiple analytic perspectives from which to examine important educational issues by analyzing political, historical, and philosophical origins of educational reform in the U.S. and internationally. Enrollment restricted to graduate students. Enrollment limited to 10. R. Ogawa

264. Research on Teacher Development and Teacher Education. W
Addresses personal and professional development of teachers. Explores models of teacher education with specific attention to methods and processes by which teachers can be better prepared to work with culturally and linguistically diverse students. Enrollment restricted to graduate students. Enrollment limited to 20. P. Stoddart

265. Becoming a Professional Educator. M
Expects the California state requirements for both health education and mainstreaming for those seeking a clear credential. Offers an overview of the field of special education and the expanded role of the teacher in providing health and substance abuse prevention education in the “mainstreamed” classroom. Enrollment restricted to graduate students. J. Gordon

266A. Sociocultural Perspectives on Learning and Using Literacy. S
Examines theoretical perspectives, educational issues, and scholarship related to use and development of literacy among diverse populations, particularly those who have not fared well in U.S. schools. Enrollment restricted to graduate students. Enrollment limited to 12. L. Pease Alvarez

267A. Conceptual Change in Science and Mathematics. W
Examines approaches in cognitive science, mathematics education, and science education to documenting student conceptions in science and mathematics, defining conceptual change, and describing relationship between conceptual change and learning with understanding. Enrollment restricted to graduate students. Enrollment limited to 12. J. M. Oschikovych

267B. Theoretical Foundations of Mathematics/Science Learning and Teaching (2 credits). F
Examines the theoretical foundations of teaching and learning mathematics and science. Explore these foundations from historical and current perspectives. Theories are analyzed with which students examine mathematics and science learning and teaching. (Formerly course 274J.) Enrollment restricted to graduate students. J. Aguirre

268A. Ethnographies of Education. S
Offers opportunity to critique a range of book-length ethnographic studies of education focusing on relationship between culture, learning, and schooling in the U.S. with comparative studies from other countries. Enrollment restricted to graduate students. Enrollment limited to 12. M. Gibson

268B. School Organization. F
This three-quarter seminar supports professional development for first-year doctoral students. Students develop essential skills for success as scholars, discuss issues in educational research practice, and are introduced to research by Education Department faculty. Enrollment restricted to graduate students. Enrollment limited to 15. J. Aguirre

269A, First-Year Doctoral Proseminar (2 credits). F
This three-quarter seminar supports professional development for first-year doctoral students. Students develop essential skills for success as scholars, discuss issues in educational research practice, and are introduced to research by Education Department faculty. Enrollment restricted to graduate students. Enrollment limited to 15. J. Aguirre

269B, First-Year Doctoral Proseminar (2 credits). W
This three-quarter seminar supports professional development for first-year doctoral students. Students develop essential skills for success as scholars, discuss issues in educational research practice, and are introduced to research by Education Department faculty. Enrollment restricted to graduate students. Enrollment limited to 15. J. Aguirre

269C, First-Year Doctoral Proseminar (2 credits). S
This three-quarter seminar supports professional development for first-year doctoral students. Students develop essential skills for success as scholars, discuss issues in educational research practice, and are introduced to research by Education Department faculty. Enrollment restricted to graduate students. Enrollment limited to 15. J. Aguirre

270A. Second-Year Professional Development Seminar (2 credits). F
This three-quarter seminar supports professional development for second-year doctoral students. Activities include preparation of research and conference proposals, presentation of second-year project findings, and attendance at department colloquia. Enrollment restricted to second-year Ph.D. students. Enrollment limited to 12. M. Gibson

270B. Second-Year Professional Development Seminar (2 credits). W
This three-quarter seminar supports professional development for second-year doctoral students. Activities include preparation of research and conference proposals, presentation of second-year project findings, and attendance at department colloquia. Enrollment restricted to second-year Ph.D. students. Enrollment limited to 12. M. Gibson

270C. Second-Year Professional Development Seminar (2 credits). S
This three-quarter seminar supports professional development for second-year doctoral students. Activities include preparation of research and conference proposals, presen-
272. Teaching English Language Learners in the Content Areas (2 credits).
Introduces students to instructional approaches for supporting the English language development of middle and high school English language learners. Emphasizes placed on strategies to support English language development along with content learning in various subject areas. Enrollment restricted to graduate students. The Staff

281. Social Foundations of Education.
A sustained inquiry into the social, political, economic, and historical foundations of schools with an emphasis on community attitudes toward education. Student narratives of engagement and resistance will provide a basis for insights and interventional useful to educators. Enrollment restricted to program enrollees. Enrollment limited to 50. M. Gibson

283. Intermediate Student Teaching. W
Designed to provide students enrolled in the UCSC teacher education program a coherent, integrated, pre-professional experience in public school classrooms. Students assume part-time student teaching responsibilities totalling 14–16 hours per week under the direct supervision of an exemplary classroom teacher. Weekly seminars and ongoing supervision by department staff are required. Prerequisite(s): course 283. Enrollment restricted to graduate students majoring in education. Enrollment limited to 50. The Staff

284A. Advanced Student Teaching. S
Designed for students who have extensive field and course experience in education and who wish to qualify for the single-subject or multiple-subject teaching credential by undertaking a quarter of full-time, supervised student teaching. Prerequisite(s): course 283. Enrollment restricted to graduate students. The Staff

284B. Advanced Student Teaching. W
Designed for students who have extensive field and course experience in education and who wish to qualify for the single-subject or multiple-subject teaching credential by undertaking a quarter of full-time, supervised student teaching. Prerequisite(s): course 283. Enrollment restricted to graduate students. The Staff

284C. Advanced Student Teaching.
Designed for students who have extensive field and course experience in education and who wish to qualify for the single-subject or multiple-subject teaching credential by undertaking a quarter of full-time, supervised student teaching. Prerequisite(s): course 283. Enrollment restricted to graduate students. The Staff

286. Research and Practice in Science Teaching for Research. S
Designed for graduate students who will teach as professionals and are currently teaching assistants. Offers background on research and practical methods for teaching science to all ages. Enrollment restricted to science graduate students. Enrollment limited to 15. D. Ash

293A. Research Apprenticeship (2 credits). F,W,S
Research apprenticeship under guidance of faculty member during first or second year of doctoral studies. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. The Staff

293B. Research Apprenticeship. F,W,S
Research apprenticeship under guidance of faculty member during first or second year of doctoral studies. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. The Staff

Doctoral students work with faculty advisors to plan, carry out, and write up an independent research project during second year of graduate studies. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. The Staff

295. Portfolio Development (2 credits).
Provides students with a portfolio of work that demonstrates their professional development. The portfolio consists of a collection of work that includes both formal and informal assignments. The portfolio will be assessed by an external evaluator. Students are responsible for selecting and organizing their work. The Staff

296. Teaching Apprenticeship. F,W,S
An elective course for education master of arts students to acquire and/or refine teaching skills under the guidance of education ladder rank faculty who teach large education, lower-division courses, specifically courses 92A, 92B, and 92C. Meeting weekly throughout the quarter, students become knowledgeable about course content, discuss with faculty course curriculum and pedagogy, and ultimately lead course sections. Making an active connection between theory and practice is the expected student outcome. The Staff

297. Independent Study. F,W,S
Students submit petition to sponsoring agency. The Staff

Students submit petition to sponsoring agency. The Staff

Electrical Engineering
See Engineering, page 217.

Engineering
School of Engineering
Baskin School of Engineering
335 Baskin Engineering Building
(831) 459-2158
http://www.soee.ucsc.edu
Dean's office
335 Baskin Engineering
(831) 459-2158
Undergraduate office
113 Baskin Engineering
(831) 459-5840
Graduate office
361B Baskin Engineering
(831) 459-2576
Professor Sung-Mo (Steve) Kang, Dean
Professor F. Joel Ferguson, Associate Dean of Undergraduate Affairs
Professor Darrell Long, Associate Dean for Graduate Studies and Research

Baskin School of Engineering
The Baskin School of Engineering, UCSC's first professional school, has a high-technology focus incorporating programs and curricula that help educate students to meet the changing demands of society and a high-technology global marketplace. It offers a stimulating academic environment that provides a foundation for professional growth as well as a lifetime of learning. The Baskin School's programs and courses help prepare students for the human aspects, as well as the technical challenges, of careers in engineering and computer science. The Baskin School of Engineering consists of the Department of Biomedical Engineering, the Department of Computer Engineering, the Department of Computer Science, and the Department of Electrical Engineering. The Department of Applied Mathematics and Statistics and the Department of Information Systems Technology. Management are awaiting approval.

Graduate Study
The Baskin School of Engineering offers ten graduate programs designed to prepare students for advanced study and research in major areas of biomolecular, computer, and electrical engineering, as well as computer science and applied mathematics and statistics:
- Applied mathematics and statistics M.S. and Ph.D.
- Biomedical engineering M.S. and Ph.D.
- Bioinformatics B.S. and M.S.
- Computer engineering M.S. and Ph.D.
- Computer science B.A. and B.S.
- Electrical engineering B.S.
- Information systems management B.S.
- Dual degree engineering program (B.A. in the social sciences or arts from UC Santa Cruz with a B.S. degree in engineering from UC Berkeley [excluding EECS])

Bioinformatics: The bioinformatics curriculum combines mathematics, the physical sciences, computer science, and engineering to explore and understand biological data from high-throughput experiments, such as genome sequencing and gene expression chips. The immensity of biological information stored in computerized databases has led to a critical need for people who can understand the languages, tools, and techniques of mathematics, science, and engineering. The undergraduate bioinformatics degree program prepares students for graduate school or a career in the fast-paced pharmaceutical or biotechnology industries.

Computer Engineering: The computer engineering curriculum's focus is making digital systems that work. It
overlaps with computer science on one end (software systems) and with electrical engineering on the other end (digital electronics). The program's emphasis on problem solving provides both excellent training for future engineers and strong background for graduate study. The computer engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). The combined B.S./M.S. program provides an opportunity for outstanding undergraduates to begin advanced study and earn both degrees in five years.

**Computer Science**

The computer science curriculum has options that include topics in hardware and software, giving students a solid grounding in both theoretical and practical aspects of computer technology and computer usage. Students become proficient in many areas, with a good academic foundation for various careers in the software industry, as well as preparation for graduate school.

**Dual Degree Engineering**

The 3/2 program, a five-year program in association with UC Berkeley, enables students to receive two bachelor's degrees: a B.S. in a subject within the social sciences, humanities, or arts at UC Santa Cruz and a B.S. in engineering from the College of Engineering at Berkeley (excluding ECE). Many combinations of fields are possible, such as economics, chemistry, or biology, as an acceptable score on these may satisfy both university and major degree requirements. Students must provide verification of exam scores to the School of Engineering Undergraduate Advising Office and other course sponsoring departments in order to be granted credit toward course prerequisites or degree requirements as follows:

- **Biology**: credit for the AP Biology exam can be substituted for Biology 3, or Economics 11B credit.
- **Chemistry**: a score of 4 or 5 on the AP Chemistry exam fulfills the prerequisite for enrollment in Chemistry 1B/1M, or allows for the AP Chemistry exam to be applied toward major-level courses.
- **Computer Science**: a score of 3 or 4 on the AP Computer Science A exam fulfills the prerequisite for programming 1A/1B.
- **Economics**: a score of 4 or 5 on the AP Microeconomics exam fulfills Economics 1, or allows for the AP Microeconomics exam to be applied toward major-level courses. The exam also satisfies Economics 2.
- **Mathematics**: a score of 4 or 5 on the AP Calculus BC exam satisfies Mathematics 19A-B or Economics 11A.
- **Physics**: a score of 4 or 5 on the AP Physics 1 exam fulfills the prerequisite for enrollment in Physics 5A, 5B, 5C.

**Admission to School of Engineering Majors**

**General Major Preparation**

It is recommended that high school students intending to apply to a School of Engineering major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Comparable college mathematics and science courses completed at other institutions also serve to properly prepare students for the majors.

The School of Engineering strongly encourages applications from transfer students. Due to the prerequisite structure for upper-division courses, it is necessary for prospective transfer students to have completed as many of the lower-division requirements for the respective majors as possible to complete the degree within a reasonable time. Students must plan carefully because many courses must be taken sequentially.

Transfer students should not follow the Intersegmental General Education Transfer Curriculum (IGETC) because it will not provide transfer students with enough mathematics and engineering courses to allow them to complete School of Engineering programs at UCSC in two years. For more information on transfer admission into the UCSC School of Engineering, see the admissions policy below.

**College Board Advanced Placement Credit**

Prospective students are encouraged to take the College Entrance Examination Board (CEEB) Advanced Placement (AP) Examinations in computer science, mathematics, economics, chemistry, or biology, as an acceptable score on these may satisfy both university and major degree requirements. Students must provide verification of exam scores to the School of Engineering Undergraduate Advising Office and other course sponsoring departments in order to be granted credit toward course prerequisites or degree requirements as follows:

- **Biology**: credit for the AP Biology exam can be transferred for Biology 3, or Economics 11B credit.
- **Chemistry**: a score of 4 or 5 on the AP Chemistry exam fulfills the prerequisite for enrollment in Chemistry 1B/1M, or allows for the AP Chemistry exam to be applied toward major-level courses.
- **Computer Science**: a score of 3 or 4 on the AP Computer Science A exam fulfills the prerequisite for programming 1A/1B.
- **Economics**: a score of 4 or 5 on the AP Microeconomics exam fulfills Economics 1, or allows for the AP Microeconomics exam to be applied toward major-level courses. The exam also satisfies Economics 2.
- **Mathematics**: a score of 4 or 5 on the AP Calculus BC exam satisfies Mathematics 19A-B or Economics 11A.
- **Physics**: a score of 4 or 5 on the AP Physics 1 exam fulfills the prerequisite for enrollment in Physics 5A, 5B, 5C.

**Course Substitutions**

The School of Engineering Undergraduate Advising Office offers general advising for prospective and declared undergraduate majors in School of Engineering programs. The office handles student petitions, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork required for admission or transfer to the Undergraduate Advising Office. Students may obtain additional information and assistance on the School of Engineering web site: www.soe.ucsc.edu/servicing/undergraduate.

First-year applicants to UCSC may apply for direct admission to a School of Engineering major by indicating the major as their first or second choice on the application. Applicants will be granted direct admission based on their high school grade point average, courses completed in mathematics and sciences, scores on standardized tests, and/or their personal statement.

To take advantage of direct admission, first-year students must declare the major in their first term at UCSC or forfeit their direct admission status. First-year students who are admitted to UCSC but do not receive direct admission to the major, or who forfeit their direct admission status, may still petition for admission to the major after completing the required foundation courses (see Current Students Admissions into Majors below).

**Junior Transfer Admissions to Majors**

Students who apply as transfer students with junior status (90 quarter credits or more of transfer credit) who wish to earn a degree from the School of Engineering must indicate a School of Engineering major as their first choice on their UC application. Students may also indicate an alternative School of Engineering major as their second choice.

Admission into the major will be based on the student's academic college record. Applicants are encouraged to take and excel in as many courses that are equivalent to the department's foundation courses (listed below) as possible. An applicant will be approved, conditionally approved, or denied. Only students who have completed most or all of the foundation courses will be approved or conditionally approved for the major. For most School of Engineering majors, completion of a year of calculus (accepted as equivalent to Mathematics 19A-B or Mathematics 11A-B), linear algebra, differential equations, a year of calculus-based physics courses (accepted as equivalent to Physics 5A, 5B, 5C), and two programming courses (accepted as equivalent to Computer Science 12A and 12B) are strongly recommended.

Students who are approved for acceptance must declare the major in their first term of enrollment at UCSC. Students whose petitions are denied may still be admitted to UCSC, but they may not apply for admission to the major(s) for which they were originally considered.

Students who are conditionally approved must complete the remaining required foundation courses for their major in their first term at UCSC and petition to declare the major at the beginning of the following term at UCSC. Conditionally approved students will be evaluated based upon their performance in the foundation courses attempted during their first term at UCSC. Students who are conditionally approved for the major should be prepared to declare an alternative major outside of the School of Engineering in case they are not accepted into a School of Engineering major.

**Course Substitutions**

The School of Engineering Undergraduate Advising Office offers general advising for prospective and declared undergraduate majors in School of Engineering programs. The office handles student petitions, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork required for admission or transfer to the Undergraduate Advising Office. Students may obtain additional information and assistance on the School of Engineering web site: www.soe.ucsc.edu/servicing/undergraduate.

First-year applicants to UCSC may apply for direct admission to a School of Engineering major by indicating the major as their first or second choice on the application. Applicants will be granted direct admission based on their high school grade point average, courses completed in mathematics and sciences, scores on standardized tests, and/or their personal statement.

To take advantage of direct admission, first-year students must declare the major in their first term at UCSC or forfeit their direct admission status. First-year students who are admitted to UCSC but do not receive direct admission to the major, or who forfeit their direct admission status, may still petition for admission to the major after completing the required foundation courses (see Current Students Admissions into Majors below).

**Junior Transfer Admissions to Majors**

Students who apply as transfer students with junior status (90 quarter credits or more of transfer credit) who wish to earn a degree from the School of Engineering must indicate a School of Engineering major as their first choice on their UC application. Students may also indicate an alternative School of Engineering major as their second choice.

Admission into the major will be based on the student's academic college record. Applicants are encouraged to take and excel in as many courses that are equivalent to the department's foundation courses (listed below) as possible. An applicant will be approved, conditionally approved, or denied. Only students who have completed most or all of the foundation courses will be approved or conditionally approved for the major. For most School of Engineering majors, completion of a year of calculus (accepted as equivalent to Mathematics 19A-B or Mathematics 11A-B), linear algebra, differential equations, a year of calculus-based physics courses (accepted as equivalent to Physics 5A, 5B, 5C), and two programming courses (accepted as equivalent to Computer Science 12A and 12B) are strongly recommended.

Students who are approved for acceptance must declare the major in their first term of enrollment at UCSC. Students whose petitions are denied may still be admitted to UCSC, but they may not apply for admission to the major(s) for which they were originally considered.

Students who are conditionally approved must complete the remaining required foundation courses for their major in their first term at UCSC and petition to declare the major at the beginning of the following term at UCSC. Conditionally approved students will be evaluated based upon their performance in the foundation courses attempted during their first term at UCSC. Students who are conditionally approved for the major should be prepared to declare an alternative major outside of the School of Engineering in case they are not accepted into a School of Engineering major.
Current Students Admissions into Majors

UCSC students may apply to declare a School of Engineering major upon completion (with a grade of C or better) of all the foundation courses for that major. Approval of the declaration application will be based upon the student’s “declaration GPA” in the foundation courses taken at UCSC (see below). All students with a declaration GPA of 2.8 or better will be admitted to the requested major. Students with a declaration GPA below 2.8 may be admitted at the discretion of the department.

Foundation Courses

The foundation courses for each School of Engineering major are as follows:

- **Bioinformatics**: Computer Science 13H (or both 12A and 12B); Chemistry 1B/M, 1C/N; Mathematics 19A-B
- **Computer Engineering**: Computer Science 12A and 12B (or 13H); Computer Engineering 16 or 16H; Mathematics 19A-B
- **Computer Science**: Computer Science 12A and 12B (or 13H); Computer Engineering 16 or 16H; Mathematics 19A-B
- **Electrical Engineering**: Mathematics 19A-B; Applied Mathematics and Statistics 27, Physics 5A, 5B, and SC
- **Information Systems Management**: Computer Science 12A or 13H; Computer Engineering 16 or 16H; Mathematics 19A-B (or Applied Mathematics and Statistics 11A and 11B or Economics 11A and 11B); Information Systems Management 50 (or Economics 1 and 2)
- **Declaration GPA Calculation**: The declaration GPA is calculated on grades received for all attempted foundation courses at UCSC. Students are advised not to request Pass/No Pass grading in any foundation courses since a grade of P is treated as a C for calculating the declaration GPA regardless of the content of the evaluation. No Pass and Withdraw grades are treated as an F.

Application and Declaration Process

Applications to the major are accepted during the first seven days of the quarter. UCSC students must apply for the major before earning 105 credits. Junior transfer students must apply for admittance to the major as part of the UCSC admissions process (see Junior Transfer Admissions to Majors above). Current student applications must be submitted electronically by completing the form found at www.soe.ucsc.edu/advising/undergraduatecurrent/apply.html. The decision to accept the student will be made by the major department at that point.

Petitions for declaration of the major are accepted at the beginning of each term between the first day of classes and the campus enrollment deadline (usually the second week of the term). Petitions should include a study plan that allows the student to complete the degree without undue extension of enrollment. Students interested in more than one major should submit one petition listing their major preferences. Requirements and procedures can be found at www.soe.ucsc.edu/advising/undergraduatecurrent/currentmajors.html.

The departments will inform students by email of the status of their petitions by the beginning of the pre-enrollment period (usually the eighth week of the term).

Appeal Process

Appeals of negative decisions will be evaluated by the academic program to which the student applied. Appeals letters must be submitted in writing to the Undergraduate Advising Office by the last day of the term. Letters of appeal should describe any extenuating circumstances that might affect the faculty’s evaluation of the record. Students whose petitions and appeals have been turned down may not reapply for the same major.

Letter Grade Policy

- **Majors in the School of Engineering have additional restrictions on the use of the Pass/No Pass option. Foundation courses should not be taken Pass/No Pass because doing so may lower students’ declaration GPA and affect their admission into School of Engineering majors. MAJOR grade requirements are as follows:**
  - **Bioinformatics**: Same as campus requirements, but foundation courses should not be taken Pass/No Pass, since doing so may lower the declaration GPA needed for admission to the major.
  - **Computer engineering major**: All courses required for the major must be taken for a letter grade. Two lower-division exceptions are allowed.
  - **Computer engineering minor**: Same as campus requirements.
  - **Computer science major and minor**: All courses required for the major and minor must be taken for letter grades. Two lower-division exceptions are allowed.
  - **Electrical engineering major**: All courses required for the major must be taken for letter grades. Two lower-division exceptions are allowed (not to include Electrical Engineering 70).
  - **Information systems management major**: All courses required for the major must be taken for letter grades. Two lower-division exceptions are allowed (not to include Information Systems Management 50 or 58).

Disqualification Policy

- **GPA Requirement**: Your cumulative School of Engineering GPA is calculated from all required and elective courses you have taken for your major. Your term School of Engineering GPA is calculated from all required and elective courses you have taken for your major in the previous quarter as a UCSC student. School of Engineering GPA calculation follows the same rules as UCSC GPA calculation.

If both your cumulative and term School of Engineering GPAs are 2.0 or greater, then you are in good standing. If either your cumulative or term GPAs are less than 2.0, then you are on departmental probation. If you are already on departmental probation and your cumulative School of Engineering GPA falls below 2.0, you are subject to disqualification from the major.

Ethics Requirement

- **Graduates of the Baskin School of Engineering are expected to become professionals with the highest ethical standards. A knowledge and practice of professional ethics is a requirement for the degree. Examples of professional society codes of ethics are available at www.ieee.org/about/what/standards.html and www.aom.org/serving/standards.html.**

Students found guilty of a single incident of academic dishonesty may, at the discretion of the department, be disqualified from the major. In addition, students may be subject to other possible university sanctions. A second incident of academic dishonesty will result in automatic disqualification from the major.

Additional Notes on Disqualification

Please note the Repeating Courses policy in the School of Engineering section of this catalog. Two failed attempts in a class will endanger your opportunity to continue in a School of Engineering major.

Bioinformatics, Computer Engineering, and Computer Science have additional disqualification criteria. Please see those sections of this catalog for details.

Repeating Courses

Due to its impacted status and the need to identify students having difficulty in School of Engineering courses, no School of Engineering course may be attempted more than twice without prior approval from the chair of the department offering the course. A class in which a W is given is counted as an attempt.

Courses Taken Elsewhere After Enrollment

It is the intent of the faculty of the Baskin School of Engineering that all degree requirements be completed at UCSC or prior to first enrollment at UCSC. Course substitutions, such as taking a course at another UC campus, in the Education Abroad Program, or at a community college, require approval prior to taking the class. Applications and procedures for preapproval are obtained from and given to the School of Engineering Undergraduate Advising Office.

Articulation agreements do not apply to enrolled students. You must get preapproval before taking a class at a community college.

The School of Engineering does not provide course substitution for School of Engineering general education courses, such as topical courses, Computer Science 2, Computer Science 10, or Computer Engineering 3.

When a student declares their major, minor, or proposed major in a School of Engineering program, the decision as to whether a course taken elsewhere will be accepted for this School of Engineering major or minor will be made by the department at that point. (Note: there is no guarantee that a course will be applicable toward a School of Engineering major, minor, or proposed major even if the student has completed more advanced courses in that department.)

Honor Courses

The Baskin School of Engineering offers two honors courses: Computer Engineering 16H, Honors Applied Discrete M and Computer Science 13H/L. Honors Introduction to Programming and Data Structures Laboratory. Computer Engineering 16H provides more challenging version of Computer Engineering 16; and Computer Science 13H/L provides a more challenging combination of both Computer Science 12A/L and Introduction to Programming Computer Programming Laboratory and 12B/M, Introduction to Data Structures Laboratory. Other honors courses are being planned. Typically, honors courses have a limited enrollment of fewer than 30. Students are eligible for them based on performance in high school and college courses, standardized test scores, and a personal interview.

School-Wide Information and Policies

Computing Facilities

The Baskin School of Engineering houses research facilities and teaching laboratories in the Baskin Engineering
Building for courses in programming, software design, circuits, electronics, graphics, digital design, and computer and system architecture. Emphasis in these laboratories is on state-of-the-art equipment, including personal computers, engineering workstations, a 1,000-processor Linux cluster, logic analyzers, microprocessor development systems, a wireless network for mobile computers, and network support at 100M B/sec (see Bakin School of Engineering Computer Facilities, page 57).

All Unix computers and workstations and most personal computers on campus are networked together, allowing students to access the School of Engineering and the Communications and Technology Services (CATS) facilities from any computer account on campus. For a more complete description of the computing facilities on campus, see page 55.

Prerequisites

Because of the sequential nature of the School of Engineering curricula, most courses have prerequisites, which are listed in the course descriptions. Students should carefully review these descriptions in the catalog and the quarterly Schedule of Classes. Students must have passed all prerequisites of a course for which they are enrolling. Pre-enrolled students who then fail a prerequisite are no longer eligible to be enrolled in the course and will be dropped.

For example, to enroll in Computer Science 101, a prerequisite to many upper-division courses, the prerequisite course must be completed or in progress. Computer Science 12B (or 13H), Computer Engineering 16 or 16H, Computer Engineering 16 or 16H, Mathematics 19B, and one of the following: Mathematics 21, 22, 23A, 24, or Applied Mathematics and Statistics 27.

Students with transferable course work from another institution that appears to satisfy a UCSC course prerequisite should promptly consult with the School of Engineering's staff advisers. Students will be asked to present records from the other institution to document the course equivalency. Until such evidence has been verified by the department, students attempting to enroll in a course using a prerequisite course that was not completed at UCSC will be informed that they have not satisfied the course prerequisite. (See the Course Substitutions section under Admission to School of Engineering Majors.)

Permission Numbers

Students not meeting the regular prerequisite requirements for courses sponsored by the Bakin School of Engineering may petition the course instructor to receive a permission number to enroll. The instructor may ask a student to demonstrate the ability and/or potential to succeed in the course or may require additional information to formulate a decision. Students requesting a permission number must submit the form found at www.soe.ucsc.edu/advising/undergraduate/pdf/prereq_waiver.pdf to the Undergraduate Advising Office.

Materials Fee

Students should be aware that some laboratory courses require each student to purchase miscellaneous parts or a material kit for completion of the laboratory work. Some laboratory courses may include consumable (one-time use) parts and materials that are distributed to the entire class. Some laboratory kits include parts that the student will assemble into a project and keep. Please refer to the Bakin Engineering Lab Support Web page for specific course material fee amounts: www.soe.ucsc.edu/administration/labs.

Miscellaneous Fees

Miscellaneous breakage or loss of equipment fees are assessed to address the cost of damaged laboratory equipment and loss of laboratory materials due to abuse or negligence. This fee is only charged if a student breaks or loses laboratory equipment or materials and is not a mandatory fee charged to all students taking the course. Please refer to the Bakin Engineering Laboratory Support web page for more information: www.soe.ucsc.edu/administration/labs.

Lower-Division Courses

1. Introduction to Engineering and Information Sciences (2 credits).

An introductory seminar designed to help students learn about engineering and information sciences in general as well as specific School of Engineering majors. Topics include adjusting to college life, teamwork, research and presentation skills, career development, and exploring educational/career goals. Enrollment restricted to first-year students. Enrollment limited to 20. The Staff

50. Engineering Mechanics W

An introduction to statics and engineering graphics, and their applications. Topics include equilibrium of two-dimensional and three-dimensional systems, work and potential energy, virtual work, orthographic projections and descriptive geometry, engineering drawing, computer graphics and modeling, and empirical equations. Prerequisite: Physics 5B/M or 6B/M, and concurrent enrollment in course 50L. The Staff

50L. Engineering Mechanics Laboratory (1 credit), W

A laboratory sequence illustrating topics covered in course 50. One two-hour laboratory session per week. Students are billed a materials fee. Prerequisite(s): Physics 5B/M or 6B/M, and concurrent enrollment in course 50L. The Staff

Graduate Courses

280. Product Engineering Management

*Prepares students to function more effectively within a company by better understanding the challenges of basic research, product development, product costing and pricing, market forecasting, manufacturing, sales and distribution, customer support, customer satisfaction, and planned product obsolescence. J. Callon, P. M. aney

281. Technology Venture Formation S

Simulates the process of starting a high-tech company. Students work in teams to develop and present a business plan for a start-up. Lectures, cases, and guest speakers from the Monterey Bay area and Silicon Valley. Prerequisite(s): bachelor's degree in science or engineering is required; knowledge of accounting, finance, and marketing is recommended; students must demonstrate appropriate knowledge and experience. Enrollment limited to 24. A. Keller, S. Kang

Applied Mathematics and Statistics

Applied mathematics and statistics faculty offer courses under the sponsorship of the School of Engineering. Applied mathematics and statistics faculty also teach courses in collaboration with Mathematics, Economics, and other departments.

Graduate programs leading to M.S. and Ph.D. degrees in applied mathematics and statistics are currently under development and review. At present, students wishing to pursue graduate study in these subjects should apply for admission through the existing graduate programs in computer science, stating clearly in the application process that they are interested in graduate study in applied mathematics and statistics.

Faculty and Professional Interests

Professor

Neil Balfoorth

Astrophysics, dynamical systems, fluid dynamics, mathematical biology, non-Newtonian fluids, plasma physics

David Draper

Bayesian statistics, hierarchical modeling, nonparametric methods, model uncertainty, statistical applications in the medical and social sciences

Marc S. Mangel

Mathematical modeling of biological phenomena, especially the evolutionary ecology of growth, aging, and longevity; quantitative bias in fishery management; mathematical and computational aspects of disease

Assistant Professor

Pascale Garaud

Atmospheric, geophysical, fluid dynamics, numerical solutions of differential equations, and mathematical modeling of natural flows

Athanasios Kottas

Bayesian modeling and inference, survival analysis, semiparametric regression modeling, categorical data analysis, spatial statistics, inference under probability order constraints, Bayesian nonparametrics

Herbert Lee III

Bayesian statistics, computational statistics, model selection and model averaging, inverse problems, spatial statistics, nonparametric regression, neural networks, classification and clustering

Raquel Prado

Time series analysis, signal processing, Bayesian statistics and applied statistics

Jorge Cortes Monforte

Motion planning and coordination, cooperative control, scalable and adaptive algorithms, Lagrangian and Hamiltonian control systems, geometric control theory, geometric integration, averaging theory and perturbation analysis

Hongmin Wang

Meshless modeling and biophysics, numerical analysis, fluid mechanics, computer animation, partial differential equations, parallel computing, statistical physics, data structures, fast algorithms

Lecturer

Yonatan Katzenelson

Mathematical methods for economics, econometrics

Lower-Division Courses

3. Precalculus for Science and Engineering, F, W

Includes real and complex numbers, inequalities, linear and quadratic equations, functions, graphs, exponential
and logarithmic functions, trigonometry, and analytic geometry, with applications in science and engineering. Students cannot receive credit for both this course and Mathematics 2AB or 3. Mathematics 3 can substitute for course 4. (Formerly Engineering 3.) Prerequisite(s): score of 20 or higher on Mathematics Placement Exam or Mathematics 2. (General Education Code(s): Q.) H. Zhou

5. Statistics, F,W,S
Introduction to statistical methods/reasoning, including descriptive methods, data-gathering (experimental design and sample surveys), probability, interval estimation, significance tests, one- and two-sample problems, categorical data analysis, correlation and regression. Emphasis on applications to the natural and social sciences. Students cannot receive credit for this course and course 7, and Mathematics 5 and 7. (Formerly Engineering 5.) (General Education Code(s): IN, Q.) The Staff

7. Biostatistics, W
Standard statistical techniques in biology and the medical sciences; examples taken from these fields are presented. Descriptive statistics, normal and binomial distributions, estimation and hypothesis testing, including correlation and chi-square techniques, ANOVA, multivariate analysis, and nonparametric techniques. Students cannot receive credit for this course and course 5 or Mathematics 5 or 7. (Formerly Engineering 7.) (General Education Code(s): IN, Q.) R. Prado

11A. Mathematical Methods for Economists, F,W,S
An introduction to mathematical tools and reasoning, with applications to economics. Topics are drawn from precalculus and calculus and include functions and graphs, techniques of differentiation, relative extrema, logarithms and exponents, and differentials. Students who have already taken Mathematics 11A and 19A should not take this course. (Also offered as Economics 11A. Students cannot receive credit for both courses.) Prerequisite(s): score of 31 or above on Math Placement Exam. Students who do not place into precalculus should enroll in Math 1. (General Education Code(s): Q.) J. Katznelson

27. Mathematical Methods for Engineers, F,W,S
This course provides the mathematical background for several engineering courses. The content includes linear algebra, ordinary differential equations, and Laplace Transform methods. Students cannot receive credit for this course and Mathematics 24 or 27. (Formerly Engineering 27.) Prerequisite(s): Mathematics 19B or 22 or 23A or 26 or permission of instructor. Concurrent enrollment in course 27L is required. H. Wang

27L. Mathematical Methods for Engineers Laboratory (2 credits), F,W,S
Computer demonstrations of solutions of differential equations. Numerical simulations of differential equations using the supplied Matlab programs with graphics user interface. Elementary programming in Matlab language to solve equations and to visualize solutions. (Formerly Engineering 27L.) Prerequisite(s): Mathematics 19B or 22 or 23A or 26 or permission of instructor. Concurrent enrollment in course 27L is required. H. Wang

Upper-Division Courses

113. Managerial Statistics, W
Practical methods for analyzing data relevant to the management sciences, with particular emphasis on information systems management. Reviews basic topics in probability and statistics, including correlation and simple linear regression and multiple regression. Experience using statistical software package. Case studies drawn from business problems. Students cannot receive credit for this course and Economics 113. (Formerly Engineering 113.) Prerequisite(s): course 11B or Economics 11B or Mathematics 11B or 19B. (General Education Code(s): Q.) The Staff, H. Lee

131. Introduction to Probability Theory, S
Introduction to probability theory and its applications. Combinatorial analysis, axioms of probability and independence, random variables (discrete and continuous), joint probability distributions, properties of expectation, Central Limit Theorem, Law of Large Numbers, M-arkov chains. Students cannot receive credit for this course and Computer Engineering 107. (Formerly Engineering 131.) Prerequisite(s): course 11B or Economics 11B or Mathematics 11B or 19B. R. Prado

146. Chaotic Dynamical Systems, F
Linear difference equations and the calculus of differences. Nonlinear difference equations and maps. Fixed points, stability, bifurcations, and cycles. The logistic map and the period-doubling cascade to chaos. Strange attractors and measures of chaos. Students cannot receive credit for this course and Computer Engineering 107. (Formerly Engineering 146.) Prerequisite(s): course 27 or Mathematics 27 or Mathematics 21 and 24. The Staff

147. Computational Methods and Applications, W
Applications of computational methods to solving mathematical problems using Matlab. Solution of nonlinear equations, linear systems, differential equations, sparse matrix solver, and eigenvalue problems. Some prior experience with Matlab is helpful but not required. (Formerly Engineering 147.) Prerequisite(s): course 27 or Mathematics 27. H. Wang

162. Design and Analysis of Computer Simulation Experiments, S
Methods for the design and analysis of computer simulation experiments randomized random number generation; estimation of sample size necessary to achieve desired precision on goals, optimization, and population biology. Topics include life history theory, sex ratio, nonlinear diffusion, effects of aggregation on
population dynamics, and the population biology of disease. (Formerly Engineering 215.) Enrollment restricted to graduate students or permission of instructor. M. Mangel

216. Stochastic Differential Equations.* Introduction to stochastic differential equations and diffusion processes with applications to biology and economics. Topics include Brownian motion and white noise, gambler’s ruin, backward and forward equations, and the theory of boundary conditions. (Formerly Engineering 216, Stochastic Population Theory.) Enrollment restricted to graduate students or consent of instructor. M. Mangel

221. Bayesian Decision Theory. F
Explores conceptual and theoretical bases of statistical decision making under uncertainty. Focuses on axiomatic foundations of expected utility, elicitation of subjective probabilities and utilities, and the value of information and modern computational methods for decision problems. Prerequisite(s): course 206. Enrollment restricted to graduate students. The Staff, D. D. Raper

222. Time Series Analysis.* Graduate level introductory course on time series data and models in the time and frequency domains: descriptive time series methods; the periodogram; basic theory of stationary processes; linear filters; spectral analysis; time series analysis for repeated measurements; ARIMA models; introduction to Bayesian spectral analysis; Bayesian learning, forecasting, and smoothing; introduction to Bayesian Dynamic Linear Models (DLMs); DLM mathematical structure; DLM for trends and seasonal patterns; and autoregression and time series regression models. (Formerly Engineering 223.) Prerequisite: course 206. Enrollment restricted to graduate students. R. Prado

241. Bayesian Nonparametric Methods.* Theory, methods, and applications of Bayesian nonparametric modeling. Prior probability models for spaces of functions, Dirichlet processes, Pólya trees, nonparametric mixtures. Models for regression, survival analysis, categorical data analysis, and spatial statistics. Examples drawn from social, engineering, and life sciences. (Formerly Engineering 241.) Prerequisite(s): course 206. Enrollment restricted to graduate students. A. Kottas

256. Linear Statistical Models, W Theory, methods, and applications of linear statistical models. Review of simple correlation and simple linear regression. Multiple and partial correlation and multiple linear regression. Analysis of variance and covariance. Linear models diagnostics and model selection. Case studies drawn from natural, social, and medical sciences. Students cannot receive credit for this course and course 156. Course 206 strongly recommended. Undergraduates are encouraged to take this class with permission of instructor. (Formerly Engineering 256.) Enrollment restricted to graduate students. The Staff

261. Probability Theory with Markov Chains, S Introduction to probability theory; probability spaces, expectation as Lebesgue integral, characteristic functions, modes of convergence, conditional probability and expectation, discrete-state Markov chains, stationary distributions, limit theorems, ergodic theorem, continuous-state Markov chains, applications to Markov chains Monte Carlo methods. Prerequisite(s): course 205. Enrollment restricted to graduate students. The Staff, A. Kottas

274. Generalized Linear Models, W Theory, methods, and applications of generalized linear statistical models; review of linear models; binomial models for binary responses (including logistical regression and probit models); log-linear models for categorical data analysis; and Poisson models for count data. Case studies drawn from social, engineering, and life sciences. Students cannot receive credit for this course and course 174. (Formerly Engineering 274.) Prerequisite(s): course 205 or 256. Enrollment restricted to graduate students. A. Kottas

279. Independent Study or Research, F,W,S Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. (Formerly Engineering 297.) The Staff

297F. Independent Study (2 credits). F,W,S Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. The Staff

299. Thesis Research, F,W,S Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. (Formerly Engineering 299.) The Staff

Biomolecular Engineering

Faculty and Professional Interests

Professor

DAVID DEAMERA, Emeritus (Chemistry and Biochemistry)

DAVID HAUSLER (Computer Science Director, Institute for Quantitative Biomedical Research) Genomics, bioinformatics, computational molecular biology, statistical models, machine learning, neural networks; decision theory; computation

KEVIN KAPLINS (Computer Engineering, Undergraduate and Graduate Director of Bioinformatics) Analysis of biological sequences; protein structure prediction

Assistant Professor

TODD LOWE (Computer Engineering) Experimental and computation genomics, miRNA gene finding; Drosophila microarrays to study the biology of Archaea

CAROL ROHL (Biomolecular Engineering) Protein design, protein structure and function prediction; protein-protein interactions

JOSHUA STUART (Biomolecular Engineering) Computational genomics

Richard Hughey (Computer Engineering) Computer architecture, parallel processing, computational biology

Suresh Lodha (Computer Science) Scientific visualization, geographic information visualization, sensor and computer vision, image processing multi-modal human-computer interaction

John Timkun (Molecular, Cell, and Developmental Biology) Transcriptional regulation, molecular genetics of Drosophila, development, regulation of gene expression

Manfred K. Warmuth (Computer Science) Online learning, machine learning, statistical decision theory, neural computation, analysis of algorithms

W. Todd Wilke (Emeritus)

Assistant Professor

Karen Ottemann (Environmental Toxicology) Environmental responses to pathogenic bacteria

Hongyun Wang (Applied Mathematics and Statistics) Molecular modeling and biophysics, numerical analysis fluid mechanics, computer animation, partial differential equations, parallel computing, statistical physics, data structures, fast algorithms

Program Description

The program in bioinformatics is a multidisciplinary program involving faculty of the Center for Biomolecular Science and Engineering. The program offers B.S., M.S., and Ph.D. degrees in bioinformatics. Bioinformatics combines mathematics, science, and engineering to explore and understand biological data from high-throughput experiments, such as genome sequencing, gene expression chips, and proteomics experiments. The program builds upon the research and academic strengths of the faculty in the Center for Biomolecular Science and Engineering. The Human Genome Project, the international collaboration to determine the sequence of human DNA and understand its function, has its origin in a conference that took place at UC Santa Cruz in 1985. One notable output from our research is that UCSC is the primary release site for the public version of the human genome and its annotation: http://genome.ucsc.edu. We are also a major player in protein structure prediction.

The undergraduate bioinformatics degree program prepares students for graduate school or a career in the fast-paced pharmaceutical or biotechnology industries. The immense growth of biological information stored in computerized databases has led to a critical need for people who can understand the languages, tools, and techniques of mathematics, science, and engineering. A classically trained scientist may be unfamiliar with the statistical and algorithmic knowledge required in this field. A classically trained engineer may be unfamiliar with the chemistry and biology required in the field. Thus this program strives for a balance between the two, an engineer focused on the problems of the underlying science or, conversely, a scientist focused on the use of engineering tools for analysis and discovery.

The undergraduate degree program in bioinformatics builds a solid foundation in the constituent areas of the field. Students complete core sequences in mathematics (including calculus, statistics, and discrete mathematics), science (including biology, chemistry, and biochemistry), and engineering (including programming, algorithms, and databases). The core topics are brought together in a bioinformatics course, Biomolecular Engineering 100L,
Introduction to Bioinformatics Laboratory. Students have two electives for specialization within the field of bioinformatics and are required to take a bioethics course, course 80G. Bioethics in the Twenty-First Century: Science, Business, and Society, to study the ethical, legal, and social implications of this new technology. As a comprehensive requirement, all students complete a graduate project course: Biomedical Engineering 220/L (formerly Computer Science 243), Protein Bioinformatics Laboratory or Biomedical Engineering 230/L, (formerly Computer Science 244), Computational Genomics Laboratory.

Note students who work on independent research projects with faculty may substitute a senior thesis, Biomedical Engineering 195, for the graduate project course.

Courses for Nonmajors
Biomedical Engineering 60, Programming for Biologists and Chemists, provides an introductory programming class using Perl and BioPerl to analyze, transform, and publish biological data.

Biomedical Engineering 80G, Bioethics in the Twenty-First Century: Science, Business, and Society, is particularly appropriate to all students interested in the societal issues surrounding the revolutions in bioinformatics and biotechnology.

Biomedical Engineering 110, Computational Biology Tools, provides an introduction to the tools and techniques of bioinformatics from a user’s view. It is intended for biologists and biochemists who need to use bioinformatics tools, but are not primarily interested in building new bioinformatics tools.

Biomedical Engineering 100/L, Introduction to Bioinformatics Laboratory, provides a detailed look at some of the important algorithms and theory that is used in bioinformatics tools. It may be of interest to majors in chemistry, biology, computer science, and mathematics.

Biomedical Engineering 109, Resource-Efficient Programming, provides advice and practice for people working at the limits of their computer hardware. It is of use for bioinformatics, game programmers, and embedded-system designers.

Bioinformatics Policies
Admissions Policy
Admission to the bioinformatics major is selective. First-year applicants may receive direct admission at the time they apply to UC Santa Cruz, based on their high school record and test scores. Admission to the bioinformatics major after a student has entered UCSC is based on performance in the first-year courses: Computer Science 13H (or 12A and 12B), Chemistry 1B/M and 1C/N, and Mathematics 19A-B. Please refer to the School of Engineering section of the catalog for the full admissions policy.

Courses Taken Elsewhere
Please refer to the School of Engineering section of the catalog for policies about taking courses at other institutions after enrolling at UC Santa Cruz.

Disqualification Policy
Students who do not make adequate progress in the major (normally passing six required courses per year) may be disqualified from the major. All students not meeting the progress in the major or grade point average requirements must meet with the undergraduate director to discuss their options for continuing in the major. Please refer to the Engineering section of this catalog for the School of Engineering's Major Disqualification Policy.

Transfer Students
Please refer to the School of Engineering section of the catalog for the policy regarding transfer students.

School of Engineering Policies
Please refer to the School of Engineering section of the catalog for additional policies that apply to all School of Engineering programs.

Preparation for the Major
Students applying for admission to the bioinformatics major should complete four years of high school mathematics (through advanced algebra and trigonometry) and three years of science, including one year of chemistry and one year of biology. Comparable college mathematics and science courses completed at other institutions may be accepted in place of high school preparation. Students without this preparation may be required to take additional courses to prepare themselves for the program.

Major Requirements
Every bioinformatics major must have a faculty advisor, assigned by the Baskin School of Engineering Undergraduate Advising Office, and with that advisor, must formulate a program of proposed course work that meets the major requirements. Because of the enormous breadth of requirements, bioinformatics majors are urged to take honors courses or sections whenever possible, to get as much as possible out of the courses they take in each field.

Lower-Division Requirements
Majors must complete the following lower-division courses:

Biology
- 12A, Accelerated Cell and Molecular Biology or 120A, Cell and Molecular Biology
- 12B, Accelerated Development and Physiology or 120B, Development and Physiology

Biomedical Engineering
- Chemistry 1B/M and 1C/N, General Chemistry Laboratory
- Computer Engineering 16H, Honors Applied Discrete Mathematics or 16, Applied Discrete Mathematics

Computer Science
- 13H/L, Introduction to Programming and Data Structures (Honors)/Laboratory, or both 12A/L, Introduction to Programming/Laboratory and 12B/M, Introduction to Data Structures
- Mathematics 20A and 20B, Honors Calculus or 19A-B, Calculus for Science, Engineering, and Mathematics
- 21A, Multivariable Calculus

Upper-Division Requirements
Majors must complete the following upper-division courses:

Biochemistry and Molecular Biology
- 100A, Biochemistry (first in three-part sequence)

Bioinformatics
- Biomedical Engineering 100/L, Introduction to Bioinformatics Laboratory
- Biomedical Engineering 110, Computational Biology Tools
- One of the following: Biomedical Engineering 220/L, Protein Bioinformatics Laboratory, or 230/L, Computational Genomics Laboratory, or 195, Senior Thesis

Chemistry
- 108A/L, Organic Chemistry Laboratory, or 112A/L, 112B/M, Organic Chemistry Laboratory (two-thirds of three-part sequence)

Probability and Statistics
- Computer Engineering 107, Mathematical Methods of Systems Analysis: Stochastic and Applied Mathematics
- Statistics 131, Introduction to Probability Theory (formerly Mathematics 131A)
- 206, Bayesian Statistics

Computer Engineering
- 185, Technical Writing or W section of Biology 20L, Experimental Biology Laboratory

Computer Science
- 101, Abstract Data Types
- 180, Databases Systems

Advanced Programming
- One of the following five courses: Computer Engineering 177, Applied Graph Theory and Algorithms or Computer Science 104A, Fundamentals of Compiler Design I; or Computer Science 109, Advanced Programming; or Computer Science 115, Software Methodology; or Biomedical Engineering 109, Resource-Efficient Programming

Required Electives
With approval from the undergraduate director for bioinformatics, students must select two additional courses as electives. The following courses are typical of the ones chosen:


Biomedical Engineering 109, 110, 220/L, 230/L

Chemistry 108B/M

Computer Engineering 108, 150, 151, 177

Computer Science 104A, 104B, 109, 115, 116, 130, 160

Applied Mathematics and Statistics 147, 162, 203, 205

Note: many of these courses are offered only once a year and have additional prerequisites, so advance planning is necessary to make sure elective courses can be fit into the student’s schedule.

Comprehensive Requirement
The bioinformatics comprehensive requirement can be met by taking Biomedical Engineering 220/L, Protein Bioinformatics Laboratory, or Biomedical Engineering 230/L, Computational Genomics Laboratory, which includes substantial projects, or Biomedical Engineering
Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td>Math 23A</td>
</tr>
<tr>
<td></td>
<td>(fresh)</td>
<td>(fresh)</td>
<td>(fresh)</td>
</tr>
<tr>
<td></td>
<td>Cmps 12A/L</td>
<td>Cmps 12B</td>
<td>Cmps 16H (or 16)</td>
</tr>
<tr>
<td></td>
<td>core</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
<td>Biol 21A (or 20A)</td>
</tr>
<tr>
<td></td>
<td>(sof)</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Biol 21B (or 20B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Biol 101</td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td>Math 23A</td>
</tr>
<tr>
<td></td>
<td>(fresh)</td>
<td>(fresh)</td>
<td>(fresh)</td>
</tr>
<tr>
<td></td>
<td>Cmps 12A/L</td>
<td>Cmps 12B</td>
<td>Cmps 16H (or 16)</td>
</tr>
<tr>
<td></td>
<td>core</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
<td>Biol 21A (or 20A)</td>
</tr>
<tr>
<td></td>
<td>(sof)</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Biol 21B (or 20B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Biol 21B (or 20B)</td>
</tr>
</tbody>
</table>

The Bioinformatics Minor

The bioinformatics minor consists of the following 16 courses:

**Lower-Division Requirements (11 courses)**
- Biology (two courses): Biology 20A and 20B or 21A and 21B
- General chemistry (two courses): Chemistry 1B/M and 1C/N
- Calculus (three courses): Mathematics 19A-B and 23A; or Mathematics 11A-B and 22; or Mathematics 20A and 20B and 23A.
- Discrete math (one course): Computer Engineering 16 or 16H
- Programming (two courses): Computer Science 12A/L and 12B/M; or Computer Science 13H/L
- Bioethics (one course): Biomolecular Engineering 80G or Philosophy 145

**Upper-Division Requirements (five courses)**
- Organic chemistry (one course): Chemistry 108A; or Chemistry 112A-B
- Biochemistry (one course): Biochemistry and Molecular Biology 100A or Biology 100
- Statistics (one course): Computer Engineering 107 or Applied Mathematics and Statistics 131
- Programming (one course): Computer Science 101 or Biomolecular Engineering 109
- Bioinformatics (one course): Bioinformatics 100/L or 110

A bioinformatics minor may apply the upper-division courses in organic chemistry (Chemistry 108 or 112A-B), biochemistry (Biochemistry 100A or Biology 100), statistics (Computer Engineering 107 or Applied Mathematics and Statistics 131), and programming (Computer Science 101 or Biomolecular Engineering 101) to both the minor and another major or minor. If Biomolecular Engineering 100L is applied to another degree, they must be replaced by an appropriate bioinformatics elective approved by the program. Majors with substantial overlap with bioinformatics include biochemistry, chemistry, computer science, computer engineering, and molecular, cell, and developmental biology. For example, a biochemistry and molecular biology major, chemistry major with biochemistry emphasis, or M.C.D. biology major could double-count the biology, general chemistry, calculus, organic chemistry, and biochemistry courses. A chemistry major could double-count general chemistry, calculus, organic chemistry, computer science 12A, and biochemistry courses. A computer science major could double-count the programming, discrete math, calculus, and statistics classes. A computer engineering major could double-count the bioethics, biochemistry, programming, discrete math, calculus, and statistics classes.

**The Bioinformatics Combined B.S./Graduate Degree Program**

Because our bioinformatics B.S. program provides excellent preparation for a graduate program in bioinformatics, we offer a combined B.S./M.S. and B.S./Ph.D. program that allows our B.S. students to complete the M.S. (or Ph.D.) somewhat sooner than master's students with less tailored preparation.

The current B.S. and graduate requirement have four courses in common:
- Biomolecular Engineering 100/L, Introduction to Bioinformatics Laboratory
- Biomolecular Engineering 220/L, Protein Bioinformatics Laboratory, or 230/L, Computational Genomics Laboratory
- Applied Mathematics and Statistics 206, Bayesian Statistics

Mater's students normally take nine courses plus two seminars (4 credits) and Biomolecular Engineering 200. The course work for Ph.D. students is the same, except that 8 credits of seminars are required.

The combined B.S./graduate program does not make any changes to the undergraduate program, except that students must pass the four overlapping courses listed above with a grade of B- or better.

The requirements at the graduate level are changed to remove the four courses that overlap with the B.S. and to add two graduate electives to be chosen by the students with the approval of their advisors. Thus, the total number of courses required is reduced from nine to seven, plus the seminar requirements.

To apply for the combined program, students apply to the M.S. or Ph.D. program through the normal graduate admission process in the fall of their senior year. If admitted into the graduate program, they will automatically be included in the combined B.S./M.S. or B.S./Ph.D. program.

**Graduate Program**

The graduate program in bioinformatics offers both M.S. and Ph.D. degrees.

**Course Requirements**

Both masters and doctoral students must complete nine, 5-credit courses (seven core courses and two electives; see below) and a 3-credit research and teaching course. In addition, M.S. students must complete four seminar credits, while Ph.D. students must complete eight seminar credits.

**Core courses (5 credit)—seven are required** Biomolecular Engineering
- 100/L, Introduction to Bioinformatics Laboratory
- 220/L, Protein Bioinformatics Laboratory
- 230/L, Computational Genomics Laboratory

One graduate course, approved by the faculty, in each of the following three areas:
- Statistics (Applied Mathematics and Statistics 206 recommended)
- Biology (Biology 208 recommended)
- Chemistry (Chemistry 200A recommended)

**Electives (5 credit)—two are required**

The electives should be graduate-level courses selected with approval of the faculty to ensure a coherent, balanced program. For M.S. students, 5 credits of independent research (297) or thesis research (299) may count as electives toward the degree requirements upon approval of the faculty. For Ph.D. students, independent or thesis research cannot be counted as electives.

Students must choose their electives with faculty guidance and approval to balance their preparation and make up for deficiencies in background areas. In addition to fulfilling background needs, students may choose to emphasize one of the breadth areas: molecular biology, biochemistry, statistics, computational biology, genetics, computer science, computer engineering, applied mathematics, cell biology, and computer graphics/visualization or may take a cross-sample of the electives to achieve a broad knowledge base.

**Other Curriculum Requirements**

- Biomolecular Engineering 200, Research and Teaching in Bioinformatics, 3 credits
- Seminars
- M.S. students a minimum of two seminar courses, including at least one quarter of the 2-credit Biomolecular Engineering seminar, 280B (formerly Computer Engineering 280B)
- Ph.D. students a minimum of four seminar courses, including at least two quarters of the 2-credit Biomolecular Engineering Seminar, 280B

**Adapted Progress**

Graduate students receiving two or more U (unsatisfactory) grades or grades below B in courses relevant to the program are not making adequate progress and will be placed on academic probation for the next three quarters of registered enrollment.

Graduate students who fail (unsatisfactory or lower than B) a relevant course while on probation may be dismissed from the program. Students may appeal their dismissal. Graduate students who fail a relevant course after
being removed from probation are immediately returned to academic probation.

Graduate students experiencing circumstances that may adversely affect their academic performance should consult with their adviser and the graduate director.

**Thesis and Dissertation Requirements**

In addition to completing the course requirements, students must fulfill the following thesis or dissertation requirements.

For M.S. students, a written thesis proposal should be submitted to a faculty member by the end of the third academic quarter. If the faculty member accepts the proposal, he or she will become the student's adviser and will be in charge of supervising the writing of the master's thesis. When the thesis is completed, it will be submitted to and must be accepted by a faculty review committee consisting of the thesis adviser and at least two additional readers. The committee must include a School of Engineering faculty member, may include participants from the Division of Physical and Biological Sciences and from industry as appropriate, and must be approved by the bioinformatics program director. Students are required to present their thesis project in a public seminar.

Ph.D. students must select a faculty research adviser by the end of the second year. A written dissertation proposal will be submitted to the adviser. A qualifying committee is then formed, which consists of the adviser and three additional members, and approved by the bioinformatics program director and the campus graduate dean. The student must submit his or her written dissertation proposal to all members of the committee and the graduate assistant one month in advance of the examination. The dissertation proposal is publicly and formally presented in an oral qualifying examination given by the qualifying committee.

Ph.D. candidates will submit the completed dissertation to a reading committee at least one month prior to the dissertation defense. The reading committee, formed upon advancement to candidacy, consists of the dissertation supervisor and two readers appointed by the program director upon the recommendation of the dissertation supervisor. The candidate will present his or her research in a public seminar. The seminar will be followed by a debate of the dissertation to the reading committee and attending faculty, who will then decide whether the dissertation is acceptable or requires revision.

**Transfer Limitations**

Up to two courses may be transferred from other graduate institutions, with the approval of the faculty adviser and the graduate director.

**Lower-Division Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>Programming for Biologists and Biochemists. S</td>
</tr>
</tbody>
</table>

**Upper-Division Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Introduction to Bioinformatics. F</td>
</tr>
<tr>
<td>100L</td>
<td>Laboratory (1 credit).</td>
</tr>
<tr>
<td>109</td>
<td>Resource-Efficient Programming, W</td>
</tr>
<tr>
<td>110</td>
<td>Computational Biology Tools. W</td>
</tr>
<tr>
<td>130</td>
<td>Genomes, W</td>
</tr>
</tbody>
</table>

**Graduate Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>Research and Teaching in Bioinformatics (3 credits). F</td>
</tr>
</tbody>
</table>
210. Application and Analysis of Microarrays, W
Topics include, but are not limited to, microarray production techniques, experimental strategies using microarrays, and analysis and extraction of microarray data. DNA and protein arrays, SNP analysis, gene expression analysis, materials analysis, and advanced analysis of data using bioinformatics techniques. Enrollment restricted to graduate students; undergraduates by permission of instructor. J. Stuart, M. Ares, T. Lowe

220. Protein Bioinformatics, W
Covers the application of bioinformatics techniques to protein sequences and structures. Topics include protein sequence analysis, protein structure prediction, and sources of experimental data about proteins. (Formerly Computer Science 243, Bioinformatics.) Prerequisite(s): courses 100 and 100L, or Chemistry 208; concurrent enrollment in course 220L or 296 or 297 is required. Enrollment restricted to graduate students; undergraduates may enroll if they have completed course 100, Computer Science 101, and Biochemistry 100A. C. Rohli

220L. Protein Bioinformatics Laboratory (1 credit), W
Project in protein bioinformatics. Prerequisite(s): courses 100 and 100L; concurrent enrollment in course 220 is required. C. Rohli, K. Karplus

230. Computational Genomics, *
Genomics databases; analysis of high-throughput genomics datasets; BLAST and related sequence comparison methods; pairwise alignment of biosequences by dynamic programming; statistical methods to discover common motifs in biosequences; multiple alignment and database searching using motif models; constructing phylogenetic trees; hidden Markov models for finding genes, etc.; discriminative methods for analysis of bioinformatics data, neural networks, and support vector machines; locating genes and predicting gene function, including introduction to linkage analysis and disease association studies using SNPs and modeling DNA and RNA structures. Prerequisite(s): courses 100 and 100L. Enrollment restricted to graduate students; undergraduates may enroll if they have completed course 100, Computer Science 101, and Biochemistry 100A; or by permission of the instructor. J. Stuart, T. Lowe

280B. Seminar on Bioinformatics (2 credits), F, W, S
Weekly seminar series covering topics of current research in computational biology or bioinformatics. Current research work and literature in these areas are discussed in weekly meetings. Enrollment restricted to graduate students or permission of instructor. M. Ares may be repeated for credit. C. Rohli, D. Haussler, T. Lowe, K. Karplus

281. Seminar on Protein Structure Prediction (2 credits), F, W, S
Weekly seminar series covering topics of current computational and experimental research in protein structure prediction. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. M. Ares may be repeated for credit. D. Haussler

281K. Seminar on Protein Structure Prediction (2 credits), F, W, S
Weekly seminar series covering topics of current computational and experimental research in protein structure prediction. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. M. Ares may be repeated for credit. D. Haussler

281L. Seminar in Computational Genetics (2 credits), F, W, S
Weekly seminar series covering topics of current computational and experimental research in computational genetics. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. M. Ares may be repeated for credit. T. Lowe

281R. Seminar on Protein Structure and Function (2 credits), F, W, S
Weekly seminar series covering topics of current computational and experimental research in protein structure prediction and design, structure-function relationships and protein evolution. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. M. Ares may be repeated for credit. T. Lowe

281S. Seminar in Computational Functional Genomics (2 credits), F, W, S
Weekly seminar series covering topics of current computational and experimental research in computational functional genomics. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. M. Ares may be repeated for credit. T. Lowe

296. Research in Bioinformatics, F, W, S
Independent research in bioinformatics under faculty supervision. Although this course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements. Students submit petition to sponsoring agency. M. Ares may be repeated for credit. The Staff

297. Independent Study or Research, F, W, S
Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements. Students submit petition to sponsoring agency. M. Ares may be repeated for credit. The Staff

297F. Independent Study or Research (2 credits), F, W, S
Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M. Ares may be repeated for credit. The Staff

299. Thesis Research.
This research conducted under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements. Students submit petition to sponsoring agency. M. Ares may be repeated for credit. The Staff

Computer Engineering

Faculty and Professional Interests

Professor
ALEXANDRE BRANDWYN
Computer architecture, performance modeling, queuing network models of computer systems, operating systems

WAYNE WEI-MING DAI
Computer-aided design of VLSI circuits, layout synthesis, multiphase modules, field-programmable systems

F. JOEL FERGUSON
Fault diagnosis, failure analysis, logic fault modeling, digital test pattern generation, design-for-test of digital circuits and systems VLSI design

J. JOAQUIN GARCIA-LUNA-ACEVES
Wireless networks, Internet, multimedia information systems

RICHARD HUGHEY
Computer architecture, parallel processing, computational biology

KEVIN KARPLUS
Analysis of biological sequences, protein structure prediction, programming SIM D machines, VLSI chip design, technical writing

GLEN G. LANDGON JR., Emeritus

PATRICK E. MANTY
Image processing, computer networks, multimedia systems, real-time control

MARTINE D. F. SCHLAG
VLSI design tools and algorithms, VLSI theory, field-programmable gate arrays, FPGA-based computing engines

ANUJAN VARMA
Computer networking, computer architecture, optical networks

Associate Professor
PAK K. CHAN
Placement and routing algorithms, field-programmable gate arrays, spectral-based partitioning, circuit theory, computer arithmetic

T RACY LARRABEE
Test pattern simulation and generation, fault modeling, fault diagnosis, design verification, digital signal processing

KATIA OBRACZKA
Computer networks, distributed systems, operating systems, Internet information systems, mobile computing, wireless networks

Assistant Professor
LUCA DE ALFARO
Embedded software, software engineering, formal modeling and analysis of systems, reactive, hybrid, and stochastic game theory

WILLIAM DUNBAR
Control of dynamic systems and optimization
Associate Professor

CLAIRE X.-G. GU (Electrical Engineering)
Optical fiber communications, volume holographic data storage, liquid crystal displays, nonlinear optics, optical information processing

Suresh K. Lodha (Computer Science)
Scientific visualization, geographic information visualization, sensor and computer vision, image processing, multi-modal human-computer interaction

PEYMAN MILANFAR (Electrical Engineering)
Signal and image processing, inverse problems, statistical detection and estimation, scientific computing, and applied mathematics

ETHAN L. MILLER (Computer Science)
File and storage systems, operating systems, computer security, distributed systems, performance evaluation, information retrieval

Assistant Professor

HAMDIA SADJADPOUR (Electrical Engineering)
Coding theory, equalization techniques, wireless communications, communication theory

Adjunct Professor

HARWOOD G. KOLSKY, Emeritus

Program Description

Computer engineering focuses on the design, analysis, and application of computers and on their applications as components of systems. The UC Santa Cruz Department of Computer Engineering sustains and strengthens its teaching and research program to provide students with inspiration and quality education in the theory and practice of computer engineering. The UC Santa Cruz B.S. in computer engineering prepares graduates for a rewarding career in engineering. UC Santa Cruz computer engineering graduates will have a thorough grounding in the principles and practices of computer engineering and the scientific and mathematical principles upon which they are built. They will be prepared for further education (both formal and informal) and for productive employment in industry. Because computer engineering is so broad, five specialized tracks for completing the program have been identified: systems programming, computer systems, multimedia systems, networks, and digital hardware. Descriptions of these tracks follow in the section on major requirements.

Courses for Nonmajors

The Computer Engineering Department offers course 3, Personal Computer Concepts and Hardware. Providing students an introductory course on the design and use of computers from an engineering viewpoint. Other computer engineering courses of interest to nonmajors, as well as to science-oriented students, include course 12, Computing Systems and Assembly Language, an introductory course on computer systems, system software, and machine-level programming; course 16, Applied Discrete Mathematics, an introduction to applications of discrete mathematical systems; course 80N, Introduction to Networking and the Internet, an introduction to technological services of the Internet; and course 80E, Engineering Ethics.

Computer Engineering Policies

Admissions Policy

Admission to the computer engineering major is selective. Freshmen applicants may receive early admission at the time they apply to UCSC, based on their high school record and test scores. Admission to the major after a student has entered UCSC is based on performance in the foundation courses. Computer Science 12A and 12B (or 13H), Computer Engineering 16 or 16H, and Mathematics 19A-B. Please refer to the School of Engineering section of the catalog for the full admissions policy.

Disqualification Policy

Please refer to the Engineering section of this catalog for the School of Engineering’s Major Disqualification Policy. In evaluating disqualifying GPAs, the department will consider failure of the core exam as if it were a failure in a required course.

Letter Grade Policy

The Computer Engineering Department requires letter grading for all courses applied to the degree with the exception of two lower-division courses, which students may elect to take Pass/No Pass. This policy includes courses required for the computer engineering major but sponsored by other departments.

Transfer Students

Please refer to the School of Engineering section of the catalog for the policy regarding transfer students.

School of Engineering Policies

Please refer to the School of Engineering section of the catalog for additional policies that apply to all School of Engineering programs.

Major Requirements

All students in the computer engineering major take the same core courses, which give the fundamentals of programming and hardware design, supported by the physics and mathematics necessary to understand them. The core courses also cover the fundamentals of computer architecture and designing with microprocessors.

Lower-Division Requirements

Core Requirements

Computer Engineering

12/L, Computer Systems and Assembly Language, laboratory

Computer Science
Introduction to Operating

Electrical Engineering
70/L, Introduction to Electronic Laboratory

Mathematics
Mathematics 19A-B, Calculus for Science, Engineering, and Mathematics
Mathematics 23A, Multivariable Calculus

Electrical Engineering 103, Signals and Systems (required for multimedia and networks tracks); or Mathematics 238, Multivariable Calculus
Applied Mathematics and Statistics 27/L, Mathematical Methods for Engineering Laboratory (formerly Mathematics 27); or Mathematics 21, Linear Algebra; and Mathematics 24, Ordinary Differential Equations

Science
Students must complete Physics 5C/N or 6C/N, and one of the following four science options:
- Biology: Chemistry 1B/M or 4A/L; and Biology 20A or 21A
- Chemistry: Chemistry 1B/M or 4A/L; and Chemistry 1C/N or 4B/M
- Earth Science: Earth Science 10/L and a choice of one 5-credit Earth science upper-division course, excluding Earth Science 111
- Physics: Physics 5B/M or 6B/M; and either Physics 5D or one 5-credit upper-division physics course

Ethics
Students must take Computer Engineering 80E, Engineering Ethics, or another approved ethics course.

This course is required even for transfer students who have had their general education requirements waived.

Upper-Division Requirements
Core Requirements
Computer Engineering
100/L, Logic Design Laboratory
121/L, Microprocessor System Design Laboratory
110, Computer Architecture
107, Mathematical Methods of Systems Analysis
185, Technical Writing for Computer Engineers
Computer Science
101, Abstract Data Types

Specialized Tracks
The following tracks are specialties for the computer engineering student. Students must complete all of the courses listed within their selected track, and they must complete the capstone sequence:

Computer Engineering
- 123A, Computer Engineering Design Project I
- 123B, Computer Engineering Design Project II
- 195, Senior Thesis Research

Systems Programming Track

The systems programming track focuses on software systems: courses include operating systems, compilers, software engineering, and advanced programming. Students finishing this track are very well prepared for building large software systems of all types. This track is the closest one to a computer science major — the main differences are that it does not require computer science theory courses, but because of the core computer engineering requirements, includes more hardware and electronics than a computer science bachelor's degree.
- Computer Science 111, Introduction to Operating Systems
- Computer Science 115, Software Methodology
- Elective: any approved computer science or computer engineering upper-division or graduate elective

Any two of the following courses:
- Computer Engineering 113, Parallel and Concurrent Programming
- Computer Engineering 117/L, Embedded Software Laboratory
- Computer Engineering 156, Network Programming (requires course 150)
- Computer Science 104A, Fundamentals of Compiler Design I
- Computer Science 104B, Fundamentals of Compiler Design II
- Computer Science 116, Software Design Project

Computer Systems Track
The computer systems track is the most general track, providing a balance between software and hardware design. Students are prepared for a large variety of different design tasks, especially those requiring the integration of hardware and software systems, but may need further training for any particular specialization.
- Computer Engineering 125/L, Logic Design with Verilog/Laboratory
- Computer Science 111, Introduction to Operating Systems
- Elective: any approved computer science practice or computer engineering upper-division or graduate elective
- Elective: any approved computer engineering or electrical engineering upper-division or graduate elective

Multimedia Systems Track
The multimedia systems track focuses on techniques and systems in acquiring, processing, transmitting, and storing digital media. Courses include signals and systems, data compression, networks, and multimedia processing and applications. Students finishing this track are well prepared for designing real-time multimedia systems in a networked computer environment.
- Computer Engineering 108, Data Compression (requires Electrical Engineering 103)
- Computer Engineering 150, Introduction to Computer Networks
- Computer Engineering 163/L, Multimedia Processing and Applications Laboratory
- Elective: any approved computer engineering or computer science upper-division or graduate elective

Portoflio Exit Requirement
- A software-oriented project report
- A hardware-oriented project report
- A third project report of the student's selection
A one- to two-page overview of the three projects, the student’s contribution to them, and a narrative as specified at http://www.soec.ucsc.edu/program/undergraduateportfolio.html.

An exit survey
If a project report is associated with a course, it must be an upper-division or graduate course. One of the reports must be the result of a multi-person project. One of the reports must result be the result of an individual project. One of the reports must be the result of the student’s capstone design project.

Computer Engineering Major Planners

The following are two sample academic plans for students to complete during their first two years as preparation for the computer engineering major. Plan One is suggested guidelines for students who are committed to the major early in their academic career. Plan Two is for students who are considering the major.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td>Cmps 100/L</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Cmps 12A</td>
<td>Cmps 12L</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Phys 5A/L</td>
<td>Phys 5B</td>
<td>Phys 5C/N</td>
</tr>
<tr>
<td>(soph)</td>
<td>Math 23A</td>
<td>Cmps 16 or 16H</td>
<td>Cmps 80E</td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 3</td>
<td>Math 19A</td>
<td>Math 19B</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Cmps 10</td>
<td>Cmps 12A</td>
<td>Cmps 12L</td>
</tr>
<tr>
<td>2nd</td>
<td>Phys 5A/L</td>
<td>Phys 5B</td>
<td>Phys 5C/N</td>
</tr>
<tr>
<td>(soph)</td>
<td>Cmps 12H</td>
<td>Cmps 16 or 16H</td>
<td>Cmps 80E</td>
</tr>
</tbody>
</table>

Minor Requirements

Requirements for the minor in computer engineering are the following:

Mathematics
19A-B. Calculus for Science, Engineering, and Mathematics
23A. Multivariable Calculus
Applied Mathematics and Statistics 27/L
Mathematical Methods for Engineers/Laboratory (formerly Mathematics 27); or Mathematics 21, Linear Algebra, and 24, Ordinary Differential Equations

Computer Engineering 16, Applied Discrete Mathematics; or 16H, Honors Applied Discrete Mathematics

Science
Physics 5A/L or 6A/L, or 5C/N or 6C/N

Core Requirements

Computer Engineering
12/L, Computer Systems and Assembly Language/Laboratory
100/L, Logic Design/Laboratory
110, Computer Architecture
121/L, Microprocessor System Design/Laboratory

Computer Science
12A/L, Introduction to Programming/Computer Programming Laboratory; and
12B/M, Introduction to Data Structures/Data Structures Laboratory; or 13H/J, Introduction to Programming and Data Structures (Honors)/Laboratory
101, Abstract Data Types

Electrical Engineering
70/L, Introduction to Electronics/Laboratory
At most, two of the upper-division core courses and the lower-division electrical engineering course may be used to satisfy the requirements of another major or minor degree.

The portfolio exit requirement does not apply for the computer engineering minor.

Materials Fee and Miscellaneous Fees
Please see the section on fees under the School of Engineering.

Undergraduate Programs

B.S./M.S. Undergraduate Program

The Department of Computer Engineering offers a combined bachelor and master of science degree program in computer engineering, providing the opportunity to earn both degrees in five years. The B.S./M.S. program offers a competitive edge to students who are completing their undergraduate degree at UCSC, by enabling those with advanced preparation to move directly from the undergraduate to the graduate program. The program assists qualified enrolled students with a simplified graduate application process and makes it possible to complete an M.S. degree with just seven courses beyond the B.S. program.

The program prepares students for engineering positions in industry, and it is particularly attractive for undergraduate students planning to engage in engineering research in industry or academia. The School of Engineering has many opportunities for undergraduate research, especially for honors-level students. B.S./M.S. students can continue their undergraduate research projects with the same research group. Upon advancement to graduate standing, B.S./M.S. students are eligible for support as graduate research assistants. The B.S./M.S. program provides knowledge and training in important and contemporary areas of computer engineering.

Particularly motivated B.S./M.S. students can complete the entire program in 14 quarters (or fewer with Advanced Placement credit), however, advanced planning is essential. Interested students should contact the department and their faculty advisor early in their college career—no later than the start of their junior year. B.S./M.S. students retain undergraduate status until the completion of all undergraduate requirements, but may begin graduate course work in advance of graduate standing.

The undergraduate degree requirements are the same as those for other computer engineering majors. However, the B.S./M.S. program capitalizes on graduate-level courses that may apply toward both degree requirements. B.S./M.S. candidates may apply (at most) two graduate courses taken as undergraduates toward both the M.S. degree and B.S. degree electives. At the time graduate status is achieved, no more than three graduate courses taken as an undergraduate may count toward the nine courses required for the M.S. degree. B.S./M.S. students may not apply undergraduate courses toward the M.S. degree.

Admission to the B.S./M.S. program is by formal application. Undergraduate applicants seeking admission as graduate students generally apply in their last quarter of junior standing. To qualify, applicants must have completed the following:

- Computer Engineering 100/L, Logic Design/Laboratory
- Computer Science 101, Abstract Data Types
- Computer Engineering 110, Computer Architecture or 121/L, Microprocessor System Design/Laboratory
- Electrical Engineering 70/L, Introduction to Electronics/Laboratory

and at least one additional upper-division School of Engineering course.

Applications will be considered until the student’s first quarter of senior standing. This extension of the application period into the first quarter of the senior year is specifically geared to enable eligible transfer students to complete the courses required for admission.

Students who cannot meet the B.S./M.S. application requirements or who are not admitted into the program are encouraged to apply for admission to the standard M.S. or Ph.D. program during their senior year.

Additional information about this program can be found on the department’s web pages at www.soec.ucsc.edu/program/undergraduate.

Graduate Programs

M.S. and Ph.D. Degree Programs

The graduate program in computer engineering accepts students for both the M.S. and the Ph.D. degrees. Graduate students in this program establish a solid foundation in computer algorithms and architectures and then proceed to a thorough study of recent developments in their selected area of specialization. This provides the basis for the M.S. degree and Ph.D. thesis work. The major areas of research concentration in computer engineering at UCSC are computer networks, computer systems design, computer-aided design technologies, digital media and education technology, and software and systems engineering.

The computer engineering program benefits from a close relationship with the computer science and electrical engineering programs at UCSC and ties to industry in the Silicon Valley and Monterey Bay areas. Graduates of the program are prepared for careers in teaching and research as well as for positions in industrial research and development.

While in the program, most graduate students are supported as research assistants on faculty-sponsored projects or as teaching assistants for undergraduate courses.

Additional information on the computer engineering M.S. and Ph.D. degrees, including degree requirements and applications for admission, can be found on the department’s web pages at www.soec.ucsc.edu/program/graduate.

Requirements for the Master’s Degree

Base Requirement

In their first year, graduate students must show proficiency in five fundamental subjects: data structures, computer architecture, logic design, circuits, and software systems. Proficiency can be demonstrated by either completing one of the associated undergraduate courses, by establishing that an equivalent undergraduate course has been completed elsewhere, or by passing the final exam (off project when deemed appropriate by the faculty responsible) of an associated course. Students should obtain a Computer Engineering Base Worksheet
The breadth requirement must be met by all graduate students (both M.S. and Ph.D.) by the end of the spring quarter of their first year in the program.

Course Requirements
Each student is required to complete a total of 48 units. The course work must include:
- Computer Engineering 200, Research and Teaching in Computer Science and Engineering
- Computer Science 201, Analysis of Algorithms
- Computer Engineering 202, Computer Architecture
- Up to 10 credits of Computer Engineering 297, Independent Study or Research; or Computer Engineering 299, Thesis Research
- At least half of the units from the graduate-level courses (not seminars) in related disciplines outside the School of Engineering (requires advisor and computer engineering graduate committee approval) or upper-division undergraduate courses when necessary to strengthen the student's preparation for graduate studies (requires advisor approval)
- All remaining credits must be graduate elective courses from Computer Engineering's list of approved graduate courses (available online or from the department)

In addition, the selection of graduate elective courses must show breadth by including a minimum of 5 credits in each of two categories from Computer Engineering's list of approved graduate electives. Computer Science 201 and Computer Engineering 202 cannot be used to satisfy the breadth requirement.

At least half of the units from the graduate-level courses must be computer engineering graduate courses.

Thesis
Completion of a master's thesis is required for award of the master's degree. To fulfill this requirement, the student must submit a written proposal to a faculty member, usually by the third academic quarter. By accepting the proposal, the faculty member becomes the thesis advisor for the proposed thesis. In consultation with the advisor, the student must form a master's thesis reading committee with at least two additional faculty members, each of whom is provided a copy of the proposal. The student is required to present an expository talk on the thesis research, and the final thesis must be accepted by the review committee before the award of the master of science degree.

Requirements for the Ph.D. Degree

Base Requirement
In their first year, graduate students must show proficiency in five fundamental subjects: data structures, computer architecture, logic design, circuits, and software systems. Proficiency can be demonstrated by either completing one of the associated undergraduate courses, by establishing that an equivalent undergraduate course has been completed elsewhere, or by passing the final exam (or project when deemed appropriate by the faculty responsible) of an associated course. Students should obtain a Computer Engineering Base Work Sheet for the list of associated courses and instructions on fulfilling this requirement.

The base requirement must be met by all graduate students (both M.S. and Ph.D.) by the end of the spring quarter of the first year in the program.

Course Requirements
A Ph.D. student is required to take a total of 58 credits of graduate courses, which must consist of:
- Course 200, Research and Teaching in Computer Science and Engineering
- Computer Science 201, Analysis of Algorithms
- Computer Engineering 202, Computer Architecture
- A minimum of 20 credits of graduate computer engineering courses from Computer Engineering's list of approved graduate courses (available online or from the department)
- Up to 10 credits of course 297, Independent Study or Research; or course 299, Thesis Research
- Up to 10 credits of graduate courses (not seminars) in related disciplines outside the School of Engineering (requires advisor and computer engineering graduate committee approval)
- All remaining units must be graduate elective courses from Computer Engineering's list of approved graduate courses.

The selection of elective courses must show breadth by including either 10 credits in each of two categories or 5 credits in each of three separate categories from Computer Engineering's list of approved graduate courses. Computer Science 201 and course 202 cannot be used to satisfy the breadth requirement.

Course selection should form a coherent plan of study and requires advisor approval. Undergraduate courses may not be used to satisfy Ph.D. course requirements.

Ph.D. students must satisfy the requirements for the master's degree before receiving the Ph.D. degree.

Examinations and Dissertation
To continue in the Ph.D. program, students must pass a preliminary examination in their chosen research area by the end of their third year. Preliminary examinations are held during the first three weeks of each spring quarter; students must petition the computer engineering graduate committee for an examination in their chosen area two weeks before the end of winter quarter. Examination committees consist of four faculty members, two chosen by the student and two by the computer engineering graduate committee. The format of this oral examination is up to the examination committee; the examination will typically evaluate both general knowledge of the chosen area and specific understanding of selected technical papers. The preliminary examination requirement is waived for students who advance to candidacy by the end of their third year.

Each student must write a Ph.D. dissertation. The dissertation must show the results of in-depth research, an original contribution of significant knowledge, and include material worthy of publication. As the first step, a student must submit a written dissertation proposal to a School of Engineering faculty member. By accepting the proposal, the faculty member becomes the student's dissertation supervisor. The student may choose a faculty member outside the Computer Engineering Department within the School of Engineering as advisor only with approval from the computer engineering graduate committee. The dissertation proposal is publicly and formally presented in an oral qualifying examination given by a qualifying exam committee, approved by the computer engineering graduate committee and the graduate council. The student must submit his or her written dissertation proposal to all members of the qualifying exam committee and the graduate assistant one month in advance of the examination.

Students are advanced to candidacy after they have completed the course requirements, passed both the preliminary and qualifying examinations (or just the qualifying examination if passed prior to the end of the student's third year in the program), cleared all incomplete grades from their records, have an appointed dissertation reading committee, and paid the filing fee. Students who have not advanced to candidacy by the end of their fourth year will be placed on academic probation.

Each Ph.D. candidate must submit the completed dissertation to a reading committee at least one month prior to the dissertation defense. The appointment of the dissertation reading committee is made immediately after the qualifying exam and is necessary for advancing to candidacy. The candidate must present his or her research results in a public seminar sponsored by the dissertation supervisor. The seminar is followed by a defense of the dissertation to the reading committee and attending faculty who will then decide whether the dissertation is acceptable or requires revision. Successful completion of the dissertation fulfills the final academic requirement for the Ph.D. degree.

Transfer Credit
Up to three School of Engineering courses fulfilling the degree requirements of either the M.S. or Ph.D. degree may be taken before beginning the graduate program through the concurrent enrollment program.

Ph.D. students who have previously earned a master's degree in a related field at another institution may substitute courses from their previous university with approval of the advisor and the computer engineering graduate committee. Courses from other institutions may not be applied to the M.S. degree course requirements.

Petitions for course substitutions must designate a specific graduate-level course from the list of approved graduate courses. They should be submitted along with the transcript from the other institution or UCSC extension. For courses taken at other institutions, copies of the syllabus, exams, and other course work should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UCSC.

A total of, at most, three courses may be transferred from concurrent enrollment and other institutions.

Review of Progress
Each year, the computer engineering faculty reviews the progress of every student in the graduate program. Students not making adequate progress towards completion of degree requirements (see UCSC Graduate Student Handbook for policy on satisfactory academic progress) are subject to dismissal from the program. Students with academic deficiencies may be required to take additional courses.

Full-time students with academic deficiencies are normally expected to complete the degree requirements at the rate of at least two courses per quarter. Full-time students must complete Computer Science 201 and course 202 within two years and normally must complete all course requirements within two years for the M.S. and three years for the Ph.D. program.

Students receiving two or more grades of U (unsatisfactory) or below B in School of Engineering courses are not making adequate progress and will be placed on academic probation for the following three quarters of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Part-time enrollment is counted as a half of a quarter of enrollment.

Should any computer engineering graduate student fail a School of Engineering course while on probation, the Computer Engineering Department may request the
graduate dean to dismiss that student from the graduate program. If, after being removed from probation, the student again fails a School of Engineering course, he or she will be dismissed immediately from academic probation.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their advisor and the graduate director immediately. Students may appeal their dismissal.

Lower-Division Courses


Provides an introduction to computers. Personal computing is emphasized, and students are introduced to word processing, spreadsheets, database management, graphics, and programming. Covers fundamentals of computing and current and future uses of computer technology, PC hardware, Windows operating system, applications software, networking, and the Internet, and developments in the computer industry. Recommended for students with little or no experience using computers. Students cannot receive credit for this course and Computer Science 2. (General Education Code(s): IN.)

12L. Computer Systems and Assembly Language, F,W,S

Introduction to computer systems and assembly language and how computers compute in hardware and software. Topics include digital logic, number systems, data structures, compiling/assembly process, basics of system software, and computer architecture. Prerequisite(s): Computer Science 12A or 13H or suitable programming experience; previous or concurrent enrollment in course 12L is required. (General Education Code(s): IN, Q.)

16L. Applied Discrete Mathematics, F,W,S

Introduction to applications of discrete mathematical systems. Topics include sets, functions, relations, graphs, trees, switching algebra, first order predicate calculus, mathematical induction, permutations, combinations, summation, and recurrences. Examples drawn from computer science and computer engineering. Prerequisite(s): eligibility to enroll in Mathematics 19A (completion of Mathematics 2B or 3 or Mathematics Placement Exam score of 40 or higher) or completion of M Mathematics 19A or 11A. (General Education Code(s): Q.)

16H. Honors Applied Discrete Mathematics.

Honors version of course 16L. Introduction to applications of discrete mathematical systems. Topics include sets, functions, relations, graphs, trees, switching algebra, first order predicate calculus, mathematical induction, permutations, combinations, inclusion-exclusion, summation, recurrences, and generating functions. Examples are drawn from computer science and computer engineering. Students register for course 16L, then petition to be accepted into 16H. Top students will be accepted. Enrollment limited to 60. (General Education Code(s): Q.)

80E. Engineering Ethics, S

Ethical theories, analysis, and their application to issues in the practice of engineering, such as safety and liability, professional responsibility to clients and employers, codes of ethics, legal obligations, environmental issues, and social issues. Emphasis on developing independent ethical analysis through the use of case studies. (General Education Code(s): T6-Natural Sciences or Humanities and Arts.)

80N. Introduction to Networking and the Internet, F,W

Introduction to the evolution, technological basis, and services of the Internet, with descriptions of its underlying communications structure, routing algorithms, peer-to-peer hierarchy, reliability, and packet switching. Network security, mail, multimedia and data compression issues, HTML, and digital images. CATS accounts are recommended. Students who have completed course 150 cannot receive credit for this course. (General Education Code(s): T2-Natural Sciences or Humanities and Arts.)

94. Group Tutorial. F,W,S

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff.

94F. Group Tutorial (2 credits). F,W,S

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff.


Students submit petition to sponsoring agency. May be repeated for credit. The Staff.

99F. Tutorial (2 credits). F,W,S

Students submit petition to sponsoring agency. May be repeated for credit. The Staff.

100. Logic Design, F,W,S

Boolean algebra, logic minimization, finite state machine design, sequential circuits, common logic elements, programmable logic devices, and an introduction to system level design. The electrical behavior of circuits including three state outputs, propagation delay, logic levels, and fanout. Prerequisite(s): course 16 or 16H; previous or concurrent enrollment in course 100L required. Enrollment limited to 60. T. Larrabee, F. Ferguson, S. Petersen

101L. Logic Design Laboratory (1 credit). F,W,S

Laboratory sequence illustrating topics covered in course 100. One no-tutorial laboratory session per week. Weekly laboratory assignments which require the use of oscilloscopes, TTL circuits, computer-aided design and simulation tools, and programmable logic. Students are billed for materials fee. Prerequisite(s): course 16 or 16H; previous or concurrent enrollment in course 100L required. Enrollment limited to 60. T. Larrabee, F. Ferguson, S. Petersen


Introduction to fundamental tools of stochastic analysis. Probability, conditional probability, Bayes' Theorem, random variables, independence, Poisson processes, Bernoulli trials and Markov chains. Instructor's choice of additional topics, most likely drawn from configuration measures, difference equations, transform methods, stability issues, applications to reliability, queues, and hidden Markov models. Students cannot receive credit for this course and Applied Mathematics and Statistics 131. Prerequisite(s): course 16 or 16H and Mathematics 22 or 23A.

110. Computer Architecture, F,W,S

High performance computer architecture including examples of current approaches and the effect of technology and software. Instruction set design and RISC, cache and virtual memory, pipelining, SIMD (array and vector) processors, MIMD multiprocessors, interconnection schemes, memory management, parallel and concurrent processing. Offered in alternate quarters. Prerequisite(s): courses 12L and 16 or 16H.

113. Parallel and Concurrent Programming.

Introduction to parallel and concurrent programming. Topics include types of parallel computers and programming platforms, basic and advanced programming techniques, performance analysis and load balancing, and selected parallel algorithms. Students perform extensive programming projects using shared memory, cluster, and high performance systems. Prerequisite(s): course 110 and Computer Science 101. J. Madyastha, R. Hughey, F. Ferguson, A. Brandwajn.

117. Embedded Software, W

Introduction to software design for embedded systems. Emphasis on real-time embedded systems as follows fundamentals of scheduling for real-time systems, real-time operating systems, and real-time protocols for distributed real-time systems time-triggered and event-triggered paradigms for embedded software development, their trade-offs, and languages and tools for development of embedded software. Prerequisite(s): Computer Science 111; previous or concurrent enrollment in course 117L required. Enrollment limited to 50.

117L. Embedded Software Laboratory (1 credit). W

Gain experience in the practical aspects of embedded programming by writing several programs for small robots. Emphasis is to provide experience in a spectrum of programming paradigms (even-triggered, time-triggered), communication paradigms (synchronous and asynchronous programming), and programming languages (both C/C++ and more specialized languages for embedded programming). Concurrent enrollment in course 117L is required. Enrollment limited to 30.
118. Introduction to Mechatronics. S
Technologies involved in mechatronics (intelligent electromechanical systems) and techniques necessary to integrate these technologies into mechatronic systems. Topics include electronics (A/D, D/A converters, opamps, filters, power devices), software program design (event-driven programming, state machine-based design), D.C and stepper motors, basic sensing, and basic mechanical design (machine elements and mechanical CAD). Combines lab component of structured assignments with a large and open-ended team project. Prerequisites: Electrical Engineering 70/L and course 12/L or equivalent. Concurrent enrollment in course 118/L is required. Enrollment limited to 36. G. Elkaim

118L. Introduction to Mechatronics Laboratory (2 credits). S
Technologies involved in mechatronics (intelligent electromechanical systems) and techniques necessary to integrate these technologies into mechatronic systems. Topics include electronics (A/D, D/A converters, opamps, filters, power devices), software program design (event-driven programming, state machine-based design), D.C and stepper motors, basic sensing, and basic mechanical design (machine elements and mechanical CAD). Combines lab component of structured assignments with a large and open-ended team project. Prerequisites: Electrical Engineering 70/L and course 12/L or equivalent. Concurrent enrollment in course 118/L is required. Enrollment limited to 36. G. Elkaim

121. Microprocessor System Design. F, S
The design and use of microprocessor-based systems. Covers microprocessor and microcontroller architecture, programming techniques, bus and memory organization, DMA, timing issues, interrupts, peripheral devices, serial and parallel communication, and interfacing to analog and digital systems. Prerequisites: courses 12/L and 100/L; Electrical Engineering 70/L; previous or concurrent enrollment in course 121/L required. Enrollment limited to 40. P. Chan, R. Hughey, S. Peterson

121L. Microprocessor System Design Laboratory (1 credit). F, S
Laboratory sequence illustrating topics covered in course 121. One two-hour laboratory session per week. Students design, build, program, debug, document, and demonstrate a microprocessor-based system. Students are billed for a materials fee. Prerequisites: courses 12C/L and 100/L; Electrical Engineering 70/L; previous or concurrent enrollment in course 121/L required. Enrollment limited to 40. P. Chan, R. Hughey, S. Peterson

123A. Engineering Design Project I (3 credits). F, W
First of a two-course sequence that is culmination of the engineering program. Students apply knowledge and skills gained in elective track to complete a major design project. Students complete research, specification, planning, and procurement for a substantial project. Includes technical discussions, design reviews, and formal presentations engineering design cycle, engineering teams, and professional practices. Formal technical specification of the approved project is presented to faculty. Prerequisites: course 121 or Electrical Engineering 171; previous or concurrent enrollment in computer engineering 185; must have passed core exam if computer engineering major. Students are billed a materials fee. (Also offered as Electrical Engineering 123A. Students cannot receive credit for both courses.) J. Veesey

123B. Engineering Design Project II. W, S
Second of two-course sequence in engineering design. Students fully implement and test system designed and specified in course 123A. Formal written report, oral presentation, and demonstration of successful project to review board of engineering faculty is required. Students are billed a materials fee. (Also offered as Electrical Engineering 123B. Students cannot receive credit for both courses.) Prerequisites: courses 123A and 185. Enrollment limited to 35. J. Veesey

125. Logic Design with Verilog. F, S
Digital logic design, system-level design using current state of the art in CAE tools. Students learn to design large scale-logic circuits from fundamental building blocks and methods with the help of tools used by professionals in the field today. Examples and assignments will use the Verilog Hardware Description Language. Prerequisites: courses 121 and 121L; concurrent enrollment in course 125L. Students required to pass computer engineering core exam in first week of class to remain enrolled. Enrollment limited to 20. P. Chan, A. Varma, K. Karplus

125L. Logic Design with Verilog Laboratory (1 credit). F
Laboratory sequence illustrating topics covered in course 125. One two-hour laboratory session per week. Students are billed a materials fee. Prerequisite: courses 121/L and 185; concurrent enrollment in course 125L. Enrollment limited to 20. P. Chan, A. Varma, K. Karplus

126. Advanced Logic Design. *
The principles of digital system design with emphasis on using computer-aided design tools for the specification, design, and verification of digital systems. Project is the complete design, implementation, and realization of a digital system using field-programmable gate arrays. Prerequisites: courses 121/L and 185; students enrolling concurrently in 185 need to request a permission code concurrent enrollment in course 126L required. Enrollment limited to 20. P. Chan, M. Schlag

126L. Advanced Logic Design Laboratory (2 credits). S
Laboratory sequence illustrating topics in course 126. One four-hour laboratory session per week. Students use computer-aided design tools for the specification, design, and verification of digital systems. Students implement and realize a digital system using field-programmable gate arrays. Students are billed for a materials fee. Prerequisites: courses 121/L and 185; students enrolling concurrently in 185 need to request a permission code concurrent enrollment in course 126 required. Enrollment limited to 20. P. Chan, M. Schlag

Introduction to computer-aided synthesis tools for VLSI. Emphasizes the theory, concepts, as well as algorithms and data structures for building state-of-the-art synthesis tools. Topics covered include layout synthesis, logic synthesis, and behavioral synthesis. Development of computer programs for VLSI design. Students are billed a materials fee. Prerequisite: course 100 and Computer Science 101. Enrollment limited to 30. Offered in alternate academic years. W. Dai

150. Introduction to Computer Networks. F, S
Addresses issues arising in organizing communications among autonomous computers. Network models and conceptual layers. Internetworking characteristics of transmission media, switching techniques (packet switching, circuit switching, cell switching); medium access control (MAC) protocols and local area networks; error-control strategies and link-level protocols; routing algorithms for bridges and routers; congestion control mechanisms; transport protocols; application of concepts to practical wireless and wireline networks and standard protocol architectures. Students who have completed course 80N can take this course for credit. Prerequisite(s): courses 12, 12L, and 16 or 16H. J. García-Luna-Aceves, K. Obraczka, A. Varma

151. Network Administration. W
Projects include installing and configuring (client and server) machines, configuring network routing, setting up firewalls and network appliances, and setting up and using wireless networks. Includes lectures, projects presented, and discussions. Requires written reports, oral presentations, and demonstrations of projects. Students are billed for a materials fee. Prerequisite(s): course 150. Enrollment limited to 30. K. Obraczka

152. Analysis and Design of Communication Protocols. *
Analysis and design of communication protocols for computer networks. Random processes and queueing theory applied to performance analysis of communication protocols, protocol verification methods, channel access protocols, point-to-point and point-to-multipoint reliable transmission, routing protocols, multicast protocols, and congestion control protocols. Prerequisites: courses 107 and 150. J. García-Luna-Aceves

153. Digital Signal Processing. W
Analysis and design of discrete time signals and systems. Discrete-time processing of continuous signals, the sampling theorem. Difference equations, z-transforms, discrete-time Fourier transforms, the fast Fourier transform (FFT). Frequency response of discrete-time Fourier transforms, the fast Fourier transform (FFT). Frequency response of discrete-time systems. Filter design: time- and frequency-domain design techniques for recursive (IIR) and non-recursive (FIR) filters. Filter realizations, flowgraph structures. Applications. Students are billed a materials fee. (Also offered as Electrical Engineering 153. Students cannot receive credit for both courses.) Prerequisite(s): Electrical Engineering 103. The Staff

154. Data Communications. *
Introduction to data communications. Addresses transmission of data in reliable and efficient manner. Focuses on physical layer of digital data communications: signal transmission, transmission media, signal encoding (modulation, demodulation, spread-spectrum), interfacing, and multiplexing. Includes concepts and issues in telephone systems, intra-facility wiring (Ethernet), and wireless links. Prerequisite: Electrical Engineering 70 and 70L, and course 107 or equivalent background in probability theory and random variables. P. Mantei

156. Network Programming. S
Methods and tools used for network programming. Topics include inter-process communication (IPC), facilities such as pipes, shared memory, semaphores, sockets, and remote procedure call (RPC); design of client and server sides of network applications; CGI programming; and programming projects. Prerequisites: course 150 and Computer Science 111. Concurrent enrollment in course 156L required. K. Obraczka, A. Varma

156L. Network Programming Laboratory (1 credit). S
Laboratory sequence illustrating concepts taught in course 156. Learn use of network programming tools and
163. Multimedia Processing and Applications. S
Introduction to basic concepts and techniques in multimedia processing including the acquisition, processing, and transition of various forms of digital media (image, video, audio, 3D graphics, animation, and text). Students are billed for a materials fee. Prerequisite(s): course 107. Concurrent enrollment in course 163L required. H. Tao

163L. Multimedia Processing and Applications Laboratory (1 credit). F
Exercises performed by individual students to help them understand the basic concepts and techniques in multimedia processing including the acquisition, processing, and transition of various forms of digital media (image, video, audio, 3D graphics, animation, and text). Students are billed for a materials fee. Prerequisite(s): course 107. Concurrent enrollment in course 163L required. H. Tao

172. Linear and Nonlinear Circuits. F
Kirchhoff’s laws, time- and frequency-domain analysis; linear and nonlinear circuits; signal propagation, crosstalk, and electromagnetic interference. Topics include electrical characteristics of digital circuits, interfacing digital and analog systems, and digital-to-analog and analog-to-digital conversion. Prerequisite(s): Electrical Engineering 70/L; previous or concurrent enrollment in course 172L required. W. Dai, P. Mantey

172L. Linear and Nonlinear Circuits Laboratory (1 credit). F
Laboratory sequence illustrating topics covered in course 172, mainly using circuit simulators such as SPICE. One two-hour laboratory session per week. Students are billed for a materials fee. Prerequisite(s): Electrical Engineering 70/L; previous or concurrent enrollment in course 172L required. W. Dai, P. Mantey

173. High-Speed Digital Design. W
Studies of analog circuit principles relevant to high-speed digital design: signal propagation, crosstalk, and electromagnetic interference. Topics include electrical characteristics of digital circuits, interfacing digital and analog systems, and digital-to-analog and analog-to-digital conversion. Prerequisite(s): Electrical Engineering 70/L; previous or concurrent enrollment in course 173L required. W. Dai, P. Mantey

173L. High-Speed Digital Design Laboratory (1 credit). W
Laboratory sequence illustrating topics covered in course 173. One two-hour laboratory session per week. Students are billed for a materials fee. Prerequisite(s): Electrical Engineering 70/L; previous or concurrent enrollment in course 173L required. W. Dai, P. Mantey

177. Applied Graph Theory and Algorithms. F
Basic concepts and algorithms are reviewed including trees, Eulerian and Hamiltonian graphs, and graph transversal. Algorithms are explored to solve problems in connectivity, routing, matching, and embedding of graphs. Prerequisite(s): Electrical Engineering 70/L; previous or concurrent enrollment in course 173 required. K. Obraczka, A. Varma

185. Technical Writing for Computer Engineers. W
Writing by engineers and computer scientists, not to general audiences, but to engineers, engineering managers, and technical writers. Exercises include job application and resume, in-code documentation, algorithm description, naive-user documentation, library, survey article, proposal, progress report, formal technical report, and oral presentation. Prerequisite(s): Electrical Engineering 70/L; previous or concurrent enrollment in course 173 required. H. Tao

193. Field Study. F, W, S
Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the Computer Engineering Department and a willing sponsor at the field site using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. May not normally be repeated for credit. Students submit petition to sponsoring agency.

193F. Field Study (2 credits). F, W, S
Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the Computer Engineering Department and a willing sponsor at the field site using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. May not normally be repeated for credit. Students submit petition to sponsoring agency.

194F. Group Tutorial (2 credits). F, W, S
A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

195F. Senior Thesis Research (2 credits). F, W, S
A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

196. Individual Study or Research. F, W, S
A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

198F. Individual Study or Research (2 credits). F, W, S
A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.
225. Introduction to ASIC System Design. F
Introduction to system prototyping using field-programmable gate arrays (FPGAs). Topics include architectures of FPGAs, behavioral design specification, system partitioning, synthesis tools, design verification, and studies of novel systems implemented with FPGAs. Intended to familiarize students with the techniques and tools in ASIC design. Final project is the complete design of a small system using FPGAs. Enrollment restricted to graduate students; undergraduates may enroll if they have completed courses 210L and 202. Enrollment limited to 10. Offered in alternate academic years. P. Chan

226. Computer-Aided Analysis of Electrical Circuits. W
Covers issues involved in building an electrical circuit simulator. Topics include formulation of circuit equations, device modeling, solution of systems of linear and nonlinear equations, numerical integration techniques, and switch-level timing simulation. Enrollment restricted to graduate students; undergraduates may enroll if they have completed courses 172L and 210L. Offered in alternate academic years. W. D. A. Li, P. Chan

Covers a wide variety of topics relating to the development of computer-aided synthesis tools for VLSI circuits. Both combinatorial and system aspects are addressed. Advances put into historical and taxonomic perspective. Topics covered include layout synthesis, logic synthesis, and behavioral synthesis. Enrollment restricted to graduate students; undergraduates may enroll if they have completed course 127. W. D. A. Li, P. Chan

228. Semiconductor Fabrication Technology. *
A graduate-level introduction to the processes used to make integrated circuits, including the underlying science behind the technology and its current practices. Topics include photolithography, etching, deposition, and wafer fabrication. Offered in alternate academic years. Prerequisite(s): course 222. Enrollment limited to 32. Offered in alternate academic years. P. Ferguson

Introduction to methods of analysis of computer system performance. Predictive performance models with emphasis on queuing models; exact and approximate solution methods; discrete-event simulation, and numeric iterative approaches; analytical solutions and their computation; separable queuing networks, decomposition approaches; examples of practical application; and performance measurement, model validation, robustness of models, and operational analysis. Enrollment restricted to graduate students. Enrollment limited to 20. Offered in alternate academic years. A. Brandwajn

232. Arithmetic Processors. *
Concept of number systems; binary additions, multiplications, divisions; elementary function evaluation algorithms; algorithm acceleration; floating-point and significant arithmetic; IEEE standards; technology related issues; algorithm evaluation by implementation with gate arrays. Prerequisite(s): course 202. Enrollment restricted to computer engineering graduate students. Enrollment limited to 15. P. Chan

250. Multimedia Systems. F
Study of state-of-the-art technology for networked multimedia systems. Data processing and communication requirements for distributed multimedia systems. Topics include audio, image, and video delivery and compression standards, networking for multimedia, scene composition, and digital television. Proficiency in C++ required; experience in designing user interfaces recommended. Prerequisite(s): courses 106 and 108 or Electrical Engineering 103. Enrollment restricted to graduate students. R. Manandhar

251. Error-Control Coding. *
Overview of coding to protect messages against error during transmission or storage. Topics include channel models, linear algebra over finite fields, linear block codes and bounds, cyclic codes (BCH and RS), decoding algorithms, spectral analysis, codes on graphs, and low-complexity algorithms. Enrollment restricted to graduate students or consent of instructor. H. Sadapour

252A. Computer Networks. F
Issues resulting from organizing communication among autonomous computers. Includes network models and switching techniques, medium access control protocols and local area networks, error control and retransmission strategies, routing algorithms and protocols, congestion control mechanisms and end-to-end protocols, application-level protocols, and application of concepts to wireless and wired network lines, with emphasis on the Internet. Enrollment restricted to graduate students. J. Garcia-Luna-Aceves

252B. Modeling of Communications Protocols. W
Theory and practice of computer communication networks. Emphasis on verification and performance analysis of network control processes. Topics include protocols for channel access, point-to-point and multipoint reliable transmission, routing, congestion control, network management, multicasting, and ATM networks. Prerequisite(s): courses 107 and 252A. J. Garcia-Luna-Aceves, A. Varma

Design and implementation of digital systems characterized by sets of linear difference equations; applications in signal processing, simulation, and computerized control systems; conditions for the equivalence of continuous and discrete linear systems; design of FIR and IIR digital filters to meet various specifications; optimal digital controllers; design and analysis in the time domain (state-space) and the frequency domain; implementation effects of system structure, sampling rate, computer storage requirements, word length, and computation speed; and applications in audio, communications, medicine, and control systems. Enrollment restricted to graduate students; undergraduates may enroll if they have completed course 153 or have other background in signals and systems with consent of the instructor. Offered in alternate academic years. P. M. Amid

254. High-Speed Computer Networks. *
Fiber-optic technology; fiber-optic link design; network protocol concepts; coding and error control; high-speed local area and metropolitan area networks; gigabit networks; error and congestion control; photonic networks; research topics. Prerequisite(s): course 252B. Offered in alternate academic years. A. Varma

255. Advanced Computer Communication. *
Special topics on the design, verification, and performance analysis of computer communication protocols. Topics include local area networks, packet radio networks, Internet working, end-to-end services, mobile computing and communication, middleware. Prerequisite(s): courses 230 and 252B. Enrollment restricted to graduate students. Offered in alternate academic years. J. Garcia-Luna-Aceves

257. Wireless and Mobile Networks. S
An interdisciplinary course on wireless communication and mobile computing. Covers the physical aspects of wireless communication but emphasizes higher protocol layers. Topics include cellular networks, packet radio and ad hoc networks, wireless transport protocols, security, and application-level issues. Prerequisite(s): course 252B or permission of instructor. Enrollment limited to 20. K. Obrazczak

258. Unix Networking Internals. F
In-depth treatment of the implementation of network protocols in typical open-source Unix systems. Topics include implementation of send and receive functions, buffer management, interrupt handling, locking, scheduling and timer management. Major implementation project required. Prerequisite(s): course 252A, Computer Science 111. Enrollment restricted to graduate students. A. Varma

263. Data Compression and Image Coding. *
Arithmetic coding and application to data compression and compression based on dictionary or parsing models. Context modeling for data, image, and video compression. Statistical algorithms for probability estimation. JPEG, MPEG, and other video standards. Experimental techniques to design compression algorithms. Includes individual project and presentation. Enrollment restricted to graduate students. G. Langdon

264. Image Analysis and Computer Vision. W
Brief review of image processing. Binary images, thresholding, morphological operations, edge detection and segmentation; contours, digital curves and curve fitting; statistical texture analysis, shape from texture, depth cues, stereo matching, depth from stereo; color perception and segmentation; and shading and image radiation, surface orientation, and shape from shading. Students who have completed course 261 may not take course 264 for credit. Electrical Engineering 264 encouraged, but not required. Undergraduate students who are interested in enrolling should meet with the instructor first. H. Tao

265. Image and Video Coding. *
Topics include image compression and moving picture coding based upon the international standards called JPEG and MPEG. Theory of transforms including the DCT, matrix algebra, quantization for lossy compression, motion estimation, run-length coding of sequences of Os. Prerequisite(s): graduate standing in School of Engineering or permission of instructor. Enrollment restricted to computer engineering, computer science, or electrical engineering majors. Enrollment limited to 29. G. Langdon

276. Software Engineering. W
Introduction to the general principles of software engineering. Covers current and classical topics from both practical and theoretical viewpoints. Topics include software evolution, project management, software inspections, design methods, requirements analysis and specification, software testing, maintenance, software implementation, human interfaces, and software engineering experimentation. Enrollment restricted to graduate students; undergraduates may enroll in this course if they have completed Computer Science 115. The Staff
278. Introduction to the Theory of Discrete Systems. 2
Introduction to methods for modeling, analyzing, and reasoning about discrete systems, such as hardware and software.

280N. Seminar on Networks (2 credits). Weekly seminar series covering topics of current research in networks and networked systems. Current research work and literature in these areas are discussed. Prerequisite(s): permission of instructor. Enrollment restricted to graduate students. May be repeated for credit. J. Garcia-Luna-Aceves, K. Obraczka

280P. Seminar on Parallel Processing (2 credits). Weekly seminar series covering topics of current research in parallel systems, architectures, and algorithms. Current research work and literature in these areas are discussed. Prerequisite(s): permission of instructor. Enrollment restricted to graduate students. May be repeated for credit. R. Hughey

280T. Seminar on New Technologies (2 credits). Weekly seminar series in which distinguished speakers from industry, universities, and government discuss current developments in networking and computer technology. The emphasis is on open research questions that may lead to collaborative work with faculty and graduate students. W. Dai, J. Yellin, P. M. Amyx

Writing skills development for graduate engineers. Students produce a major writing project with many subtasks. Exercises include fellowship application; mathematical and algorithmic description; use of tables and graphs; experiment description; and producing technical web sites, presentations, and posters. Enrollment restricted to graduate students. May be repeated for credit. T. Larabee

290L. Advanced Topics in VLSI Computer-Aided Design. S
A graduate course on a research topic in VLSI computer-aided design. Topic varies according to instructor. Possible topics include, but are not limited to, specification languages and formal verification, logic minimization, testing and verification, electrical simulation, layout synthesis, and behavioral synthesis. Prerequisite(s): course 222. Offered in alternate academic years. W. Dai, P. Chan, T. Larabee, F. Ferguson, K. Karplus, M. Schlag

290M. Topics in Parallel Computation. *
Investigates selected topics in applied parallel computation. Topics may include numerical methods, artificial intelligence and machine learning algorithms, graphics and image processing, stochastic algorithms, and the interplay between hardware and algorithms. Students are encouraged to investigate and discuss the parallelization of their own research. Prerequisite(s): course 202 and Computer Science 201. Course 220 is recommended. Enrollment restricted to graduate students. Offered in alternate academic years. T. M. adhyyash, R. Hughey

290N. Topics in Computer Performance. *
Selected topics of current interest in the area of computer system performance. Subjects may include aspects of large systems, performance modeling, computer networks, storage subsystems, and nontraditional approaches and are subject to periodic revision. Enrollment restricted to graduate students. Offered in alternate academic years. A. Brandwajn

290V. Advanced Topics in Visual Computing. *
Advanced course in image analysis and computer vision. Topics include motion analysis, multiple view geometry, 3D reconstruction, image-based rendering, vision-based graphics, face detection and recognition, tracking, image and video retrieval, and human-computer interface. Enrollment restricted to seniors and graduate students. Enrollment limited to 20. H. Tao, S. Lodha

293. Advanced Topics in Computer Engineering, W,S
A graduate seminar on a research topic in computer engineering which varies according to instructor. Possible topics include, but are not limited to, communication networks, data compression, special-purpose architectures, computer arithmetic, software reliability and reusability, systolic arrays. Prerequisite(s): course 202. The Staff

297. Independent Study or Research, F,W,S
Independent study or research under faculty supervision. Students submit petition to sponsoring agency. The Staff

Thesis research conducted under faculty supervision. Students submit petition to sponsoring agency. The Staff

299C. Thesis Research (15 credits). S
Thesis Research. The Staff

Computer Science

Faculty and Professional Interests

Professor

MARTIN ABADI
Computer and network security, principles of programming languages, specification and verification methods

DAVID HAUSER
Computer science, machine learning, neural networks, decision theory, computational complexity

DANIEL HELMBOLD
Machine learning, computational learning theory, analysis of algorithms

HARRY D. HUSKEN
Emeritus

PHOKIN G. KOLAITIS
Logic in computer science, automated deduction, computational complexity, databases theory

ROBERT A. LEVISON
Artificial intelligence, machine learning, heuristic search, abductive pattern retrieval, hierarchical reinforcement learning, semantic networks

SURESH K. LODHA
Scientific visualization, geographic information visualization, sensor and computer vision, image processing multi-modal human-computer interaction

DARRELL D. E. LONG
Storage systems, distributed computing systems, operating systems, mobile computing, performance evaluation, fault tolerance, computer security, multimedia, and video-on-demand systems

CHARLES E. McDOWELL
Programming languages, parallel computing, operating systems, compilers

ALEX T. PANG
Computer graphics, scientific visualization, and virtual reality interfaces

IRA POHL
Artificial intelligence, programming languages, heuristic methods, educational and social issues, combinatorial algorithms

R. MICHAEL TANNER, Emeritus

ALLEN VAN GELDER
Logic programming, distributed algorithms, parallel algorithms, complexity, programming languages, automated theorem proving scientific visualization

MANFRED K. WARMUTH
Online learning, machine learning, statistical decision theory, neural computation, analysis of algorithms

JANE P. WILLHELM
Computer graphics, computer animation, modeling, artificial reality, virtual reality, collaborative authoring, intelligent virtual environment, human and animal modeling, scientific visualization

Associate Professor

SCOTT A. BRANDT
Soft real-time systems, quality of service, distributed systems

ETHAN L. MILLER
File and storage systems, operating systems, computer security, distributed systems, performance evaluation, information retrieval

Assistant Professor

JAMES E. DAVIS
Computer graphics and computer vision, methods for acquiring and manipulating complex graphical models from the real world

CORMAC FLANAGAN
Programming languages and software engineering, with an emphasis on specifying and checking correctness properties of sequential and multi-threaded programs

NEKOLIS POLYZOTIS
Synthesis of XML data, visual query interfaces, query processing, and optimization

RAYMIE STAFA
Software engineering

WANG-CHIEN TAN
Data provenance/image, data archiving scientific databases, database query languages, semistructured data, combinatorial optimization on database problems

E. JAMES WHITEHEAD III
Software engineering, software configuration management, web, hyper-text, collaborative authoring, hyper-text versioning, Internet information systems
Adjunct Professor

MARTIN GRISS
Software Engineering

MICHAEL ZYDA
Computer graphics, networked 3-D virtual environments, modeling and simulation

Lecturer

WESLEY MACKAY
Compiler construction, programming languages

LINDA WERNER
Software engineering, testing, usability engineering, educational and social issues

Professor

ALEXANDRE BRANDWAN (Computer Engineering)
Computer architecture, performance modeling, queuing network models of computer systems, operating systems

WAYNE WEI-MING DAI (Computer Engineering)
Computer-aided design of VLSI circuits, layout synthesis, multipitch modules, field programmable systems

F. JOEL FERGUSON (Computer Engineering)
Fault diagnosis, failure analysis, logic fault modeling, digital test pattern generation, design-for-test of digital circuits and systems VLSI design

J. JOAQUIN GARCIA-LUNA-ACEVES (Computer Engineering)
Wireless networks, Internet, multimedia information systems

Jorge Hankamer (Linguistics)
Syntax, semantics, morphology, computational linguistics, Turkish

RICHARD HUGHEY (Computer Engineering)
Computer architecture, parallel processing, computational biology

KEVIN KARPLUS (Computer Engineering)
Analysis of biological sequences, protein structure prediction, programming SIMD machines, VLSI chip design, technical writing

GLEN G. LANGDON JR., Emeritus (Computer Engineering)

PATRICK E. MANTY (Computer Engineering)
Image systems, image processing, visualization, image and multimedia systems, digital-signal processing, real-time control

ASSOCIATE Professor

PAK K. CHAN (Computer Engineering)
Placement and routing algorithms, field-programmable-gate-arrays, spectral-based partitioning in circuit design, computer arithmetic

TRACY LARRABEE (Computer Engineering)
Test pattern generation, fault modeling, fault diagnosis, design verification, technical writing, logic simulation

Assistant Professor

WARREN SACK (Film and Digital Media)
Software design and media theory

Program Description

Computer science is the study of the theoretical and practical aspects of computer technology and computer usage. The Computer Science Department offers courses on a wide range of topics, many of which include a mathematical component, and offers both the bachelor of arts and bachelor of science degrees, as well as the master of science and doctor of philosophy degrees. Besides offering instructional courses, the department engages in a substantial research program in which both advanced undergraduates and graduate students participate. The bachelor of arts program at UC Santa Cruz is designed to give students a solid grounding in both theoretical and practical topics in computer science, computer engineering, and mathematics while leaving flexibility for a broad program of study, including many courses outside of the sciences, or even for a double major in another discipline. The bachelor of science program is appropriate for students desiring a somewhat stronger concentration in the sciences, with more courses in computer science and computer engineering, as well as courses in physics or chemistry; this program also allows for electives outside of the sciences. Because many courses in both programs have prerequisites, students leaning toward either program will enjoy greater scheduling flexibility if they begin some preparatory courses in their first year. The specific course requirements for each undergraduate degree are given below. Applications of computer science are found in many other areas of study, from art and music to business and science. Thus, interdisciplinary activities are encouraged. For those students whose primary interest is in another area, a minor in computer science is offered.

Courses for Nonmajors

The Computer Science Department offers a wide range of courses intended for nonmajors as well as majors. These include course 2, Computer Literacy; course 10, Introduction to Computer Science; course 80B, Systems and Simulation; and course 80C, Computer Arts and Graphics. Course 10, Introduction to Computer Science, may be beneficial to students who are considering the major but have a limited background in computer science. There are also introductory programming classes intended for nonmajors courses 60G and 60N, Beginning Programming.

Computer Science Policies

Admissions Policy

Admission to the computer science majors is selective. First-year applicants may receive direct admission at the time they apply to UCSC based on their high school record and test scores. Admission to the major after a student has entered UCSC is based on performance in the foundation courses: courses 12A and 12B (or 13H); Computer Engineering 16 or 16H; and Mathematics 19A-B. Please refer to the School of Engineering section of the catalog for the full admissions policy.

Disqualification and Satisfactory Progress in the Major

Students who do not make adequate progress in the computer science major may be disqualified from the major. Adequate progress normally means passing a minimum of three courses required for the major over every three consecutive quarters. For part-time students, 15 credits attempted equals one full term. Students who do not expect to meet this requirement should consult their faculty adviser and/or the undergraduate director for their major beforehand.

Students who receive a total of three grades of D, F, or No Pass in the key courses, Computer Science 12A, 12B, 13H, 101; Computer Engineering 12, 16, and 16H may, at the discretion of the department, be disqualified from the major.

For the department major, at its sole discretion, disqualification from the major may not be made in a year in which the student has made a satisfactory contribution to the department. The department may, at its sole discretion, disqualify from the major any one of the following principal courses commonly used to satisfy degree requirements:

- Computer Engineering 12, 16, 16H, 100, 107, and 110;
- Applied Mathematics and Statistics 27, 131, and 147;
- Physics 5A, 5B, 5C, 6A, 6B, and 6C;
- Chemistry 1B, 1C, 4A, and 4C;
- Mathematics 19A-B and 23A.

Each grade of D, F, or No Pass counts as one unsuccessful attempt; each grade of W counts as one-half of an unsuccessful attempt.

The School of Engineering section contains additional disqualification policies. Students who maintain a 2.0 GPA in the major and the ethics requirement, that apply to computer science majors. Students at risk of disqualification must meet with the undergraduate director to discuss their options for continuing in the major.

Letter Grade Policy

At UCSC, students are first introduced to programming sequence, courses 12A/L and 12B/M, and course 80C, Computer Arts and Graphics. Students must complete the sequence courses 12A/L and 12B/M, in order to proceed to higher-level courses in the computer science majors.

Transfer Students

Most courses in the computer science program at UCSC have a strong theoretical component to prepare the student for designing, as opposed to simply using, computer systems. Often, courses taken at other institutions which emphasize applications of current languages and computers do not count toward the computer science major at UCSC.

At UCSC, students are first introduced to programming using the programming language Java. The core programming sequence, courses 12A/L and 12B/M, exposes students to both Java and C. Many upper-division courses that involve programming use the C pro-
gramming language. Transfer students who are not familiar with both Java and C may need to take a remedial course. Students familiar with C++ and Unix should find the transition to Java and C relatively simple.

Please refer to the School of Engineering section of the catalog for the policy regarding transfer students.

School of Engineering Policies

Please refer to the School of Engineering section of the catalog for additional policies that apply to all School of Engineering programs. These policies include admission to the major, limits on the number of times courses can be attempted, and the need for computer science students to obtain preapproval before taking courses elsewhere.

Preparation for the Major

It is recommended that high school students intending to apply to the computer science major complete four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Comparable college mathematics and science courses completed at other institutions also serve to properly prepare a student for the computer science major.

B.A. Major Requirements

The aim of this program is to expose students to a rigorous curriculum in computer science while maintaining sufficient flexibility so that students can take courses outside computer science, if so desired, or pursue a minor in another discipline, or complete a double major. Every student must complete a minimum of 17 courses, eight lower-division and nine upper-division. Of these, the eight lower-division courses and the first upper-division course are required preparatory courses for every student. Once these preparatory courses are completed, students tailor their own program by choosing eight additional upper-division elective courses. To provide an adequate balance in subject matter, these additional courses must be divided between those that emphasize the theoretical aspects of the field and those that have a more practical focus. To provide a depth of study in one aspect of computer science, three of the eight courses must be chosen from an approved depth sequence.

Lower-Division Requirements

Each student must successfully complete the following eight required preparatory courses:

- Computer Science:
  12A/L, Introduction to Programming/Computer Programming Laboratory; or 13H/L, Introduction to Programming and Data Structures (Honors)/Lab
  12B/M, Introduction to Data Structures/Laboratory; or 12D/M, Introduction to Programming and Data Structures (Honors)/Laboratory
  101, Abstract Data Structures

- Computer Engineering:
  12/L, Computer Systems and Assembly Language Laboratory
  16, Applied Discrete Mathematics, or 16H, Honors Applied Discrete Mathematics

Mathematics:

- 19A-B, Calculus for Science, Engineering, and Mathematics (Credit for one or both may be granted with adequate performance on the CEEB calculus AB or BC Advanced Placement exam.)
- 23A, Multivariable Calculus

Applied Mathematics and Statistics:

- 27, Mathematical Methods for Engineers (formerly Mathematics 27);
- 28, Linear Algebra;
- 24, Ordinary Differential Equations

Upper-Division Requirements

In addition to the above nine required courses, students must complete eight upper-division electives. Seven of these courses must be chosen from the theory and practice lists as follows:

- a minimum of three courses from the theory course list and a minimum of three courses from the practice course list;
- in addition, the seven courses chosen from the theory and practice course lists must include all of the courses of one of the depth sequences listed below;
- the eighth upper-division elective must be selected from any upper-division (5-credit) School of Engineering course;
- at least 50 percent of these upper-division courses must be completed at UCSC.

Theory Course List

- A double dagger (‡) indicates a course that prepares students for the senior comprehensive examination. (See Comprehensive Requirement below.)

Computer Science:

102, Introduction to Analysis of Algorithms ‡
130, Computational Models‡
132, Computability and Computational Complexity‡

Computer Engineering:

107, Mathematical Methods of Systems Analysis
114, Advanced Linear Algebra
118, Stochastic Processes
154, Data Communications
177, Applied Graph Theory and Algorithms

Electrical Engineering:

103, Signals and Systems
153, Digital Signal Processing (formerly Computer Engineering 153)

Mathematics:

115, Graph Theory
117, Advanced Linear Algebra
126, Mathematical Control Theory
148, Numerical Analysis

Practice Course List

Computer Science:

104A, Fundamentals of Compiler Design I ‡
104B, Fundamentals of Compiler Design II ‡
105, Systems Programming
109, Advanced Programming
111, Introduction to Operating Systems‡
112, Comparative Programming Languages‡
115, Software Methodology‡
116, Software Design Projects
122, Computer Security
129, Data Storage Systems
140, Artificial Intelligence‡
160/L, Introduction to Computer Graphics / Laboratory ‡
161/L, Visualization and Computer Animation/Laboratory
180, Database Systems I ‡
181, Database Systems II
183, Hypermedia and the Web
190X, Midrash of Cryptography
204, Compiler Design

Computer Engineering:

100/L, Logic Design Laboratory
110, Computer Architecture‡
113, Parallel and Concurrent Programming
117/L, Embedded Software Laboratory
12I/L, Microprocessor System Design/Laboratory
123A, Computer Engineering Design Project I
123B, Computer Engineering Design Project II
125/L, Logic Design with Verilog Laboratory
126/L, Advanced Logic Design/Laboratory
150, Introduction to Computer Networks
152, Analysis and Design of Communication Protocols
155, Computer Networks Project
163/L, Multimedia Processing and Applications/Laboratory

Electrical Engineering:

130, Introduction to Optoelectronics and Photonics

Depth Sequence List

- Compilers and language theory: Computer Science 104A, 112, and 130 or 104B
- Operating systems and hardware: Computer Engineering 100L, Computer Science 111, and Computer Engineering 110 or 121
- Theory: Computer Science 102, 130, and 132
- Software methodology: Computer Science 115 and two of the following: 104A, 112, and 116
- Graphics: Computer Science 160, 161, and Engineering 147
- Databases: Computer Science 180, 181, and 183

B.S. Major Requirements

This program is designed for students who wish to maximize exposure to computer science concepts and methods by taking a larger selection of upper-division computer science courses, as well as additional courses in the sciences and mathematics. A minimum of 22 courses must be completed for the B.S. in computer science degree, whereas a minimum of 17 courses must be completed for the B.A. in computer science degree. Out of the 22 courses, 10 are lower-division courses (including two sciences courses), and 12 are upper-division courses. The B.S. is more structured than the B.A. in the sense that 18 specific courses are required, and the remaining four are elective upper-division computer science or computer engineering courses.

Lower- and Upper-Division Requirements

Students are required to take the following 18 courses. A double dagger (‡) indicates a course that prepares students for the senior comprehensive examination (see Comprehensive Requirement below).

Computer Science:

12A/L, Introduction to Programming/Computer Programming Laboratory; or 13H/L, Introduction to Programming and Data Structures (Honors) /Laboratory
Programming and Data Structures (H/onors)/Laboratory
12B/M, Introduction to Data Structures/Laboratory; or 13H/L, Introduction to Programming and Data Structures (H/onors)/Laboratory
101, Abstract Data Types‡
102, Introduction to Analysis of Algorithms‡
104A, Fundamentals of Compiler Design I‡
111, Introduction to Operating Systems‡
112, Comparative Programming Languages‡
130, Computational Models‡

Computer Engineering
12/L, Computer Systems and Assembly Language/Laboratory
16, Applied Discrete Mathematics; or 16H, Honors
Applied Discrete Mathematics
107, Mathematical Methods of Systems Analysis Stochastic; or Engineering 131, Introduction to Probability Theory‡ (formerly Mathematics 131A)
110, Computer Architecture‡

Mathematics
19A–B, Calculus for Science; Engineering, and Mathematics
23A, Multivariable Calculus

Applied Mathematics and Statistics
27/L, Mathematical Methods for Engineers/Laboratory (formerly Mathematics 27); or Mathematics 21, Linear Algebra; and 24, Ordinary Differential Equations
131, Introduction to Probability Theory; or Computer Engineering 107, Mathematical Methods of Systems Analysis Stochastic

Physics or Chemistry
Either two physics or two chemistry courses, with their associated laboratories, from the following:
Physics 5C/L, Introduction to Physics I/Laboratory (or 6A/L)
Physics 5B/M, Introduction to Physics II/Laboratory (or 6B/M)
Physics 5C/N, Introduction to Physics III/Laboratory (or 6C/N)

Chemistry 1B/M, General Chemistry Laboratory
Chemistry 1C/N, General Chemistry Laboratory

The remaining four courses must be upper-division computer science or computer engineering electives selected from the theory and practice course lists (see B.A. Major Requirements reference above). One of these courses may be replaced by an upper-division mathematics course from the theory course list.

Comprehensive Requirement
In addition to the above B.A. or B.S. requirements, students in the computer science majors must satisfy one of the following three exit requirements: pass course 116, Software Design Project; successfully complete a senior thesis or obtain a scaled score of 600 or above on the Graduate Record Examination (GRE) Advanced Computer Science Subject Test.

Students taking course 116 will enroll normally and notify the instructor that they are using the course to satisfy their exit requirement. Students receiving a passing grade on the project portion of the course will satisfy the exit requirement. The project grade is typically the same as the overall 116 course grade, but may deviate in exceptional circumstances. Students are permitted to take course 116 a maximum of two times to achieve a passing score. If a student fails to receive a passing score during these two attempts, he or she may still take the GRE Advanced Computer Science Subject Test and achieve a scaled score of 600 or above to satisfy the exit requirement.

The senior thesis consists of a self-contained project within the broad scope of computer science, but one that is not available in the regular course offerings. A student wishing to complete a senior thesis must successfully complete a minimum of 5 credits in course 195, Senior Thesis Research; submit a written thesis proposal; and have it accepted by a faculty supervisor. The supervision of a senior thesis student is always at the discretion of the faculty member. For example, an instructor often requires a student to successfully pass the comprehensive examination before agreeing to the supervision of a senior thesis. A written report and an oral presentation to a faculty examining committee are required.

Students who elect to use the GRE Advanced Computer Science Subject Test as their senior exit requirement must arrange to take the GRE test and have scores submitted to the department before graduation deadlines. Contact the UCSC Career Center for GRE information and application forms.

Computer Science Major Planners
The following are four sample academic plans for first-year students as preparation for the computer science major. Plans A and B are suggested guidelines for students who are committed to the major early in their academic career. Plans C and D are for students who are considering the major. Students who plan carefully can still have several openings free to take other breadth courses they find interesting.

Plan One A, B.A. Degree

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Csps 10</td>
<td>Csps 12A/L</td>
<td>Csps 12B/M</td>
</tr>
<tr>
<td>(hsh) Math 19A</td>
<td>Math 19B</td>
<td>Math 23A</td>
<td></td>
</tr>
</tbody>
</table>

Plan One B, B.A. Degree

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td></td>
</tr>
<tr>
<td>(hsh)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan Two A, B.S. Degree

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Csps 12A/L</td>
<td>Csps 12B/M</td>
<td>Csps 12/L</td>
</tr>
<tr>
<td>(hsh) Math 19A</td>
<td>Math 19B</td>
<td>Math 16 or 16H</td>
<td></td>
</tr>
</tbody>
</table>

Plan Two B, B.S. Degree

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td></td>
</tr>
<tr>
<td>(hsh)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minor Requirements
Courses required for the computer science minor are Mathematics 19A–B and 23A; Applied Mathematics and Statistics 27/L (formerly Mathematics 27); courses 12A/L and 12B/M (or 13H/L) and course 101; Computer Engineering 12/L and 16 or 16H; and four additional upper-division computer science courses from a list of approved courses (see the department's checklist for the computer science minor at www.soe.ucsc.edu/prgrams/undergrad/). In selecting the four upper-division courses, students may elect to focus on one subdiscipline of computer science by completing a depth sequence as shown on the computer science minor checklist. Upper-division computer engineering and mathematics courses that generally apply toward the computer science major may not be applied toward the computer science minor. In addition, some upper-division computer science courses may not be applied toward the computer science minor. There is no comprehensive examination or senior thesis requirement for the minor.

Graduate Programs

Program Description
The Computer Science Department at UCSC offers both a master's program and a doctoral program. The goal of these programs is to help students develop into independent scholars who are prepared for productive careers in research, teaching, and industry. The master's degree may be used as a terminal degree or as the first step toward the Ph.D. degree. The student-faculty ratio is five to one, making it possible for students to receive individual attention and to pursue programs that fit their individual needs. The intellectual atmosphere is enriched by regular colloquia and seminars presented by eminent contributors to the field, many of whom are associated with other major universities and industrial research centers in the San Francisco Bay Area.

The Computer Science Department enjoys a close relationship with the Computer Engineering and Electrical Engineering Departments, the Bioinformatics Department, and the new applied mathematics and statistics graduate program currently in development. Most computer science graduate students are hired as teaching assistants helping with undergraduate courses, hired as research assistants working for computer science and other School of Engineering faculty, or awarded fellowships to pursue their research.

Additional information on the computer science graduate programs can be found on the department's web pages at www.soe.ucsc.edu.

Requirements for the Master’s Degree: Project Track

Course Requirements
Each student is required to take 50 credits as follows:

Computer Science
• 200, Research and Teaching in Computer Science and Engineering, 3 credits;
• 201, Analysis of Algorithms, 5 credits;
• 203, Programming Languages, 5 credits;
• 296, Master's Project, 2 credits;
• Computer Engineering 202, Computer Architecture, 5 credits;
• one course each from three different breadth categories for a total of three courses (15 credits). See http://www.soe.ucsc.edu/programs/cg/graduate;
• all remaining credits must be graduate elective courses from the list of approved graduate courses. See http://www.soe.ucsc.edu/programs/cg/graduate.
two upper-division undergraduate computer science courses (other than course 101) or a graduate course (not seminar) in related disciplines outside the list of approved graduate courses may be substituted for one graduate course, when necessary to strengthen a student’s preparation for graduate studies, with prior approval from the advisor and the graduate director.

Project
Completion of a master’s project is required for the master’s degree. In consultation with the advisor, the student forms a master’s project reading committee of at least two faculty members, each of whom is provided a copy of the project report. The final project must be accepted by the review committee before the award of the master of science degree.

Requirements for the Master’s Degree:
Thesis Track
Course Requirements
Each student is required to take 48 credits as follows:

- Computer Science
  - 200, Research and Teaching in Computer Science and Engineering, 3 credits;
  - 201, Analysis of Algorithms, 5 credits;
  - 203, Programming Languages, 5 credits;
  - Computer Engineering 202, Computer Architecture, 5 credits;
  - one course each from three different breadth categories for a total of 3 courses (15 credits). See http://www.soe.ucsc.edu/programs/csgraduate;
  - up to 10 credits of course 297, Independent Study or Research; or course 299, Thesis Research;
  - all remaining credits must be graduate elective courses from the list of approved graduate courses. See http://www.soe.ucsc.edu/programs/csgraduate;
  - two upper-division undergraduate computer science courses (other than course 101) or a graduate course (not seminar) in related disciplines outside the list of approved graduate courses may be substituted, when necessary to strengthen a student’s preparation for graduate studies, with prior approval from the advisor and the graduate director.

Thesis
Completion of a master’s thesis is required for the master’s degree. To fulfill this requirement, the student submits a written proposal to a faculty member, usually by the third academic quarter. By accepting the proposal, the faculty member becomes the thesis advisor. In consultation with the advisor, the student forms a master’s thesis reading committee with at least two additional faculty members, each of whom is provided a copy of the proposal. The student presents an expository talk on the thesis research, and the final thesis must be accepted by the review committee before the award of the master of science degree.

Requirements for the Ph.D. Degree
Course Requirements
Each student is required to take 58 credits as follows:

- Computer Science
  - 200, Research and Teaching in Computer Science and Engineering, 3 credits;
  - 201, Analysis of Algorithms, 5 credits;
  - 203, Programming Languages, 5 credits;
  - Computer Engineering 202, Computer Architecture, 5 credits;
  - one course each from three different breadth categories for a total of 3 courses (15 credits). See http://www.soe.ucsc.edu/programs/csgraduate;
  - up to 10 credits of course 297, Independent Study or Research; or course 299, Thesis Research;
  - all remaining credits must be graduate elective courses from the list of approved graduate courses. See http://www.soe.ucsc.edu/programs/csgraduate;
  - graduate courses (not seminars) in related disciplines outside the list of approved graduate courses may be substituted, when necessary to strengthen a student’s preparation for graduate studies, with prior approval from the advisor and the graduate director. Course selection should form a coherent plan of study and requires advisor approval. Undergraduate courses may not be used to satisfy Ph.D. course requirements.
  - each student is required to complete at least one quarter of teaching assistant, in addition to the above requirement; this requirement can be met after advancement to candidacy. Certain exceptions may be permitted for those with extensive prior teaching experience or those who are not allowed to be employed due to visa regulations.

Ph.D. students who have satisfied the requirements for the master’s degree are eligible to receive a master’s degree.

Dissertation
Each student writes a Ph.D. dissertation. The dissertation must show the results of in-depth research, be an original contribution of significant knowledge, and include material worthy of publication. As the first step, a student submits a written dissertation proposal to a School of Engineering faculty member. By accepting the proposal, the faculty member becomes the dissertation supervisor. The dissertation proposal is publicly and formally presented in an oral qualifying examination given by a qualifying examination committee, approved by the graduate committee and the Graduate Council. The student must submit his or her written dissertation proposal to all members of the committee and the graduate assistant one month in advance of the examination.

Students are advanced to candidacy after they have completed the course requirements, passed the qualifying examination, cleared all incompletes from their records, have an appointed dissertation reading committee, and paid the filing fee. Students who have not advanced to candidacy by the end of their fourth year will be placed on academic probation.

Each Ph.D. candidate submits the completed dissertation to a reading committee at least one month prior to the dissertation defense. The appointment of the dissertation reading committee is made immediately after the qualifying exam and is necessary for advancing to candidacy. The candidate presents his or her research results in a public seminar sponsored by the dissertation supervisor. The seminar is followed by a defense of the dissertation to the reading committee and attending faculty, who will then decide whether the dissertation is acceptable or requires revision. Successful completion of the dissertation fulfills the final academic requirement for the Ph.D. degree.

Transfer Credit
Up to three School of Engineering courses fulfilling the degree requirements of either the M.S. or Ph.D. degrees may be taken before beginning the graduate program through the concurrent enrollment program.

Ph.D. students who have previously earned a master’s degree in a related field at another institution may substitute courses from their previous university with approval of the advisor and the graduate committee. Courses from other institutions may not be applied to the M.S. degree course requirements. Petitions should be submitted along with the transcript from the other institution or U.C.S.C. extension. For courses taken at other institutions, copies of the syllabi, exams, and other course work should accompany the petition. Such petitions are not considered until the completion of at least one quarter at U.C.S.C. At most, a total of three courses may be transferred from concurrent enrollment and other institutions.

Review of Progress
Each year, the faculty reviews the progress of every student. Students not making adequate progress towards completion of degree requirements are subject to dismissal from the program. See http://www.soe.ucsc.edu/programs/csgraduate/CS/CurrentReq.html for more information on this policy.

Lower-Division Courses

2. Computer Literacy, F,W,S
Introduction to how computers work and how to use them. Topics covered include network information systems, text editors, formatting, file and directory system, spreadsheets and databases. Computers as symbol manipulation devices. Introduction to programming concepts and computer languages. Impact of computers on society. Designed for students with little or no experience using computers. Preference is given to students who have not taken other computer engineering or computer science courses. Students cannot receive credit for this course and Computer Engineering 3. (General Education Codes: I,N.) P. Franca

10. Introduction to Computer Science, F,W
An overview of the theory, foundations, and practice of computer science with emphasis on what computers can and cannot do, now and in the future. Topics include algorithms and data, correctness and efficiency of algorithms, hardware, programming languages, limitations of computation, applications, and social issues. No programming skills are required as a prerequisite. Major concepts and open problems in computer science are presented with reliance on sophisticated mathematical tools. (General Education Code(s): I,N.) The Staff

12A. Introduction to Programming, F,W,S
An introductory programming course for computer science and engineering majors where students learn programming and documentation skills, as well as algorithmic problem solving and programming methodologies. Introduces students to computers, compilers, and editors, and they are expected to write medium-sized programs. Topics include, but are not limited to, procedures and functions, conditionals and loop control structures, static and dynamic memory manipulations, and text processing. Prior experience with Unix helpful, and some prior programming experience strongly recommended (e.g., course 10). This course is required for computer engineering, computer science, electrical engineering, and information systems management majors. Prerequisite(s): eligibility to enroll in M The mathematics 19A (Mathematics 9A or 3 or 40 or higher on mathematics placement exam) or M The mathematics 19A or 11A or Economics 11A or Applied Mathematics and Statistics 11A. Concurrent enrollment in course 12L required. (General Education Code(s): I,N.) The Staff
12B. Introduction to Data Structures. F, W, S
Teaches students to implement common data structures and the algorithms associated with each data structure, through progressively difficult exercises. Topics include big "O" notation; pointers, recursion (induction), and dynamic allocation; linked lists and list processing; stacks, queues, binary trees and binary search trees; simple sorting techniques and simple search techniques. Students will gain a working knowledge of the elements of the Java and C programming languages. Prior experience with UNIX is assumed. Prerequisite(s): course 12A. Concurrent enrollment in course 12M required. Enrollment limited to 150. (General Education Code(s): IN.) W, M. M. Adcoy

12L. Computer Programming Laboratory (2 credits). F, W, S
Laboratory sequence complementing topics taught in course 12A by providing training and exposure to several software development tools and practices not covered in course 12A. In addition, the lab provides an initial exposure to a second programming language to reinforce concepts from course 12A. Prerequisite(s): eligibility to enroll in Mathematics 28B or 3 or 4 or higher (on mathematics placement exam) or completion of Mathematics 11A or 19A or Economics 11A or AM S 11A. Previous or concurrent enrollment in 12L required. I. Pohl, S. Brandt, A. Pang. C. M. O'Dowd

12M. Data Structures Laboratory (2 credits). F, W, S
Complements course 12B, gaining additional competence with a number of important software development tools, languages, and techniques. Included are advanced UNIX features and utilities such as grep, find, diff, the shell, and pipes; C programs utilizing I/O, arrays, pointers, and structures; a scripting language to perform simprose and file manipulation; and the make utility. Prerequisite(s): courses 12A and 12L. Concurrent enrollment in course 12B required. C. M. O'Dowd

13H. Introduction to Programming and Data Structures (Honors). F
Provides an accelerated introduction to programming and data structures. Includes a review of basic programming, including loop and conditional control structures, procedures and parameter passing, and arrays. Course goes on to cover some material as course 12B. Students cannot receive credit for this course and course 12A or 12B. Prerequisite(s): interview only; students must have completed a high school or college level programming course in Java, C, or C++; a short oral examination given to ascertain programming level. Concurrent enrollment in course 13L required. Enrollment limited to 25. (General Education Code(s): IN.) S. Brandt, D. Long

13L. Introduction to Programming and Data Structures Laboratory (2 credits). W, S
Provides an accelerated introduction to practical aspects of programming and data structures. Covers three areas: 1) common programming tools including UNIX commands, compilers and linkers, editors, debuggers, and makefiles; 2) basic programming techniques, including design, testing, and debugging; and 3) C programming, focusing on the major differences between C and Java. Previous or concurrent enrollment in course 13H required. Prerequisite(s): interview only; students must have completed a high school or college level programming course in Java, C, or C++. A short oral examination given to ascertain programming level. S. Brandt, C. M. O'Dowd

60G. Beginning Programming: Social Sciences and Humanities. W
An introduction to the basic techniques of computer programming. Detailed study of one programming language. Extensive practice using a computer to solve problems. Course 60G is intended for social sciences and humanities students. Students can only receive credit for either 60G or 60N. Students cannot receive credit for course 60G if taken concurrently with or subsequently to course 12A. (General Education Code(s): IN.) T. I. He Staff

60N. Beginning Programming: Natural Sciences. F
An introduction to the basic techniques of computer programming. Detailed study of one programming language. Extensive practice using a computer to solve problems. Course 60N is intended for science students. Students can only receive credit for either 60G or 60N. Students cannot receive credit for course 60N if taken concurrently with or subsequently to course 12A. (General Education Code(s): IN.) F. P. Francia

80B. Systems and Simulation.*
An introduction to systems analysis as an approach to understanding and solving complex problems. The use of simulation as an aid in this problem solving. Examples are taken from ecology, economics, physics, computer science, and other fields. Intended as a generally accessible undergraduate course in which students can develop and explore computer simulation models matched to their individual interests. (General Education Code(s): T2-Natural Sciences, Q.) R. Levinson

80C. Computer Arts and Graphics. W
Covers the design and use of various computer graphics programs for painting, drawing, computer-aided design, modeling, and animation. Students create graphical images using available software and design programs. Exposure to peripherals such as mice, laser printers, and possibly video and experimental peripherals. Use of SG1 graphics workstations. Includes discussion of computer art and its development over time, and includes slides and videos of computer graphics. Not intended for computer science or computer engineering majors, who are advised to take course 160. (General Education Code(s): T2-Natural Sciences.) W. Wilhelms, S. Lodha

80G. Introduction to Unix. W
Introduction to computing, the Internet, and the World Wide Web through the language of the UNIX operating system. Oriented to the beginner, the course presupposes no previous acquaintance with any particular sort of computer. It covers the basic concepts of text editing and formatting, writing web pages in basic HTML, and promotes a rigorous understanding of UNIX commands and shell scripts. Views communication with a computer as a matter of learning a few simple though powerful languages. (Also offered as Linguistics 80G. Students cannot receive credit for both courses.) (General Education Code(s): T2-Natural Sciences.) T. I. He Staff

80V. VRML 3-D Worlds on the Web.*
A lecture/lab course on virtual reality modeling language (VRML). Describes how to create 3-D worlds on the World Wide Web with VRML. Topics include relationship between HTML and VRML, plug-ins for viewing VRML worlds, navigating through virtual worlds, creating virtual worlds, scripting objects in virtual worlds, and applications of VRML. Introduces students to concepts in 3-D graphics, transformations, and animation. Conducted through a series of lectures, individual/group laboratory exercises, and a final project. Students must know how to use e-mail, read/post to newsgroups, and know one UNIX editor. Web knowledge is also useful. Enrollment is limited to laboratory capacity. Students with more senior class standing have priority. Enrollment limited to 80. (General Education Code(s): T2-Natural Sciences.) T. I. He Staff

94. Group Tutorial. F, W, S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. May be repeated for credit. T. I. He Staff

94F. Group Tutorial (2 credits). F, W, S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. May be repeated for credit. T. I. He Staff

99F. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. May be repeated for credit. T. I. He Staff

Upper-Division Courses

101. Algorithms and Abstract Data Types. F, W, S
Studies basic algorithms and their relationships to common abstract data types. Covers the notions of abstract data types and the distinction between an abstract data type and an implementation of that data type. The complexity analysis of common algorithms using asymptotic (big "O") notation is emphasized. Topics include sorting and searching techniques, basic graph algorithms, and algorithm design techniques. Abstract data types covered include priority queues, dictionaries, disjoint sets, heaps, balanced trees, and hashing. Familiarity with C, Java, and UNIX is assumed. Prerequisite(s): course 12B or 13H, Computer Engineering 16 or 16H, Mathematics 19B, and one course from the following: Mathematics 21, 22, 23A, 24, or Applied Mathematics and Statistics 27. Enrollment restricted to School of Engineering majors. P. Tantalo

102. Introduction to Analysis of Algorithms. F, S
Methods for the systematic construction and mathematical analysis of algorithms. Order notation, the RAM model of computation, lower bounds, and recurrence relations are covered. The algorithm design techniques include divide-and-conquer, branch and bound, and dynamic programming. Applications to combinatorial, graph, string, and geometric algorithms. Prerequisite(s): course 101. M. Warmuth, A. Van Gelder, S. Lodha, D. Hembold

104A. Fundamentals of Compiler Design I. F, W
An introduction to the basic techniques used in compiler design. Topics include compiler structure, symbol tables, regular expressions and languages, finite automata, lexical analysis, context-free languages, LL(1), recursive descent, LALR(1), and LR(1) parsing, and attribute grammars as a model of syntax-directed translation. Students use compiler building tools to construct a working compiler. Prerequisite(s): course 101 and Computer Engineering 12 and 12L. W. Mackey, D. Long
104B. Fundamentals of Compiler Design II. S
A detailed study of the structure and design of a compiler. Continues study begun in course 104A. Topics include compiler structure emphasizing the back end, type systems, run-time environments; static, stack and heap storage management, garbage collection; addressing, register allocation, code generation; basic blocks and data-flow analysis; local and global code optimization; interpretation versus compilation. Students generate machine code runnable on a real machine. Prerequisite(s): course 104A.
W. M. ackey, D. Long

105. Systems Programming. S
Covers fundamentals of systems programming including standard tools, shell programming, file I/O, files and directories, system data files and information, Unix processes, process control, synchronization, signals, event-driven programming, terminal I/O, daemons, interprocess communication, basic network programming, and basic user-interface programming. Prerequisite(s): course 101 and Computer Engineering 12 and 12L. Enrollment restricted to School of Engineering majors. E. M. iller, S. Brandt, D. Long

109. Advanced Programming. W
An introduction to object-oriented techniques of software development including data abstraction, inheritance, polymorphism, and object-oriented design. Extensive practice using a computer to solve problems, including construction of graphical user interfaces and a multi-threaded client/server applications. Prerequisite(s): course 101. I. Pohl, C. M cdowell

111. Introduction to Operating Systems, F,W,S
Fundamental principles of operating systems; process synchronization, deadlocks, memory management, resource allocation, scheduling, storage systems, and study of several operating systems. A major programming project will be required. Prerequisite(s): course 101 and Computer Engineering 110. E. M. iller, D. Long

112. Comparative Programming Languages. W,S
Covers several programming languages and compares styles, philosophy, and design principles. Principles underlying declarative, functional, and object-oriented programming styles are studied. Students write programs emphasizing each of these techniques. Prerequisite(s): course 104A. M. Abadi, D. Long, N. M. ackey, A. Van Gelder, C. M cdowell

115. Software Methodology. W,S
Emphasizes the characteristics of well-engineered software systems. Topics include requirements analysis and specification, design, programming, verification and validation, maintenance, and project management. Practical and research methods are studied. Imparts an understanding of the steps used to effectively develop computer software. Prerequisite(s): course 101. Enrollment restricted to computer science, computer engineering, and information systems management majors. Enrollment limited to 25. E. Whitehead, C. Flanagan, L. Werner

116. Software Desgn Project. S
Students in teams specify design, construct, test, and document a complete software system in a specialized application domain. Class time is spent in technical discussions and ongoing design reviews. A formal presentation and demonstration of each project is required. An organizational meeting will be held during the preceding quarter. Projects may be drawn from industry and campus research groups. Prerequisite(s): course 115 E. Whitehead, L. Werner

122. Computer Security. S
Introduction to computer security (including selected topics in network security). Access control. Security in programming languages. Basic cryptography. Security protocols. Prerequisite(s): course 111 or permission of instructor. Enrollment restricted to School of Engineering majors. Enrollment limited to 100. E. M. iller, M. Abadi

129. Data Storage Systems.*
Covers all aspects of storage systems technology from magnetic media up through system software, including principles of magnetic recording, hard drive technology and evolution, performance measurement, file systems, storage networking, disk arrays, network-attached storage, and alternative storage technologies. Prerequisite(s): course 101, 111, and Physics 5A or 6A. E. M. iller, T. M. adhyastha, S. Brandt, D. Long

130. Computational Models. F,S
Various representations for regular languages, context-free grammars, normal forms, parsing, pushdown automata, punching lemmas, Turing machines, the Church-Turing thesis. Prerequisite(s): course 101. M. Warmuth, R. Levinson, P. Kolaitis

132. Computability and Computational Complexity. W
Turing machines, general phase-structure grammars, the Chomsky hierarchy, recursive functions, diagonalization, the Halting problem, computability and unsolvability, computational complexity, time and space bounds, NP-completeness with emphasis on reductions between problems from various areas. Prerequisite(s): course 130. M. Warmuth, P. Kolaitis, D. H elmold

140. Artificial Intelligence. W
Introduction to the contemporary concepts and techniques of artificial intelligence, including any or all of: machine perception and inference, machine learning, optimization problems, computational methods and models of search, game playing and theorem proving. Emphasis may be on any formal method of perceiving, learning, reasoning, and problem solving which proves to be effective. This includes both symbolic and neural network approaches to artificial intelligence. Issues discussed include symbolic versus nonsymbolic methods, local versus global methods, hierarchical organization and control, and brain modeling versus engineering approaches. Lisp or Prolog may be introduced. Includes one major project or regular programming assignments. Prerequisite(s): course 101 and one of the following: course 130, Computer Engineering 177, or Mathematics 115. I. Pohl, R. Levinson

160. Introduction to Computer Graphics. F,S
Introduces different techniques of modeling, transformation, and rendering to obtain computer generated imagery. Topics include 2D and 3D graphical primitives, line drawing, curves and surface modeling, projections, matrix composition, hidden surface removal, and shading algorithms. Several intensive programming assignments using the C language on bit-mapped raster scan displays and a major programming project are required. Prerequisite(s): course 101 and Mathematics 21 or Applied Mathematics and Statistics 27. Concurrent enrollment in course 160L required. Enrollment limited to 160L. Enrollment limited to 160L. E. Wilhelms, A. pang, S. Lodha

160L. Introduction to Computer Graphics Laboratory (2 credits). F,S
Complements course 160, gaining additional competence with a number of important software development tools, graphics libraries, and graphical user interfaces. Included are OpenGL program, utilizing rubberbanding, picking, trackingballs, display lists, double buffering, lighting, shading, materials and textures; and FLTK program, utilizing sliders, buttons, and dialog boxes. Prerequisite(s): course 101 and Mathematics 21 or Applied Mathematics and Statistics 27. Concurrent enrollment in course 160L required. Enrollment restricted to all engineering majors. Enrollment limited to 35. J. Wilhelms, A. pang, S. Lodha

161L. Visualization and Computer Animation Laboratory (2 credits). W
Complements course 161, gaining additional competence with a number of important software development tools and techniques. Included are Visualization Toolkit (vtk) and Insight Toolkit (ITK); C, OpenGL, and FLTK programs utilizing visualization techniques of isosurfacing, transfer function, volumetric rendering, streamline visualization; video capture for facial animation and pose estimation, group and behavioral animations. Prerequisite(s): courses 160 and 160L; concurrent enrollment in course 161L required. Enrollment restricted to all engineering majors. Enrollment limited to 35. J. Wilhelms, A. Pang, S. Lodha

161L. Visualization and Computer Animation Laboratory (2 credits). W
Complements course 161, gaining additional competence with a number of important software development tools and techniques. Included are Visualization Toolkit (vtk) and Insight Toolkit (ITK); C, OpenGL, and FLTK programs utilizing visualization techniques of isosurfacing, transfer function, volumetric rendering, streamline visualization; video capture for facial animation and pose estimation, group and behavioral animations. Prerequisite(s): courses 160 and 160L; concurrent enrollment in course 161L required. Enrollment restricted to all engineering majors. Enrollment limited to 35. J. Wilhelms, A. Pang, S. Lodha

180. Database Systems I. F,W
Introduction to the concepts, approaches, tools, and methodology of database design. Covers the entity-relationship model, the relational model, relational algebra, relational calculus, commercial languages (such as SQL and QBE), functional dependencies, normal forms, and design theory. Other topics may include knowledge bases, constraint databases, and alternative database models. (Formerly offered as Database Systems I.) Prerequisite(s): course 101. W. Tan, P. Kolaitis

181. Database Systems II. S
Introduction to the architecture and implementation of database systems. Topics covered include data storage, tree and hash indexes, storage management, query evaluation and optimization, transaction management, concurrency control, recovery, and XML data management. Prerequisite(s): course 180. Enrollment limited to 50. W. Tan, N. Polyzotis

183. Hypermedia and the Web. S
An introduction to the construction of hypermedia systems and large-scale web applications. Topics covered include pre-web hypertext systems, hypertext data models, namespaces, system architecture of the web, design of large linked information spaces, design and development of database-backed web applications, web site load testing, and web collaboration technologies. Students work in teams over the term to develop a significant web application. Prerequisite(s): course 180. Enrollment limited to 40. E. Whitehead

190X. Methods of Cryptography. F
Theory and practice of encryption and decryption. Classical, cipher systems; Shannon’s information-theoretic approach. The DES standard. Finite state machines, linear and nonlinear shift registers. Public key algorithms. PGP. Authen-
194. Group Tutorial, F,W,S
A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency. The Staff

195. Senior Thesis Research, F,W,S
Students submit petition to sponsoring agency. The Staff

196. Individual Study or Research, F,W,S
Students submit petition to sponsoring agency. The Staff

197. Tutorial, F,W,S
For fourth-year students majoring in computer science. Students submit petition to sponsoring agency. The Staff

198. Tutorial (2 credits), F,W,S
For fourth-year students majoring in computer science. Students submit petition to sponsoring agency. The Staff

Graduate Courses

200. Research and Teaching in Computer Science and Engineering (3 credits), F
Basic teaching techniques for teaching assistants, including responsibilities and rights of teaching assistants, source materials, computer security, leading discussion or lab sessions, presentation techniques, maintaining class records, electronic handling of homework, and grading. The course examines research and professional training, including use of the library and online databases, technical typesetting, writing journal and conference papers, publishing in computer science and computer engineering, giving talks in seminars and conferences, and ethical issues in science and engineering. Required for all teaching assistants. Enrollment restricted to graduate students. S. Lodha

201. Analysis of Algorithms, F,W
Rigorous analysis of the time and space requirements of important algorithms, including worst case, average case, and amortized analysis. Techniques include order-notati

202. Programming Languages, F,S
Covers current issues in programming languages. Language topics include object oriented, concurrent, functional, and logic programming, and other programmable applications such as symbolic manipulators and simula

203. Computational Models and Complexity, F
Finite automata and regular expressions, universal models of computation, computability and unsolvability, relations between complexity classes, hierarchy theorems, reduc

204. Combinatorial Algorithms. *
Fundamental combinatorial algorithms, graph algo

205. Logic in Computer Science, W
The applications and uses of formal systems to computer science. Covers the syntax and semantics of propositional logic and first-order logic, normal forms, soundness and completeness theorems, Herbrand's theorem, unification and resolution, foundations of logic programming, automated theorem proving. Other topics may include deductive databases, database query languages, nonmonotonic reasoning. Enrollment restricted to graduate students. Offered in alternate academic years. A. Van Gelder, P. Kolaitis

221. Advanced Operating Systems, F
A detailed study of the issues involved in operating system design and implementation. Readings cover current research topics and systems of historical significance. Topics include (but are not restricted to) process and memory management, protection, security, synchronization, performance evaluation, file systems, distributed systems. Enrollment restricted to graduate students; undergraduates by interview only. E. M. Miller, S. Brandt, D. Long

222. Advanced Computer Security, S
Overview of research topics in computer and network security. Topics may include cryptographic operations, security properties and policies, authentication and access control, attacks on computer systems and defenses against them, security in programming languages, and network protocols for security. Enrollment restricted to graduate students or consent of instructor. E. M. Miller, M. Abadi

229. Storage Systems, S
Topics include storage devices, storage architectures, local file systems, high-performance file systems, and next-generation storage devices and architectures; covers issues of performance, reliability, scalability, robustness, and security. Prerequisite(s): course 221 or permission of instructor. E. M. Miller, S. Brandt, D. Long

232. Distributed Systems, W
Overview of research topics in distributed computer systems. Topics may include communication paradigms, process management, naming, synchronization and coordination, consistency and replication, fault tolerance, and security. Examples include distributed operating systems, distributed file and object systems, and distributed document systems. Prerequisite(s): course 221 or permission of instructor. E. M. Miller

240. Artificial Intelligence, S
Prepares students for doing research in artificial intelligence. Major topics covered are search and heuristics, knowledge representation, planning, deduction and inference, reinforcement learning, associative pattern retrieval, and adaptive search. Discussion includes current research issues in AI problem-solving methods. Individualized projects. Undergraduates may enroll in this course if they have completed course 140. Enrollment limited to 30. I. Pohl, R. Levinson

241. Knowledge Engineering, *
Introduction to the acquisition, representation, and application of knowledge in expert systems. Topics include production systems, backward and forward chaining, dependency-directed backtracking, reasoning with uncertainty, certainty factors, fuzzy systems, knowledge representation (rules, frames, and semantic nets), inference engines, and metaknowledge. Discussion includes current research issues in adaptive expert systems. Involves one major project. Undergraduates may enroll in this course if they have completed course 140. Offered in alternate academic years. R. Levinson

242. Machine Learning, F
An introduction to the design and analysis of machine learning algorithms. Covers learning models from the fields of statistical decision theory and pattern recognition, artificial intelligence, and theoretical computer science. Topics include classification learning and the Probably Approximately Correct (PAC) learning framework, non-linear regression and neural networks, density estimation.
and other kinds of unsupervised learning, reinforcement learning, learning from queries, and reductions among learning problems and relations to cryptography. Course involves one major experimental learning project or theoreti
cal paper. Enrollment restricted to graduate students. Enrollment limited to 30. D. H. auser, M. Warmuth, D. H embold
250. Information Theory and Communication. S
Physical, technological, and mathematical bases for meas-
ures of information in digital signaling and their applica-
tions. Physical and information entropies. Optimal codes.
Entropy of natural languages. Channel capacity. Optimal communication. Shannon’s theorems. Network informa-
tion theory. Introduction to quantum information theory and computation. Prerequisite(s): Computer Engineering 107 or equivalent, or permission of instructor. Enrollment restricted to graduate students. J. Yellin
Advanced course in computer graphics. Topics may vary depending on interests of students and research directions in the field. M. ain topics include in-depth study of curves and surface modeling, deformations, advanced ray tracing, and radiosity methods. Enrollment restricted to graduate students; undergraduates by interview only. Enrollment limited to 20. J. Wilhelms, A. Pang, S. Lodha
262. Computer Animation. F
An in-depth treatment of computer animation, including its origins in conventional animation, 2-D animation, in-
betweening, motion control, morphing, graphical motion editors, animation languages, motion blur, simulation of articulated body motion, real-time animation, and special-purpose animation hardware. Enrollment restricted to graduate students. Enrollment limited to 15. J. Wilhelms
272. Evolutionary Game Theory. *
Reviews static equilibrium concepts, games of incomplete information, and the traditional theory of dynamic games in discrete time. Develops recent evolutionary game mod-
els, including replicator and best reply dynamics, and ap-
plications to economics, computer science, and biology. (Also offered as Biology 274 and Economics 272.) The Staff
277. D database Systems I. F
Advanced course on principles of database systems. M. ain topics include overview of the relational data model and relational query languages, recursive queries, datalog, and fixed-point query processing and optimization; database design, dependencies, normal forms, and the chase pro-
cedure. Additional topics may include information integra-
tion, complex objects, semistructured data, and XML. (Formerly D Database Systems.) Prerequisite(s): course 180 (or equivalent) or consent of instructor. Enrollment restricted to graduate students. Enrollment limited to 20. Of ered in alternate academic years W. Tan, N. Polyzotis
278. D database Systems II. W
Advanced course in implementation techniques for data-
bases. Topics include transaction management, locking protocols, buffer- and tablespace management, and locking for index structures; query optimization, database statistics, and query processing; access methods for multidimensional data, and database recovery in centralized and distributed systems. Additional topics may include objects in databases, parallel database systems, advanced query optimization tech-
niques, and data mining. Prerequisite(s): course 277 or 181 (or equivalent) or consent of instructor. Enrollment restricted to graduate students. Enrollment limited to 20. W. Tan, N. Polyzotis
279. Software Reuse and Component-Based Software Engineering. W
D etailed study of interlocking business, organizational, and technical issues in large-scale software reuse and com-
ponent-based software engineering. Topics include archi-
tecture, design for reuse, domain engineering, model-driven development, domain-specific kits, compo-
nents, frameworks, software agents, generators, problem-
oriented languages, library design, reuse tools, patterns, and aspects. Assumes prior exposure to software engi-
neering topics. Prerequisite(s): computer engineering 276 or consent of instructor. Enrollment restricted to graduate students. Enrollment limited to 20. C. M. Dwell
280A. Seminar in Computer Science Research (2 credits). F, W, S
Weekly seminar covering topics of current research in computer science. Enrollment limited to 30. M. ay be re-
peated for credit. T he Staff
280G. Seminar on Software Engineering (2 credits). *
Weekly seminar covering topics of current research in soft-
ware engineering. Prerequisite(s): permission of instructor. Enrollment restricted to graduate students. Enrollment limited to 30. M. ay be repeated for credit. N. Whitehead, C. Flanagan, L. De Alfaro, C. M. Dwell
Weekly seminar series covering topics of current research in computer systems. Enrollment by permission of in-
structor. Enrollment limited to 30. M. ay be repeated for credit. E. Miller, S. Brandt, D. Long
290A. Topics in Algorithms and Complexity Theory: Probabilistic Algorithms and Average Case Analysis. *
Examines the use of probability theory both in the design and analysis of algorithms. Uses probability theory to an-
alyze the average performance of deterministic algorithms on randomly chosen or “typical” inputs, rather than on worst case inputs. Also a look at algorithms that use ran-
domization, such as random walk and simulated anneal-
ing techniques. Examples of specific topics include mar-
tingales, random graphs, and rapidly mixing Markov Chians. Enrollment restricted to graduate students. En-
rollment limited to 15. Offered in alternate academic years. M. ay be repeated for credit. D. H. auser
290B. Advanced Topics in Computer Graphics. F
A graduate seminar in computer graphics on topics from recently published research journal articles and conference proceedings. Topics vary from year to year depending on interests of students. Primary area of interest is likely to be scientific visualization, modeling, rendering, scattered data techniques, wavelets, and color and vision models. Students read technical papers and present class lectures. A research project is required. Enrollment limited to 15. J. Wilhelms, A. Pang, S. Lodha
290C. Advanced Topics in Machine Learning. W
In-depth study of current research topics in machine learn-
ing. Topics vary from year to year but include multi-class learning with boosting and SVM algorithms, belief nets, independent component analysis, MCMC sampling, and advanced clustering methods. Students read and present re-
search papers in addition to a research project. Prerequisite(s): course 242. M. Warmuth, D. H embold
290D. Neural Computation. *
An introduction to the design and analysis of neural net-
work algorithms. Concentrates on large artificial neural networks and their applications in pattern recognition, signal processing, and forecasting and control. Topics in-
clude Hopfield and Boltzmann machines, perceptions, multilayer feed forward nets, and multilayer recurrent net-
works. Enrollment restricted to graduate students. Offered in alternate academic years. D. H. auser, M. Warmuth
290E. Object-Oriented Programming Methodology. S
Object-oriented programming methodology is the appli-
cation of abstract-data types and polymorphism to coding solution. Topics geared to beginning thesis research in this field. Prerequisite(s): courses 201 and 203. Enrollment re-
stricted to graduate students. Enrollment limited to 20. I. Pohl
290F. Applications of Combinatorics. W
Combinatorial mathematics, including summation method-
ods working with binomial coefficients, combinatorial se-
quences (Fibonacci, Stirling, Eulerian, Harmonic, Bernoulli numbers), generating functions and their uses, Bernoulli processes, and other topics in discrete probability. Oriented toward problem solving, applications mainly to computer science, but also physics. (Formerly Topics in Combinatorial Mathematics.) Prerequisite(s): Computer Engineering 16 and Applied Mathematics and Statistics 27. Enrollment restricted to graduate students and upper-division undergraduates. Offered in alternate aca-
demic years. M. ay be repeated for credit. J. Yellin
290G. Topics in Software Engineering. W, S
Research seminar on current topics in software engineer-
ing. Topics vary from year to year depending on the cur-
rent research of the instructor(s) and interests of students. Students read technical papers from relevant journals and conference proceedings. Synthesis and understanding of materials is demonstrated by a required research project. Prerequisite(s): Computer Engineering 276 recom-
mended. Enrollment restricted to graduate students; under-
graduates may enroll with permission of instructor. Enrollment limited to 35. M. ay be repeated for credit. E. Whitehead, L. De Alfaro, C. M. Dwell, L. Werner
290H. Topics in D database Systems. W, S
Focuses on current research topics in database systems. Dif ferent offerings cover different topics depending on current research of instructor(s) and the interests of stu-
dents. Students read technical papers from journals and conference proceedings and present class lectures. A re-
search project is required. Prerequisite(s): course 180 (or equivalent) or 277 or consent of instructor. Enrollment re-
stricted to graduate students. Enrollment limited to 20. W. Tan, N. Polyzotis, P. Kolaitis
290I. Internet Technology and Policy. *
Graduate seminar that explores the transforming effects of the Internet on the physical access to information, the content of communications, the security of private infor-
mation, and the availability of investments. Computer en-
geering and computer science undergraduate students may enroll in this course if they have completed Computer Engineering 152; other graduate and advanced un-
dergraduate students may enroll with consent of the instructor. J. Yellin
290J. Advanced Topics in Computer Systems. S
Focuses on current research topics in computer systems. Topics vary from year to year depending on the current re-
search of the instructor(s) and the interests of the students. Students read technical papers from current journals and
conference proceedings, and present class lectures. A research project is required. Prerequisite(s): course 221. Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's consent. W. Tan, S. Brandt, D. Long

290X. Cryptography and Computer Security. * Research seminar on encryption and related technologies. Topics include theory of codes, random sequences and generators, public key cryptosystems, private key ciphers, key exchange protocols, quantum computing and cryptography. Major project required. Prerequisite interview with instructor. Enrollment limited to 12. J. Yellin

296. Masters Project (2 credits). F,W,S

Independent completion of a masters project under faculty supervision. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

297. Independent Study or Research. F,W,S

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

297F. Directed Readings in Machine Learning (2 credits). F,W,S

Directed readings in machine learning. Students read, present, and discuss current papers in machine learning. Specific topics include online learning, the PAC (Probably Almost Correct) learning model, pattern recognition, and practical learning algorithms. Students submit petition to sponsoring agency. The Staff


Thesis research conducted under faculty supervision. Although the course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Proposed topics include
- Artificial intelligence
- Machine learning
- Robotics
- Computer vision
- Natural language processing
- Deep learning
- Reinforcement learning
- Computer graphics
- Game theory
- Optimization
- Control theory

The Staff

Dual-Degree Engineering

Program Description
To meet the growing demand for engineers with an education that combines a solid technical background with a broad liberal arts base, the UC Santa Cruz campus has developed a dual-degree program with the College of Engineering at UC Berkeley. In this long-standing program, students spend three years at UCSC completing most of the requirements for a bachelor's degree in one of the fields in the social sciences, humanities, or arts. While attending UCSC, students also take science, mathematics, and engineering courses that are prerequisites for admission to UC Berkeley's engineering majors, and they are expected to maintain a grade point average of 3.2 or better in these engineering preparatory courses. Students apply to transfer to UC Berkeley for their fourth and fifth years of the dual-degree program. If admitted, they complete the remaining requirements for a degree in a chosen engineering specialty, and they also take any remaining courses for their UCSC major. Students complete one major from each of the following lists:

UCB Engineering Majors
- Biotechnology
- Civil and environmental engineering
- Engineering sciences

UCSC Engineering Majors
- Bioengineering
- Civil and environmental engineering
- Engineering sciences

Industrial engineering and operations research
- Manufacturing engineering
- Materials science
- Mechanical engineering
- Nuclear engineering

Recommended UCSC Majors
- American studies
- Anthropology
- Business management economics
- Community studies
- Economics
- Environmental studies
- Film and digital media
- History
- History of art and visual culture
- Legal studies
- Linguistics
- Literature
- Philosophy
- Politics
- Psychology
- Sociology
- Women's studies

Upon completion of the program, the student receives two bachelor's degrees: a B.A. in a social science, humanities, or arts field from UCSC and a B.S. in engineering from UC Berkeley. Although the UCSC major cannot be in the natural sciences, many combinations of fields are possible in the dual-degree program; examples include engineering along with economics, sociology, or philosophy. A student's curricular program is developed in consultation with an engineering advisor and is tailored to individual needs. The program is directed jointly by a committee composed of UC Santa Cruz and UC Berkeley engineering faculty. Students must enter the dual-degree program as first-quarter freshmen, beginning their course work at UCSC in the fall.

Admission
In addition to completing the courses required for UC admission, high school students who plan to follow an engineering route at UC should develop a strong background in mathematics and physics. Prospective students who wish to be considered for the dual-degree program should indicate their first choice of major on the Application for Undergraduate Admission. When the application is received by the Office of Admissions, additional information about the dual-degree program will be sent to the applicant in late January, along with a request for the applicant's specific choice of majors at UC Berkeley and UC Santa Cruz. Admission to the campus does not guarantee admission to the dual-degree program.

The admissions committee for the dual-degree program reviews each application on an individual basis. Selection is based on the applicant's essay and on strong performance in academic courses (particularly in science and math), as well as excellent test scores.

Preparation for Dual-Degree Engineering Program
Dual-degree students typically enroll in a variety of classes at UCSC due to the need to congruently fulfill their UCSC major and their required preparation for their UC Berkeley major. Following are examples of degree classes that dual-degree students may take as preparation for the engineering major while at UCSC.

Applied M mathematics and Statistics 27/L, M anual Methods for Engineers Laboratory

Electrical Engineering

Faculty and Professional Interests

Professor
Benjamin Friedlander
Digital communications, wireless communication system, array processing, adaptive signal processing

Claire X.-G. Gu
Optical fiber communications, volume holographic data storage, liquid crystal displays, nonlinear optics, optical information processing

Michael Isacson
Nano- and microfabrication technology and applications to biomedical and diagnostic devices; nanocharacterization of materials with emphasis on the development of microscopy tools and novel modes of imaging electron and light optics

Sung-Mo (Steve) Kang
Low-power, high-speed VLSI circuit design and synthesis, mixed technology, mixed signal CAD

Wen-Tai Liu
Retinal prostheses, biomimetic systems, integrated neuroelectronics, molecular electronics, CMOS and SOI transceiver design, current mode band limited signaling, micromechanical sensor, timing clock recovery and optimization, noise characterization and modeling, and computer vision/image processing

John F. Vesecky
H.F radar design and construction and observation of ocean surface winds, waves and currents with applications to coastal and deep water ocean processes project midwest

Donald Wiberg, Emeritus

Associate Professor
Joel Kubby
M icro and nanosystems for multidisciplinary applications in optics, fluidics, sensors, communications and computing

Peyman M. Lalanzar
Signal and image processing, inverse problems, statistical estimation and detection, statistical computing, and applied mathematics

Kenneth Pedrotti
Optical communications, high-speed electronics for lightweight systems, devices for all optical networking and imaging

Applied M athematics and Statistics 131, Introduction to Probability Theory
Chemistry 18/M and 1C/N, General Chemistry Laboratories
Computer Science 12A, Introduction to Programming or 60N, Beginning Programming, Basic Sciences
Earth Sciences 10, Geologic Principles
Earth Sciences 142, Soil Properties and M echanics
Electrical Engineering 70/L, Introduction to Electronic Circuits Laboratory
Engineering 50/L, Engineering Mechanics Laboratory
Mathematics 19A–B, Calculus for Science, Engineering, and Mathematics
Mathematics 23A–B, Multivariable Calculus
Mathematics 107, Advanced Engineering Mathematics
Physics 5A/L, 5B/M, and 5C/N, Introduction to Physics series; laboratories; Physics 6A/L, 6B/M, and 6C/N, Introductory Physics series; laboratories

Physics 160, Practical Electronics
**Professor**

Alexandre Brandwajn (Computer Engineering)

Computer architecture, performance modeling, queueing network models of computer systems, operating systems

Wayne Wei-Ming Dai (Computer Engineering)

Computer-aided design of VLSI circuits, layout synthesis, multiprocessor building blocks, field-programmable gate arrays

F. Joel Ferguson (Computer Engineering)

Fault diagnosis, fault analysis, logic fault modeling, digital test pattern generation, logic design, and testing for digital circuits and systems VLSI design

J. Joaquin Garcia-Luna-Aceves (Computer Engineering)

Wireless networks, Internet, multimedia information systems

Glen G. Langdon Jr., Emeritus (Computer Engineering)

Darrell E. Long (Computer Science)

Storage systems, distributed computing systems, operating systems, mobile computing, performance evaluation, fault tolerance, computer security, multimedia, and video-on-demand systems

Patrick E. Mantey (Computer Engineering)

Image systems, image processing, visualization, image and multimedia systems, digital signal processing, real-time control

R. Michael Tanner, Emeritus (Computer Science)

Allen van Gelder (Computer Science)

Logic programming, algorithms, parallel algorithms, complexity, programming languages, automated theorem proving, scientific visualization

Anuj Varma (Computer Engineering)

Computer networking, computer architecture, optical networks

**Associate Professor**

Pak K. Chan (Computer Engineering)

Placement and routing algorithms, field-programmable gate arrays, spectral-based partitioning, circuit layout computer arithmetic

Tracy Larrabee (Computer Engineering)

Test pattern simulation and generation, fault modeling, fault diagnosis, design verification, technical writing, logic simulation

**Assistant Professor**

Roberto M Anduch (Computer Engineering)

Sensor processing and image understanding with application to autonomous navigation, sensor networks, and deep-space communications

**Mission Statement**

The mission of the Electrical Engineering Department is to build and sustain a teaching and research program to provide undergraduate and graduate students with inspiration and quality education in the theory and practice of hardware- and information-processing-oriented electrical engineering, complementing the computer science and computer engineering programs; serving industry, science, and government; and bringing faculty and staff a rewarding career in teaching, research, and service.

**Summary of Objectives**

The educational objectives that the Electrical Engineering Department strives to provide for students are focused in five areas: fundamental prerequisites in theory, design, and basic science for a career based on electrical engineering; scope of application that provides theory and practical knowledge as well as specialized training in hardware- and software-oriented electrical engineering; professional approach to engineering in terms of high quality work skills in communication, teamwork, responsibility, high ethical standards, and participation in lifelong learning and the professional engineering community; encouragement and motivation based on a milieu of readily available opportunities, mentoring, and advising; and the basis for a successful transition to an engineering career, including an ability to apply research to engineering and opportunities for experience in an industry setting.

Engineering is a profession that emphasizes analysis and design, and electrical engineers apply their knowledge to an expanding array of technical, scientific, and mathematical questions. A good engineering education has three parts: a sound foundation in mathematics and science, substantial design experience to develop skills in engineering aesthetics, and a focus in the humanities and social sciences to learn how and where to apply the skills developed. Electrical engineering is a very broad discipline; the program at UC Santa Cruz is meant to complement existing campus programs, emphasizing three general areas: photonics and electronics (including analog and digital electronics), communications (including signal and image processing), and VLSI design, microtechnology, and nanotechnology.

The curriculum is designed to provide a balance of engineering science and design. For the first two years, all electrical engineering students are expected to take a basic set of lower-division mathematics, physical science, and engineering courses. After the first two years, electrical engineering students focus on topics within the discipline and specialize in one of two options: electronics and optoelectronics, including digital and analog circuits and devices, VLSI packaging and design, and electromagnetics and communications, signals, systems, and control, including optical communication, wireless communication, signal processing, networks signal processing, instrumentation, and control. Students interested in admission to the electrical engineering major should contact the Baskin School of Engineering Undergraduate Advising Office.

**Admissions Policy**

Admission to the electrical engineering major is selective. First-year applicants may receive direct admission at the time they apply to UCSC based on their high school record and test scores. Otherwise, students apply to the major based on performance in the foundation courses: M athematics 19A-19B, Applied Mathematics and Statistics 27, Physics 5A, 5B, and 5C. Please refer to the School of Engineering section of the catalog for the full admissions policy.

**Course Substitution**

Please refer to the School of Engineering section of the catalog for the policy regarding course substitution.

**Disqualification Policy**

Please refer to the Engineering section of this catalog for the School of Engineering's Major Disqualification Policy.

**Letter Grade Policy**

The Electrical Engineering Department requires letter grading for all courses applied toward the B.S. degree, with the exception of two lower-division courses, which students may elect to take Pass/No Pass. This exception does not include course 70L, which must be taken for a letter grade.

**Transfer Students**

Please refer to the School of Engineering section of the catalog for the policy regarding transfer students and admission of transfer students to the electrical engineering major.

**School of Engineering Policies**

Please refer to the School of Engineering section of the catalog for additional policies that apply to all School of Engineering programs.

**Major Requirements**

In addition to completing UCSC’s general education requirements, students must complete 15 lower-division science and engineering courses, plus associated laboratories. In the first two years, all students are required to take six courses in the major, with the remaining courses completed during their first two years at UCSC. The requirements are rigorous; students must be prepared to begin these courses early in their studies.

**Lower-Division Requirements**

Students gain a solid foundation in calculus, engineering mathematics, physics, computer science, and computer engineering during their first two years. Majors must complete the following 15 lower-division courses (including corresponding laboratories). These courses form part of the prerequisite sequence and should be completed during the first two years at UCSC. The requirements are rigorous; students must be prepared to begin these courses early in their studies.

**Electrical Engineering**

70L, Introduction to Electrical Laboratory
80T, Modern Electronic Technology and How It Works
Computer Engineering
16. Applied Discrete Mathematics or 16H, Honors
Applied Discrete Mathematics
12L, Computing Systems and Assembly Language Laboratory
80E, Engineering Ethics

Computer Science
12A, Introduction to Programming or 13H, Introduction to Programming and Data Structures (Honors)

Mathematics
19A-B, Calculus for Science, Engineering, and Mathematics
23A-B, Multivariable Calculus

Applied Mathematics and Statistics
27L, Mathematical Methods for Engineers’ Laboratory (formerly Mathematics 27)

Physics
5A/L, 5B/M, 5C/N, Introduction to Physics Laboratories
5D, Heat, Thermodynamics, and Kinetics

Ethics
Students must take one of the following courses:
Computer Engineering 80E, Engineering Ethics
Philosophy 22, Introduction to Ethical Theory
Philosophy 24, Introduction to Ethics: Contemporary Moral Issues
Philosophy 28, Environmental Ethics

Biomedical Engineering 80G/Philosophy 80G/Chemistry 80G, Bioethics in the Twenty-First Century: Science, Business, and Society

This course is required even for transfer students who have had their general education requirements waived.

Upper-Division Requirements

Thirteen upper-division courses along with associated 1- or 2-credit laboratories are required for the major. The course requirements include both depth and breadth, technical writing, and a comprehensive capstone design project.

All students are required to take the following eight upper-division courses, with associated laboratories:

Electrical Engineering
103, Signals and Systems
135/L, Electromagnetic Fields and Waves Laboratory
145/L, Properties of Materials Laboratory
151, Communications Systems
171/L, Analog Electronics Laboratory

Computer Engineering
100/L, Logic Design Laboratory
107, Mathematical Methods of Systems Analysis Stochastic
185, Technical Writing for Computer Engineers

Required Electives, in addition to completing the above required courses, electrical engineering majors must complete four elective courses chosen from the list below. At least three must be from one of the depth-sequence tracks listed. Certain graduate-level courses may also be used to fulfill an elective requirement with department approval. No course may be counted twice. See the electrical engineering web site for course descriptions:

www.reoc.ucsc.edu/academic/chtm

Electronics/Opitoelectronics Track

Electrical Engineering
130, Introduction to Optoelectronics and Photonics
136, Engineering Electromagnetics
154, Feedback Control Systems
178, Digital Electronics

Computer Engineering
121/L, Microprocessor System Design/Laboratory
172/L, Linear and Nonlinear Circuits Laboratory
173/L, High Speed Digital Design/Laboratory

Applied Mathematics and Statistics
147, Computational Methods and Applications

Communications, Signals, Systems, and Controls Track

Electrical Engineering
136, Engineering Electromagnetics
153, Digital Signal Processing
154, Feedback Control Systems

Computer Engineering
150, Introduction to Computer Networks

Applied Mathematics and Statistics
147, Computational Methods and Applications

Outcomes Assessment Options

The Electrical Engineering Department requires an outcomes assessment. All students are required to complete an exit survey and meet with a faculty member for an exit interview. The specifics of the outcomes assessment may change from year to year; for this catalog year, students must complete one of the following options:

1. maintenance of a 2.5 grade point average in all required and elective courses for the major; or
2. senior thesis submission; or
3. portfolio review.

Portfolios must include the following:

• project report(s);
• a one- or two-page overview of your contribution to the project(s);
• a two-page essay concerning the relationship of engineering to society (specific topics will be provided by the Electrical Engineering Department).

The portfolios must be submitted electronically at least seven days before the end of the instruction in the quarter of graduation. Portfolios will not be returned.

Electrical Engineering Major Planners

The following are two sample academic plans for students to complete during their first two years as preparation for the electrical engineering major.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td>Ams 27/L</td>
</tr>
<tr>
<td></td>
<td>(fsh) Phys 5A/L</td>
<td>Phys 5B/M</td>
<td>EE 80T</td>
</tr>
<tr>
<td>2nd</td>
<td>Phys 10D</td>
<td>Math 23A</td>
<td>Math 23B</td>
</tr>
<tr>
<td></td>
<td>EE 10/L</td>
<td>EE 173/L</td>
<td></td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Ams 3</td>
<td>Math 19A</td>
<td>Math 19B</td>
</tr>
<tr>
<td></td>
<td>(soph)</td>
<td>Math 12/L</td>
<td>Ams 27/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EE 80T</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Phys 5B/L</td>
<td>Phys 5B/M</td>
<td>Phys 5C/N</td>
</tr>
<tr>
<td></td>
<td>(soph)</td>
<td>CE 16/L</td>
<td>Math 23A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Math 130/L</td>
<td>Cmps 80E</td>
</tr>
</tbody>
</table>

Additional information about this program can be found on the department's web site at http://www.ee.ucsc.edu/programs/undergraduate/

Graduate Programs

The Department of Electrical Engineering (EE) at the University of California, Santa Cruz (UCSC) offers M.S. and Ph.D. degree programs and conducts research in:

• Photonics and Electronics focusing on VLSI, electronic and opto-electronic materials, devices, circuits, and systems for information transmission, storage, processing, and display, especially for optical fiber communications and lower power, high performance systems;
• Signal Processing and Communications, including wireless and optical communications coding, digital signal processing, image and video processing;
• Remote Sensing including wave propagation and scattering, radar, oceanography, and microwave remote sensing;
• Nanotechnology, including applications to bio-medicine, integrated optics for biomedical imaging, opto- thermo-electric energy conversion, near-field scanning, optical microscopy, and nano-magneto-optics.

EE enjoys a close relationship with the Departments of Applied Mathematics and Statistics, Computer Science, Computer Engineering, Biomolecular Engineering, Chemistry, Physics, Astronomy, and Molecular, Cell and Developmental Biology faculty. The Electrical Engineering faculty are affiliated with several federally funded and nationally recognized centers such as the Center for Biomimetic Microelectronic Systems, the Center for Adaptive Optics, and the Center for Biomolecular Science and Engineering. The department also has ties to nearby industry, employing electrical engineering professionals as visiting and adjunct faculty and arranging for students to gain practical research experience through work in industrial labs. Indeed, the department strongly encourages our students of all nationalities to seek practical training as part of their graduate education.

Students begin the program with the completion of courses in a core area of interest and then proceed to do
research in their area of specialization. The M.S. degree can be completed in two years. M.S. students must complete a master's thesis. A Ph.D. degree is usually completed in four to six years. Ph.D. students are required to take a preliminary exam within their first two years of study. After completing the course requirements, students must pass an oral qualifying exam and write a dissertation. Part-time study is possible for students working in industry while attending school.

Requirements for the Master's Degree

Course Requirements
Each student is required to take 45 units which must consist of:
- At least 15 units in one of the four core areas of emphasis defined above.
- At least 25 of the total 45 units must be satisfied with EE graduate courses.
- At most 10 units of independent study (EE 297, EE 299) will be counted toward the EE course requirements.

Total units required for the M.S. degree = 45

Note that each graduate course satisfying the above requirements typically covers 5 units.

Thesis
Completion of a Master's thesis is required for the Master's degree. To fulfill this requirement, the student submits a written proposal to a faculty member, usually the third academic quarter. By accepting the proposal, the faculty member becomes the thesis adviser. In consultation with the adviser, the student forms a Master's Thesis Committee with at least two additional faculty members, each of whom is provided a copy of the proposal. Upon completion of the thesis, the student presents an expository talk on the thesis research, and the final thesis must be accepted by the review committee before the award of the Master of Science degree. M.S. students admitted to continue to the Ph.D. program must pass a preliminary exam covering fundamental undergraduate course work (see below).

Requirements for the Ph.D. Degree

Course Requirements
Each student is required to take 50 units which must consist of:
- At least 20 units in one of the four core areas of emphasis defined above.
- At least 30 of the total 50 units must be satisfied with EE graduate courses.
- At most 10 units of independent study (EE 297, EE 299) will be counted toward EE course requirements.

Total units required for the Ph.D. degree = 50

* For students already holding an M.S.E.E. or equivalent degree, at most 20 units of transfer credit may be granted for equivalent course work performed at the student's M.S. granting institution. Credit transfer is subject to approval by the adviser and the graduate committee.

Preliminary Examination
At the end of the first year, i.e., no later than the fall quarter in the following year after their entry, students admitted to the Ph.D. program must take a written exam covering basic knowledge in electrical engineering. This exam will cover material from the following technical areas:
- devices and circuits at the level of courses 171, 178, and 145;
- electrodynamics at the level of courses 135 and 136;
- systems and signals at the level of courses 103 and 153;
- optics and optoelectronics at the level of course 130;
- applied mathematics and statistics at the level of Computer Engineering 107 and Applied Mathematics and Statistics 27.

The student will choose three areas from the above list in which to be examined. If the student does not pass the preliminary examination, the electrical engineering graduate committee may allow the student to repeat the preliminary examination once. If the student is to leave the Ph.D. program, and the student wishes to obtain an M.S. degree prior to departure, all requirements for the M.S. degree listed above (including an M.S. thesis) must still be satisfied.

After the student passes the preliminary examination, the student begins work on a thesis prospectus in preparation for the qualifying examination. During this period, the student finds an advisor willing to supervise the student's thesis research; works with the advisor to prepare for the qualifying examination; and attends a dissertation committee, consisting of the student's research advisor (chair of the committee) and three or four appropriate faculty members in Electrical Engineering and other relevant departments. The committee must consist of at least two electrical engineering faculty members in addition to the student's supervisor.

Qualifying Examination
This oral examination is a defense of the student's thesis prospectus and a test of the student's knowledge in advanced technical areas of relevance to the dissertation topic. This oral examination consists of a seminar-style talk before the examining committee, where the student will describe the thesis prospectus, followed by questions from the committee on the substance of the talk or the areas of presumed expertise of the student. The exam, taken typically in the third year of Ph.D. study, is administered by a Ph.D. qualifying exam committee, consisting of at least four examiners. The composition of the committee is proposed by the department (in consultation with the student and his/her advisor) to the dean of graduate studies at least one month before the date of the exam. The composition of the committee must be approved by the dean of graduate studies, whereupon the student and the committee are notified.

If the student does not pass the qualifying exam, the student may be asked to complete additional course work, or other research-related work, before retaking the exam. The student may be allowed to retake the qualifying exam once, and the composition of the examining committee will remain the same for the second try. Students who fail the qualifying exam twice may be dismissed from the Ph.D. program.

Ph.D. students who have not advanced to candidacy by the end of the fourth year may be recommended for academic probation.

Dissertation and Advancement to Ph.D. Degree Candidacy
Advancement to candidacy requires that the student
(A) pass the preliminary exam; and
(B) complete all course requirements prior to taking the qualifying exam;
(C) clear all Incompletes from the student's record;
(D) pass the qualifying exam; and
(E) have an appointed Ph.D. dissertation reading committee.

After advancement to candidacy, work on the thesis research progresses until the dissertation is completed. The Ph.D. dissertation must show the results of in-depth research, be an original contribution of significant knowledge to the student's field of study, and include material worthy of publication. The student is strongly advised to submit research work for publication in advance of completing the thesis so that the latter requirement is clearly satisfied. The Ph.D. thesis results are presented in both oral and written forms, the oral form being a dissertation defense (see below) and the written form being the Ph.D. dissertation. The student must submit his or her written Ph.D. dissertation to the dissertation reading committee at least one month before the defense.

Dissertation Defense
Each Ph.D. candidate submits the completed dissertation to a Ph.D. thesis reading committee at least one month prior to the dissertation defense. The appointment of the dissertation reading committee is made immediately after the qualifying exam and is necessary for advancing to candidacy. The candidate presents his or her research results in a public seminar sponsored by the dissertation supervisor. The seminar is followed by a defense of the dissertation to the reading committee, who will then decide whether the dissertation is acceptable or requires revision. Successful completion of the dissertation fulfills the final academic requirement for the Ph.D. degree.

Transfer Credit
For students already holding an M.S.E.E. or equivalent degree, at most 20 credits of transfer credit may be granted for equivalent course work performed at the student's M.S. granting institution. Credit transfer is subject to approval by the adviser and the electrical engineering graduate committee.

Students not already holding an M.S.E.E. degree, who are studying for the Ph.D. degree, may apply to be granted an M.S.E.E. degree when they have fulfilled all the M.S.E.E. degree requirements (including an M.S.E.E. thesis).

Review of Progress
Each year, the faculty reviews the progress of every student. Students not making adequate progress toward completion of degree requirements (see the Graduate Student Handbook for policy on satisfactory academic progress) are subject to dismissal from the program. Students with academic deficiencies may be required to take additional courses. Full-time students with no academic deficiencies are normally expected to complete the degree course requirements at the rate of at least two courses per quarter. Full-time students must complete all course requirements within two years for the M.S. and three years for the Ph.D.

Students receiving two or more grades of U (unsatisfactory) or below B in the School of Engineering courses are not making adequate progress and will be placed on academic probation for the following three quarters of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Part-time enrollment is counted as a half quarter of enrollment. If an electrical engineering graduate student fails a School of Engineering course while on probation, the Electrical Engineering Department may request the graduate dean to dismiss that student from the graduate pro-
gram. If after being removed from probation, the student again fails a School of Engineering course, he or she will return immediately to academic probation. Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their adviser and the graduate director immediately. Students may appeal their dismissal to the graduate committee.

M aterials Fee

Please see the action on fees under School of Engineering heading.

Lower-Division Courses

70. Introduction to Electronic Circuits, F,W
Introduction to the physical basis and mathematical models of electrical components and circuits. Topics include circuit theorems, constant and sinusoidal inputs, natural and forced response of linear circuits. Introduction to circuit/network design, maximum power transfer, analog filters, and system compensation. Topics in elementary electronics: devices, linear models, amplifiers, feedback. Nonlinear elements and devices also introduced. Prerequisite(s): Physics SC/N or 6C/N, and Mathematics 24 or Applied Mathematics and Statistics 27. Students must enroll concurrently in course 70L. H. Schmidt, P. M antey, K. Pedrotti, A. Shakouri, W. Liu

70L. Introduction to Electronic Circuits Laboratory (1 credit), F,W
Laboratory sequence illustrating topics covered in course 70. One two-hour laboratory session per week. Students are billed for a materials fee. Prerequisite(s): Physics SC/N or 6C/N, and Mathematics 24 or Applied Mathematics and Statistics 27. Students must enroll concurrently in course 70L. H. Schmidt, P. M antey, K. Pedrotti, A. Shakouri, W. Liu

80T. Modern Electronic Technology and How It Works, W
Basic knowledge of electricity and “how things work,” how technology evolves, its impact on society and history, and basic technical literacy for the non-specialist. Broad overview of professional aspects of engineering and introduction and overview of basic systems and components. Topics include electrical power, radio, television, radar, computers, robots, telecommunications, and the Internet. (General Education Code(s): T-2-Natural Sciences.) K. Pedrotti

94. Group Tutorial, F,W,S
A means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. M ay be repeated for credit. T he Staff

94F. Group Tutorial (2 credits), F,W,S
A means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. M ay be repeated for credit. T he Staff

99F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. M ay be repeated for credit. T he Staff

Upper-Division Courses

103. Signals and Systems, F,S
The course covers the following topics: characterization and analysis of continuous-time signals and linear systems, time domain analysis using convolution, frequency domain analysis using the Fourier series and the Fourier transform, the Laplace transform, transfer functions and block diagrams, continuous-time filters, sampling of continuous time signals, examples of applications to communications and control systems. Prerequisite(s): course 70. H. Sadagopad, B. Friedlander

123A. Engineering Design Project I (3 credits), F,W
First of a two-course sequence that is culmination of the engineering program. Students apply knowledge and skills gained in elective track to complete a major design project. Students complete research, specification, planning, and procurement for a substantial project. Includes technical discussions, design reviews, and formal presentations; engineering design cycle, engineering teams, and professional practices. Formal technical specification of the approved project is presented to faculty. Prerequisite(s): course 171 or computer engineering 121; previous or concurrent enrollment in computer engineering 185; must have passed core exam if computer engineering major; permission of department and instructor. Students are billed a materials fee. (Also offered as Computer Engineering 123A. Students cannot receive credit for both courses.) T he Staff

123B. Engineering Design Project II, W,S
Second of two-course sequence in engineering system design. Students fully implement and test system designed and specified in course 123A. Formal written report, oral presentation, and demonstration of successful project to panel of engineering faculty required. Students are billed a materials fee. (Also offered as Computer Engineering 123B. Students cannot receive credit for both courses.) Prerequisite(s): courses 123A and Computer Engineering 185. Enrollment limited to 35. T he Staff

127. Interdisciplinary System Design Project I (3 credits), *
Students, faculty, and outside participants work in a team environment to design a real-world system such as a spacecraft or global network. Course provides fundamental, introductory material that is used in course 128 to produce the final design project. Prerequisite(s): course 171 or Computer Engineering 121 and Computer Engineering 185; enrollment restricted to senior School of Engineering or Physical and Biological Sciences majors and permission of the department chair or his/her designee. Enrollment limited to 30. J. Veexy

128. Interdisciplinary System Design II, *
Students, faculty, staff, and off-campus partners work together in a team environment to design a real-world system, e.g., spacecraft or global network. Using course 127 as a basis, a design concept is carried through successive improvements to produce a final design presentation. Prerequisite(s): courses 127 and 171 or Computer Engineering 121, and Computer Engineering 185; enrollment restricted to senior School of Engineering or Physical and Biological Sciences majors and permission of the department chair or his/her designee. Enrollment limited to 30. J. Veexy

130. Introduction to Optoelectronics and Photonics, S
Introduction to optics, photonics, and optoelectronics: fiber optic devices; and communication systems. Topics include ray optics, electromagnetic optics, resonator optics, interaction between photons and atoms, dielectric waveguides and fibers, semiconductor light sources and detectors, modulators, amplifiers, switches, and optical fiber communication systems. Prerequisite(s): Physics 5B and SC, or 6B and 6C; concurrent enrollment in course 130L. Enrollment limited to 30. C. Gu

130L. Introduction to Optoelectronics Laboratory (1 credit). S
Includes a series of projects to provide hands-on experience needed for basic concepts and laboratory techniques of optical fiber technology. Students are billed for a materials fee. Prerequisite(s): Physics 5L-M-N, or 6L-M-N; concurrent enrollment in course 130. Enrollment limited to 30. C. Gu

135. Electromagnetic Fields and Waves, F
Vector analysis. Electrostatic fields. Magnetic fields. Time-varying fields and Maxwell’s equations. Plane waves. Students must concurrently enroll in course 135L. Prerequisite(s): course 70L, Mathematics 23B or 26 or Physics 14, and Applied Mathematics and Statistics 27. Students must concurrently enroll in course 135L. M. Isaacson

135L. Electromagnetic Fields and Waves Laboratory (1 credit), F
Laboratory sequence illustrating topics in course 135. One two-hour laboratory session per week. Students must concurrently enroll in course 135. Students are billed for a materials fee. Prerequisite(s): course 70L; Mathematics 23B or 26 or Physics 14; and Applied Mathematics and Statistics 27. Students must concurrently enroll in course 135. M. Isaacson

136. Engineering Electromagnetics, *
Course will cover electromagnetic wave propagation, transmission lines, waveguides, and antennas. Prerequisite(s): course 135 and 135L. Enrollment restriction to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor. M ay be repeated for credit. T he Staff

145. Properties of Materials, F
The fundamental electrical, optical, and magnetic properties of materials, with emphasis on semiconductors: chemical bonds, crystal structures, energy bands, Electrical and thermal conduction. Optical and magnetic properties. Prerequisite(s): Physics 5A/L, 5B/M, and 5C/N or 6A/L, 6B/M, and 6C/N. Students must also concurrently enroll in course 145L. H. Schmidt, A. Shakouri

145L. Properties of Materials Laboratory (1 credit). F
Laboratory sequence illustrating topics covered in course 145. One two-hour laboratory per week. Students are billed for a materials fee. Prerequisite(s): Physics 5A/L, 5B/M, and 5C/N or 6A/L, 6B/M, and 6C/N. Students must also concurrently enroll in course 145. H. Schmidt, A. Shakouri

151. Communications Systems, S
An introduction to communication systems. Analysis and design of communication systems based on radio, transmission lines, and fiber optics. Topics include fundamentals of analog and digital signal transmission in the context of baseband communications, including concepts such as modulation and demodulation techniques, multiplexing and multiple access, channel loss, distortion, bandwidth, signal-to-noise ratios and error control. Digital communication concepts include an introduction to sampling and quantization, transmission coding and error control. Students are billed for a materials fee. Prerequisite(s):
courses 103, 70/L, and Computer Engineering 107 or probability theory and random variables background. Enrollment restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor. B. Friedlander, P. Mantey

153. Digital Signal Processing, W
Analysis and design of discrete-time signals and systems. Discrete-time processing of continuous signals, the sampling theorem, difference equations, 2-transforms, discrete-time Fourier transforms, the fast Fourier transform (FFT). Frequency response of discrete-time Fourier transforms, the fast Fourier transform (FFT). Frequency response of discrete-time systems. Filter design: time- and frequency-domain design techniques for recursive (IIR) and non-recursive (FIR) filters. Filter realizations, flowgraph structures. Applications. Students are billed a materials fee. (Also offered as Computer Engineering 153. Students cannot receive credit for both courses.) Prerequisite(s): course 103. Enrollment restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor. P. M. I Ianfar

154. Feedback Control Systems, W
Analysis and design of continuous linear feedback control systems. Essential principles and advantages of feedback. Design by root locus, frequency response, and state space methods and comparisons of these techniques. Applications. Prerequisite(s): course 103. Enrollment restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor. Enrollment limited to 30. P. M. I Ianfar, P. M. A ntey

171. Analog Electronics, W,S
Introduction to (semiconductor) electronic devices. Conduction of electric currents in semiconductors, the semiconductor p-n junction, the transistor. Analysis and synthesis of linear and nonlinear electronic circuits containing diodes and transistors. Biasing, small signal models, frequency response, and feedback. Operational amplifiers and integrated circuits. Prerequisite(s): course 70/L; previous or concurrent enrollment in course 171L required. K. Pedrotti, A. Shakouri, W. Liu

171L. Analog Electronics Laboratory (1 credit), W,S
Laboratory sequence illustrating topics covered in course 171. One two-hour laboratory session per week. Students are billed a materials fee. Prerequisite(s): 70/L; previous or concurrent enrollment in course 171 required. K. Pedrotti, A. Shakouri, W. Liu

178. Device Electronics, W
This course reviews the fundamental principles, device materials, and design and introduces the operation of several semiconductor devices. Topics include the motion of charge carriers in solids, equilibrium statistics, the electronic structure of solids, doping, the p-n junction, the transistor, the Schottky diode, the field-effect transistor, the light-emitting diode, and the photodiode. Students are billed for a materials fee. Prerequisite(s): courses 145/L and 171L. Enrollment restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor. M. May be repeated for credit. C. Gu, K. Pedrotti

193. Field Theory, F,W,S
Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the electrical engineering program and a willing sponsor of the field site and using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. M. May not normally be repeated for credit. The Staff

193F. Field Study (2 credits), F,W,S
Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the electrical engineering program and a willing sponsor at the field site and using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. M. May not normally be repeated for credit. The Staff

195. Senior Thesis Research, F,W,S
Individual directed study for upper-division undergraduate students. Submits thesis to sponsoring agency. The Staff

195F. Senior Thesis Research (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. Students submit petition to sponsoring agency. The Staff

198. Individual Study or Research, F,W,S
Provides for department-sponsored individual study program off campus, for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency. The Staff

198F. Independent Field Study (2 credits), F,W,S
Provides for department-sponsored individual study program off campus for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency. The Staff

199. Tutorial, F,W,S
Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S
Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency. The Staff

Graduate Courses

200. Research and Teaching in Electrical Engineering (3 credits)*
Basic teaching techniques for TAs: responsibilities and rights, resource materials, computer security, leading discussion or lab sessions, presentations techniques, maintaining class records, electronic handling of homework, and grading. Examines research and professional training: use of library and online databases, technical typesetting, writing journal and conference papers, publishing, giving talks, and ethical issues. Enrollment restricted to graduate students. C. Gu

211. Introduction to Nanotechnology, F
Introduction to underlying principles of the emerging field of nanotechnology. Intended for multidisciplinary audience with a variety of backgrounds. Introduces scientific principles and laws relevant on the nanoscale. Discusses applications in engineering, physics, chemistry, and biology. Enrollment restricted to graduate students. Enrollment limited to 20. H. Schmidt

221. Advanced Analog Integrated Circuits, F
Analog integrated circuit design with emphasis on fundamentals of designing linear circuits using CMOS. Covers MOS devices and device modeling, current mirrors, op-amp design, op-amp compensation, comparators, multipliers, voltage references, sample-and-hold circuits, and noise. May not normally be repeated for credit. T. Ma

230. Optical Fiber Communication.*
Components and system design of optical fiber communication. Topics include step-index fibers, graded-index fibers, fiber modes, single-mode fibers, multimode fibers, dispersion, loss mechanics, fiber fabrication, light-emission processes in semiconductors, light-emitting diodes, laser diodes, modulator response, source-fiber coupling, photodetectors, receivers, receiver noise and sensitivity, system design, power budget and crosstalk, fiber- optic networks (FDDI, SONET, etc), wavelength division multiplexing (WDM). M. May be repeated for credit. C. Gu

231. Optical Electronics.*
Introduction to phenomena, devices, and applications of optoelectronics. May be repeated for credit. H. Schmidt, C. Gu, A. Shakouri

232. Quantum Electronics, W
Covers basic theory of interaction of electromagnetic radiation with resonant atomic transitions; density matrix treatment; Rabi oscillation, laser mode-locking, Q-switching; parametric oscillation, stimulated Brillouin and Raman scattering, coherent radiation; and noise in photodetectors and lasers. Prerequisite(s): course 145/L. M. May be repeated for credit. H. Schmidt, C. Gu, A. Shakouri

233. Fiber Optics and Integrated Optics, F
Concepts and analysis of optical wave propagation in optical fibers and waveguides. Topics include geometrical optics description and electromagnetic theory of slab waveguides; modes, dispersion, and birefringence in optical fibers; mode coupling and gratings in fibers; wave- length-division multiplexing; non-linear optics in fibers and solitons; semiconductor optical amplifiers and Er doped fiber amplifiers. Prerequisite(s): courses 135 and 145. C. Gu

234. Liquid Crystal Displays.*
Introduction to principle of operation, components and systems of liquid crystal displays (LCDs). Topics include basic LCD components, properties of liquid crystals, polarization of optical waves, optical wave propagation in anisotropic media, Jones matrix method, various display systems, active matrix addressing, and color LCDs. Prerequisite(s): courses 135 and 136. Enrollment restricted to seniors and graduate students. C. Gu

235. Optical Information Storage and Processing.*
Introduction to applications of optical technologies in data storage and information processing. Topics include basic principles of Fourier optics, electro-optic, acousto-optic, and magneto-optic effects and devices; planar and
250. Digital Signal Processing, W
Covers sampling continuous time signals, sample rate conversion, the Z Transform, frequency domain characterization of filters, filter structures, finite precision effects, FIR and IIR filter design techniques, the Discrete Fourier Transform, the Fast Fourier Transform and its relatives, multirate processing, applications to communications systems, speech processing, and radar systems. Prerequisite(s): course 153. H. Sadadjour, B. Friedlander

251. Principles of Digital Communications, W
A core course on digital communications theory. Provides an introduction to digital communication, including source coding, characterization of communication signals and systems, modulation and demodulation for the additive Gaussian channel, digital signaling, and over bandwidth constrained linear filter channels and over fading multipath channels. Prerequisite(s): course 151 and 153 (or Computer Engineering 153) and Computer Engineering 107. B. Friedlander

252. Wireless Mobile Communications, S
Wireless cellular, digital mobile, and personal communications systems (PCS); radio propagation, digital modulation, and error control; access methods spread spectrum, FDM and TDM; antenna diversity, multi-input multi-output systems. Prerequisite(s): course 251. B. Friedlander

262. Statistical Signal Processing I, F
Covers fundamental approaches to designing optimal estimators and detectors of deterministic and random parameters and processes in noise, and includes analysis of their performance. Binary hypothesis testing: the Neyman-Pearson Theorem, Receiver operating characteristics. Deterministic versus random signals. Detection with unknown parameters. Optimal estimation of the unknown parameters: least square, maximum likelihood, Bayesian estimation. Will review the fundamental mathematical and statistical techniques employed. Many applications of the techniques are presented throughout the course. Note: While a review of probability and statistics is provided, this is not a basic course on this material. Prerequisite(s): course 103 and Computer Engineering 107, or permission of instructor. P. Milanfar

263. Advanced Topics in Coding Theory, *
Covers convolutional codes and its principles, maximum likelihood decoding and Viterbi decoding, performance evaluation of convolutional codes, trellis coded modulation (TCM), rotationally invariant convolutional codes, turbo codes, turbo decoding principles, performance evaluation of turbo codes, interleaver design for turbo codes, turbo codes, turbo coded modulation, performance analysis, fault tolerance, computer security, multimedia, and video-on-demand systems. Prerequisite(s): Computer Engineering 251. Enrollment restricted to electrical engineering, computer engineering, and computer science graduate students. Enrollment limited to 10. H. Sadadjour

264. Image Processing and Reconstruction, S
Fundamental concepts in digital image processing and reconstruction. Continuous and discrete images, image acquisition, sampling. Linear transformations of images, convolution and superposition. Image enhancement and restoration, filtering and spectral filtering. Temporal image processing: change detection, image registration, motion estimation. Image reconstruction from incomplete data. Applications. Students that have completed Computer Engineering 261 may not take this course for credit. Prerequisite(s): course 153 or permission of instructor. P. Milanfar

265. Introduction to Inverse Problems (3 credits), *
Fundamental approaches and techniques in solving inverse problems in engineering and applied sciences, particularly in imaging. Initial emphasis on fundamental mathematical, numerical, and statistical formulations and known solution methods. Sampling of applications presented from diverse set of areas (astronomical, medical and optical imaging, and geophysical exploration). Enrollment restricted to graduate students. P. Milanfar

297. Independent Study or Research, F,W,S
Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Tha Staff

299. Thesis Research, F,W,S
Thesis research conducted under faculty supervision. Students submit petition to sponsoring agency. Tha Staff

Information Systems Management

Faculty and Professional Interests

Professor

RamaKrishna Anella
Information technology and systems, management of technology, new product introduction and development, enterprise and knowledge management, supply chain management and e-business, financial engineering

Darrell E. Long
Storage systems, distributed computing systems, operating systems, mobile computing, performance evaluation, fault tolerance, computer security, multimedia, and video-on-demand systems

Charles E. McDowell
Programming languages, parallel computing, operating systems compilers

Ira Pohl
Artificial intelligence, programming languages, heuristic methods, educational and social issues, combinatorial algorithms

Associate Professor

Robert A. Levinson
Artificial intelligence, machine learning, heuristic search, associative pattern retrieval, hierarchical reinforcement learning, semantic networks

Assistant Professor

John Musacchio
Control, analysis, and design of communications networks, applications of game theory in networking, wireless ad hoc networks and management of technology

Kevin Ross
Network modeling and management; scheduling; information systems and technology; queueing theory

Lecturer

Jack D. Callon, Emeritus
Linda Werner
Software engineering, testing, usability engineering, educational and social issues

Professor

Yin-Wong Cheung (Economics)
Econometrics, applied econometrics, exchange rate dynamics, financial price behavior, aggregate output dynamics

Daniel Friedman (Economics)
Microeconomics, experimental economics, evolution and learning, behavioral economics, financial markets

Patrick E. Mantey (Computer Engineering)
Image systems, image processing, visualization, image and multimedia systems, digital signal processing, real-time control

Nirvikar Singh (Economics)
Industrial organization, political economy, economic development, technology and innovation, South Asian immigrants in the U.S.

Joel Yellin (Natural Sciences, Environmental Science)
Classical and quantum lattice dynamics, nonlinear waves, classical and quantum information theory, Engineering economics, and policy issues related to the Internet

Program Description

Information systems management (ISM) is a multidisciplinary major that focuses on the fusion of information systems, technology, and business management. It is a rigorous, challenging major for those students wanting to pursue careers in information systems management and the management of technology. To accomplish these objectives, students must learn the mathematics, science, and technical fundamentals of computer science and engineering as well as understand the environment in which information technology (IT) solutions will be applied through economics, business, and management of technology courses.
In order to graduate with a B.S. in information systems management, students normally complete 19 required courses (with three laboratories, totaling 98 quarter credits) plus four elective courses (20 quarter credits) for the information systems management major program. Students may choose, through a set of electives, to focus in one of the three areas of information systems management: information systems management (ISM), management of technology (MOT), or a combination of both. To plan for completion of these course requirements within the normative time, students should consult with an advisor as early as possible.

Honors students and dual-degree engineering students are likely to find the rigorous management and leadership elements of the new program of significant interest. Industrial interactions and projects are key features of this major.

Information Systems Management Policies

Admissions Policy

Admission to majors in the School of Engineering is selective. First-year applicants may receive direct admission at the time they apply to UCSC based on their high school record and test scores. Admission to the major after a student has entered UCSC is based on performance in the foundation courses: Computer Science 12A (or 13H), Computer Engineering 16 or 16H, Mathematics 19A-B (or Economics 11A and 11B), and Information Systems Management 50 (or Economics 1 and 2). Please refer to the School of Engineering section of the catalog for the full admissions policy.

Disqualification and Satisfactory Progress in the Major

Please refer to the Engineering section of this catalog for the School of Engineering’s Major Disqualification Policy.

Letter Grade Policy

Information Systems Management requires letter grading for all courses applied toward the B.S. in information systems management, with the exception of two lower-division courses which students may elect to take Pass/No Pass (not to include course 50 or 58). This policy includes courses required for the information systems management major but sponsored by other departments.

Transfer Students

Articulation agreements with other California institutions are in place for some courses required for the ISM major. It is important for students to inquire whether specific courses meet the requirements of this major. Articulation information is available on ASSIST at http://www.assist.org. Courses taken at other institutions which emphasize applications of programming languages often do not count toward the information systems management major at UCSC. Please refer to the School of Engineering section of the catalog for the policy regarding transfer students.

School of Engineering Policies

Please refer to the School of Engineering section of the catalog for additional policies that apply to all School of Engineering programs. These policies include admission to the major, limits on the number of times courses can be attempted, and the need for UCSC students to obtain preapproval before taking courses elsewhere.

Preparation for the Major

The information systems management major is intended for students with an interest in both computer technology and business. It is recommended that students intending to declare this major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Completion of business-oriented computer literacy and basic programming courses is of benefit to students entering this major. Completion of any economics and/or business-related courses in high school is also beneficial, but the faculty realizes that these may not be available at many high schools. Completion of comparable college courses at other institutions serves to strengthen the preparation of a student for the information systems management major.

Information Systems Management Major Requirements

In addition to completing UCSC’s general education requirements, students must complete 19 required courses (with one laboratory, totaling 98 quarter credits) plus four elective courses (20 quarter credits) for the information systems management major program. To plan for completion of these course requirements within the normative time, students should consult with a School of Engineering advisor as early as possible. These 23 courses include the following:

Required Courses

(19 courses plus one laboratory)

Mathematics

(5 required 5-credit courses)


Economics

(Five required 5-credit courses)

1, Introduction to Microeconomics: Resource Allocation and Market Structure

2, Introduction to Macroeconomics: Aggregate Economic Activity

10A, Economics of Accounting

100A, Intermediate Microeconomics

113, Introduction to Econometrics or Applied Mathematics and Statistics 133, Statistical Analysis

Computer Engineering

(Three 5-credit courses and a 1-credit lab)

12L, Computer Systems and Assembly Language Laboratory

16, Applied Discrete Mathematics

16H, Honors Applied Discrete Mathematics

150, Introduction to Computer Networks

Computer Science

(Five 5-credit courses)

12A, Introduction to Programming

12B, Introduction to Data Structures

101, Abstract Data Types

115, Software Methodology

180, Database Systems

Information Systems Management

(Three of the following 5-credit courses)

50, Business Information Systems

58, Systems Analysis and Design

105, Management of Technology I

125, Management of Technology II

158, Business Strategy and Information Systems

For students who wish to specialize in information systems management, the following courses are recommended:

50, Business Information Systems

58, Systems Analysis and Design

158, Business Strategy and Information Systems

It is also recommended that these courses be taken 105 and 125 as electives.

For students who wish to specialize in the management of technology, the following courses are recommended:

50, Business Information Systems

105, Management of Technology I

125, Management of Technology II

It is also recommended that these courses be taken 158 as an elective.

For students interested in both information systems management and the management of technology, the following courses are recommended:

50, Business Information Systems

58, Systems Analysis and Design

105, Management of Technology I

158, Business Strategy and Information Systems

It is also recommended that these courses be taken 125 and 158 as electives.

Election Courses (four courses)

(two 5-credit School of Engineering courses)

Students select two upper-division School of Engineering electives on the basis of their particular interests. These may be any 5-credit upper-division School of Engineering courses, with the following limitations:

1. either Computer Engineering 153 or Electrical Engineering 153, but not both;
2. either Engineering 131 or Computer Engineering 107, but not both;
3. Independent and field-study courses (193, 195, 198, 199) require prior approval and support from the department in order to be used as an elective.

(two 5-credit Economics courses from the following list)

100B, Intermediate Microeconomics

101, Managerial Economics

115, Introduction to Management Sciences

133, Security Markets and Financial Institutions

135, Corporate Finance

136, Business Strategy

138, The Economics and Management of Technology and Innovation

139A, The Economics of Electronic Commerce

139B, E-Commerce Strategy

161, Project Management

164, Economics and the Telecommunications Industry

Optional Elective

An individual field study, Economics 193, is recommended but not required.

Information Systems Management Major Planners

The following are three sample academic plans for students to complete during their first two years as preparation for the information systems management major. Plan one A and B are suggested guidelines for students who
The Staff

Plan One A

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Econ 1</td>
<td>Econ 2</td>
<td>Ism 50</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Crmps 10</td>
<td>Math 13A</td>
<td>Math 19B</td>
</tr>
<tr>
<td>2nd</td>
<td>Crmps 12A</td>
<td>Crmps 12B</td>
<td>Crmps 12/L</td>
</tr>
<tr>
<td>(soph)</td>
<td>Econ 10A</td>
<td>Ism 58</td>
<td>Crmps 16 or 16H</td>
</tr>
<tr>
<td></td>
<td>Math 21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan One B

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Econ 10A</td>
<td>Econ 1</td>
<td>Econ 2</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Crmps 10</td>
<td>Econ 11A</td>
<td>Econ 11B</td>
</tr>
<tr>
<td>2nd</td>
<td>Ism 58</td>
<td>Math 21</td>
<td>Econ 100A</td>
</tr>
<tr>
<td>(soph)</td>
<td></td>
<td></td>
<td>Crmps 16 or 16H</td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 3</td>
<td>Econ 1</td>
<td>Ism 50</td>
</tr>
<tr>
<td>(fsh)</td>
<td></td>
<td></td>
<td>Econ 2</td>
</tr>
<tr>
<td>2nd</td>
<td>Crmps 10</td>
<td>Ism 58</td>
<td>Crmps 12A</td>
</tr>
<tr>
<td>(soph)</td>
<td>Math 19B or 19A</td>
<td>Math 21</td>
<td>Econ 11B</td>
</tr>
<tr>
<td></td>
<td>Econ 11A</td>
<td></td>
<td>Econ 10A</td>
</tr>
</tbody>
</table>

Comprehensive Requirement

Students complete two project-intensive courses, either the combination of Computer Science 115 and Information Systems Management 158 or the combination of Computer Science 115 and Information Systems Management 105, which constitute the comprehensive requirement for the information systems management major, based on the dual aspects of the program. Computer Science 115 addresses the technical side of the major, course 158 deals with the business and economics content, and course 105 deals with the integration of technology and business.

Computer Science 115, Software Methodology, is designed to validate students' technical capabilities. Working in teams, students are required to apply the technical knowledge they have gained by designing, programming, and testing a complete software application. Information Systems Management 105, Business Strategy and Information Systems requires that students understand and use a structured methodology to evaluate the competitive use of information systems within an enterprise. This is accomplished by researching and writing a comprehensive analytical term paper using a methodology taught as part of this course.

Information Systems Management 158, Business Strategy and Information Systems requires that students understand and apply structured methodologies for the development, management, and commercialization of technologies and products. Students will work in teams on a comprehensive term project in the development, commercialization, and management of technologies such as computers, networks, semiconductors, mechatronics, and biotechnology.

Lower-Division Courses

50. Business Information Systems, F,S

Address the use of information systems (IS) within a business enterprise. Subjects include computer hardware and software concepts, system design and implementation, telecommunications, data management, transaction-based systems, management information systems, and the use of IS to compete. Intended for information systems management and business management economics majors. The Staff

Plan Two

105. Management of Technology Seminar 1 (credit), F,W,S

Addresses weekly talks by leading industry practitioners and university researchers to provide in-depth exposure to the management of technology. Topics covered include product development, operations, strategy, finance, and marketing for technologies such as software and information systems. May be repeated for credit. R. Akella

Upper-Division Courses

101. Management of Technology Seminar 1 (credit), F,W,S

Addresses weekly talks by leading industry practitioners and university researchers to provide in-depth exposure to the management of technology. Topics covered include product development, operations, strategy, finance, and marketing for technologies such as software and information systems. May be repeated for credit. R. Akella

105. Management of Technology Seminar 2 (credit), F,W,S

Addresses weekly talks by leading industry practitioners and university researchers to provide in-depth exposure to the management of technology. Topics covered include product development, operations, strategy, finance, and marketing for technologies such as software and information systems. May be repeated for credit. R. Akella

107. Management of Technology Seminar 3 (credit), F,W,S

Addresses weekly talks by leading industry practitioners and university researchers to provide in-depth exposure to the management of technology. Topics covered include product development, operations, strategy, finance, and marketing for technologies such as software and information systems. May be repeated for credit. R. Akella

109. Management of Technology Seminar 4 (credit), F,W,S

Addresses weekly talks by leading industry practitioners and university researchers to provide in-depth exposure to the management of technology. Topics covered include product development, operations, strategy, finance, and marketing for technologies such as software and information systems. May be repeated for credit. R. Akella

125. Management of Technology I. *

An in-depth examination of technological, strategic, marketing, and financial methods and analytical tools for the management of technology to enable cost-effective and rapid development of profitable and high-quality technologies. Includes case studies and a comprehensive project. Students who receive credit for this course cannot also receive credit for course 225. Students who receive credit for course 225 cannot also receive credit for this course. Prerequisite(s): Mathematics 198 or 11B or Engineering 118 or Economics 11B. R. Akella

158. Business Strategy and Information Systems. W

Analysis of the effective use of information systems within a business enterprise, with emphasis on gaining a competitive advantage. Integration of information systems with business strategy, financial justification, personnel, and organizational considerations is highlighted. Intended for information systems management majors. Prerequisite(s): satisfaction of the Subject A and Composition requirements, courses 150 or Computer Engineering 150, Computer Science 101, Economics 10A and 100A, and Applied Mathematics and Statistics 113 or Economics 113. (General Education Code(s): W.) R. Akella

193. Field Study, F,W,S

Provides individual programs of study with specific academic objectives carried out under direction of faculty member of Information Systems Management and a willing sponsor at field site. Uses resources not normally available on campus. Credit based on presentation of evidence of achieving objectives by submitting written and oral presentations. Cannot normally be repeated for credit. Students submit petition to sponsoring agency. The Staff

193F. Field Study (2 credits), F,W,S

Provides individual programs of study with specific academic objectives carried out under direction of faculty member of Information Systems Management and a willing sponsor at field site. Uses resources not normally available on campus. Credit based on presentation of evidence of achieving objectives by submitting written and oral presentations. Cannot normally be repeated for credit. Students submit petition to sponsoring agency. The Staff

194. Group Tutorial, F,W,S

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency. The Staff

194F. Group Tutorial (2 credits), F,W,S

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency. The Staff

195. Senior Thesis Research, F,W,S

Intended for majors. Students submit petition to sponsoring agency. The Staff

195F. Senior Thesis Research (2 credits), F,W,S

Intended for majors. Students submit petition to sponsoring agency. The Staff
198. Individual Study or Research, F.W,S
Intended for majors. Students submit petition to sponsoring agency. The Staff

198F. Individual Study or Research (2 credits), F.W,S
Intended for majors. Students submit petition to sponsoring agency. The Staff

199. Individual Study or Research, F.W,S
Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency. Enrollment restricted to senior information systems management majors. The Staff

Graduate Courses

205. Management of Technology I. W
Addresses technological, strategic, marketing, financial methods, and analytical tools for management of technology in an integrated manner that enables the cost-effective and rapid development of profitable and high quality technologies. Includes case studies and a comprehensive project. Students cannot receive credit for this course and either course 80A or 105. Enrollment restricted to graduate students; students submit petition to sponsoring agency. Enrollment restricted to juniors, seniors, and graduate students. R. Akella

225. Management of Technology II. S
High-technology enterprises must understand and operate effectively within their technology-business value chain in order to maximize profitability. Course develops and applies methods and tools for the design, optimization, selection, and management of these value chain networks. Students cannot receive credit for this course and either course 80B or 125. Prerequisite(s): course 205 or consent of instructor. Enrollment restricted to juniors, seniors, and graduate students. The Staff, R. Akella

250. Stochastic Optimization in Information Systems and Technology. S
First in a sequence of courses in information systems and technology management (IST M). Provides systematic methodology and corresponding set of methods and analytical tools to address the field of IST M in an integrated manner; provides required training in stochastic optimization and other algorithmic approaches, such as dynamic programming, to achieve business intelligence in corporate enterprises. Students should have solid background in the following: probability equivalent to statistics, stochastic methods, calculus, linear algebra, mathematical maturity, stochastic processes, and optimization. Enrollment restricted to graduate students; undergraduates may enroll if they have completed Computer Engineering 107 or Applied Mathematics and Statistics 131 or have permission of instructor. Applied Mathematics and Statistics 203 and 205 and Computer Engineering 230 are recommended. May be repeated for credit. The Staff, R. Akella

251. Information Systems and Technology Management II. S
Provides systematic methodology and corresponding set of methods and analytical tools in stochastic and neuro-dynamic programming used for business intelligence in corporate enterprises and A1 and A2 learning research and applications in computer science, computer engineering, and electrical engineering and related to applied mathematics and statistics, business, management, and economics. Students should have solid background in probability equivalent to statistics, stochastic methods, calculus, mathematical maturity, stochastic processes and optimization, business intelligence and algorithms.

Prerequisite(s): Computer Engineering 107 or Applied Mathematics and Statistics 131 or permission of instructor. Enrollment restricted to graduate students. Applied Mathematics and Statistics 203, 205, 230, and course 250 recommended. R. Akella

English-Language Literatures

Students wishing to pursue a course of study in English literature should consult the concentration in national/transnational literatures under Literature, page 290.

Environmental Sciences and Policy

UCSC offers a range of options for students to pursue environmental topics. The Environmental Studies Department offers an interdisciplinary B.A. program that emphasizes social sciences, conservation biology, and agroecology (see Environmental Studies, below). The Environmental Studies Department offers combined majors with the Departments of Biological Sciences, Earth Sciences, and Economics. Effectively, the environmental studies/biology and environmental studies/Earth sciences combined majors extend the scientific training in disciplinary areas but are not intended to develop a student’s core competence to a level equivalent to that attained with a major in the related science. The Chemistry and Earth Sciences departments offer concentrations in environmental topics within their B.A. and B.S. degree programs. The environmental sciences concentrations are designed for students in the natural sciences who wish to pursue interdisciplinary study of the environment. These develop a level of competency suitable for pursuing graduate work in these disciplinary areas or in graduate environmental programs (see descriptions in the appropriate sections: Chemistry, see page 148; and Earth Sciences, see page 168).

Environmental Studies

405 Interdisciplinary Sciences Building
(831) 459-2634
http://envs.ucsc.edu

Faculty and Professional Interests

Professor
ROBERT R. CURRY, Emeritus
BRYAN H. FARRELL, Emeritus
MARGARET FITZSIMMONS
Social and spatial aspects of environmental change, the development and regulation of primary-sector activities and the regional integration of environmental planning and resources management institutions in urban and rural settings.

STEPHEN R. GLIESSMAN
Agroecology, sustainable agriculture, natural history, tropical land use and development, ecology and management of California vegetation.

DAVID GOODMAN
Political economy of international environmental issues, global agri-food systems, technology, North-South relations and sustainable development, Brazilian economy and society

DEBORAH K. LETOURNEAU
Agroecology, tropical biology, insect-plant interactions, biological control as an alternative to chemical pesticides

PAUL L. MIEBANCK, Emeritus
JAMES E. PEPPER, Emeritus

DANIEL M. PRESS
U.S. environmental politics and policy, social capital and democratic theory, industrial ecology, land and species conservation, regionalism

ALAN R. RICHARDS
Political economy, agricultural and economic development, economic history

CAROL SHENAN
Agroecology, ecosystem agriculture, wetland interactions, participatory research, gender, and environmental issues

MICHAEL E. SOULE, Emeritus

Associate Professor
WEIXIN CHENG
Soil ecology, agroecology, biogeochemistry, global change ecology

GREGORY S. GILBERT
Disease ecology, conservation biology, tropical forest ecology, microbial ecology

BRENT HADDAD
Market-based regulation, property rights, economic institutions and the environment, California water institutions, renewable resource electricity, greenhouse-gas reduction

KAREN D. HOLL
Renovation ecology, conservation biology, landscape ecology

S. RAVI RAJAN
Environmental history and political ecology, risk and disaster studies, science and technology studies, North-South environmental conflicts, environmental social theory, environmental ethics

Assistant Professor
DENNIS D. KELSO
Environmental policy, natural resource use, social theory, and emerging technology

MICHAEL E. LOIK
Plant responses to natural and anthropogenic environmental stress, climatology, implications of global environmental change for reproductive success and community composition, biogeography, physiology of ecosystem restoration

ERIKA ZAWALET
Ecology and evolutionary biology, biodiversity and global change, biological invasions, terrestrial plant and ecosystem ecology, ecological economics, human ecology, conservation

Adjunct Associate Professor
SEAN SWEENEY
Integrated pest management and agricultural sustainability

Lecturer
JENNIFER K. ANDERSON
Environmental interpretation/education, experiential learning, multi-cultural environmental education
The program emphasizes the integration of ecological and evolutionary biology, cultural and political theory, and an understanding of social and political change. Students pursue an interdisciplinary curriculum that combines courses in ecology and the social sciences. The fundamentals of environmental studies are offered through introductory courses on the ecological and political-economic aspects of environmental issues and through the core course, Ecology and Society. Upper-division areas of concentration have interdisciplinary curricula that draw on both ecology and the social sciences. The program emphasizes the integration of ecological knowledge with an understanding of social institutions and policies in ways that support the conservation of biodiversity, the practice of sustainable agriculture, and the treatment of toxic substances.
careful management of other ecological and environmental systems. The faculty work on these issues at local, regional, and global levels. Current faculty research focuses on Costa Rica, Panama, M. aic. M. alic, Florida, Hawaii, Alaska, California, and the Monterey Bay region.

As a complement to instruction and research, many courses have field components. The Environmental Studies Field and Internship Program helps qualified students find placements with government and educational agencies, community organizations, and private firms. In addition, students are encouraged to participate in faculty-directed research on specific problems. Environmental studies courses complement most majors on campus, and students from other majors are encouraged to take courses that are relevant to their interests.

Requirements for the Major

Prerequisites

Continuing UCSC students are required to complete six prerequisite courses. Environmental Studies 23, 24, 25, and Applied Mathematics and Statistics 5 or 7 (statistics) are to be completed before taking Environmental Studies 100L, the core course. The two remaining prerequisites are to be completed no later than the junior year. Transfer students must complete seven prerequisite courses before transferring to UCSC (see also Transfer Students below). The courses listed here are examples of the course offerings at UCSC that satisfy the prerequisites. If you are transferring, compare catalog descriptions, consult your current institution's adviser, and refer to the ASSIST web site, http://www.assist.org/default.htm, to determine equivalency. The specific prerequisites are as follows:

- The Physical and Chemical Environment. A course introducing the basic physical and chemical processes that govern the structure and function of ecosystems, including climate and weather, soil types and their formation, and biogeochemical cycles (course 23). Transfer students must satisfy this prerequisite by completing a college-level introductory chemistry course.

- General Ecology. An introduction to the basic concepts and methods of ecology, population ecology, biotic communities, and ecosystems (course 24).

- Political Economy and the Environment. A course introducing environmental policy issues, key concepts in politics and economics, and the processes that have given rise to environmental issues, their social and political perception, and institutional responses (course 25). Transfer students must satisfy this prerequisite by completing an introductory political science or politics survey course (equivalent to Pol 20 or 70 at UCSC) and an introductory microeconomics or macroeconomics course (equivalent to Economics 113 or 114 at UCSC).

- Anthropology 2 or Philosophy 21, 22, 24, 28, or 80G or 80J.

- Mathematics 3 or a score on the math placement exam sufficient to be placed into calculus.

- Environmental Studies/ Biology Combined Major

Transfer Students

Students transferring to UCSC are expected to fulfill the prerequisites for the major by completing equivalent courses, with a grade of C or better, at another recognized institution before transferring to UCSC. The prerequisite in the physical and chemical environment (course 23) may be satisfied by completing a college-level introductory chemistry course. If no course equivalent to course 23 is available, two courses—one in politics, one in economics—are required to satisfy the political economy and the environment (course 25) prerequisite. Course 25 may be offered during Summer Session at UCSC and transfer students are encouraged to take it. Those students attending an institution not offering an acceptable general ecology course are urged to enroll in Summer Session at UCSC to complete this prerequisite (course 24); those not able to do so are allowed to take the course concurrently with course 100/L in the fall quarter.

Upper-Division Requirements

Students are required to complete nine upper-division courses, including course 190, and a comprehensive course. For students who have limited time, the department also offers three combined majors: one with biology, one with Earth sciences, and one with economics. If students choose to select a set of related courses from another discipline, they should do so in consultation with a faculty adviser.

Comprehensive Requirement

Students satisfy the senior comprehensive requirement by completing one of the following:

- Senior capstone (course 190).
- Senior thesis (course 195A or 195B).
- Senior seminar (a course from the 196 series).
- Senior internship (course 183B).

Students who wish to complete the senior thesis or senior internship option must make a formal application to a faculty mentor by the last quarter of their junior year before enrolling in a senior thesis or senior internship independent study course (183B, 195A, or 195B).

Major Disqualification Policy

The Environmental Studies Department considers courses 23, 24, 25, and 100/L to be the core of the program. Students who have failed two of these courses will be disqualified from the major and barred from enrollment in all upper-division environmental studies courses. Students who have failed the same course (of these four core courses) twice will likewise be barred from enrollment in all upper-division courses. Students who have failed course 100/L or its equivalent must complete upper-division courses by exception only; they must present their case in writing to the department chair in order to be allowed to remain enrolled. The department also reserves the right to disqualify from the major those students who fail three or more upper-division environmental studies elective courses.

Students who feel that there were extenuating circumstances surrounding their failure of a course for the second time may appeal their disqualification within the appeal period by submitting a letter to the chair of the Environmental Studies Department. This appeal must be filed no later than 15 days from the date the disqualification notification was mailed, or the 10th day of classes in the quarter of their disqualification, whichever is later. The department will subsequently notify the student, the college, and the Office of the Registrar of the decision no later than 15 days after the filing of the appeal.

Requirements for the Combined Majors

Environmental Studies/Biology

This course of study provides students with the basic tools of biological science and sufficient understanding of resource conservation, conservation biology, and concerns about environmental sustainability to apply these tools to environmental problems.

Prerequisites

- Biology 20A and 20B.
- Environmental Studies 24 (or Biology 20C or 150).
- Environmental Studies 25.
- Anthropology 2 or Philosophy 21, 22, 24, 28, or 80G or Sociology 1 or 15.
- Precalculus (Mathematics 3 or a score on the math placement exam or the College Board AP calculus exam sufficient to be placed into calculus).
- Applied Mathematics and Statistics 5 or 7.
- Chemistry 1B/M and 1C/N and 108A/L and 108B/M.
- Two courses in physics or computer science, either Physics 7A/L and 7B/M or two courses from Computer Science 12A, 12B, 60G or 60N, 80B, and 80G.

Upper-Division Requirements

Environmental Studies 100/L

Biology 105

Six upper-division courses, three in biology and three in environmental studies. One of the six must be a laboratory course, and one of the three environmental studies courses should be based in the social sciences. These upper-division courses should be selected in pursuit of a coherent plan of study, such as agroecology-botany, conservation biology-zoology, resource management-ecology, environmental education-animal behavior, or environmental policy-marine studies, among others.

Comprehensive Requirement

Students satisfy the senior comprehensive requirement by completing the following:

- for environmental studies, one of the options for environmental studies majors (see Comprehensive Requirement above);
- for biological sciences, either pass the biology comprehensive examination, achieve a score of or above the 50th percentile on the Graduate Record Examination (GRE) Biology Subject Test, achieve a score of or above the 50th percentile on the MCAT biological science section, or complete a senior essay.

Declaration Process for the Environmental Studies/Biology Combined Major

Students must complete the following prerequisites before declaring the environmental studies/biology combined major:

- Precalculus (Mathematics 3 or a score on the math placement exam sufficient to be placed into calculus),
- general chemistry (Chemistry 1B/M and 1C/N),
- organic chemistry (Chemistry 108A/L and 108B/M),
- introductory biology with lab (Biology 20A, 20B, and 20L).

Biology 105 is required for this combined major. See the Biological Sciences section of this catalog (page 130) for more information.
Environmental Studies/Earth Sciences

This course of study provides students with the basic tools of Earth sciences and environmental studies needed to address environmental problems.

Lower-Division Requirements

- Applied Mathematics and Statistics 5 or 7
- Mathematics 11A-B (or 19A-B)
- Chemistry 1B/M and 1C/N
- Physics 6A/L and 6B/M (or 5A/L and 5B/M)
- Earth Sciences 20/L (or 5/L or 10/L)
- Environmental Studies 24 and 25
- Anthropology 2 or Philosophy 21, 22, 24, 28, or 80G

Upper-Division Requirements

- Earth Sciences 110/L, 118/L, or 110C/N
- Environmental Studies 100/L
- Three additional upper-division environmental studies courses, including at least one course based in the social sciences
- Three additional upper-division Earth sciences courses

The upper-division courses should be selected in pursuit of a coherent plan of study, such as water policy-climate change, among others, in consultation with faculty from both the Environmental Studies and Earth Sciences departments.

Comprehensive Requirement

Students satisfy their senior comprehensive requirement in environmental studies or Earth sciences by completing one of the following:

- Environmental Studies 190
- A 196-series course
- A 193B senior internship
- Earth Sciences 188A-B
- A senior thesis with faculty readers from both departments and enrollment in Environmental Studies 195A or 195B or Earth Sciences 195.

Environmental Studies/Economics

This major is intended to provide students with the basic tools of economic analysis and an understanding of the mechanics of resource production, conservation, and use, in both ecological and economic terms.

Lower-Division Requirements

- Economics 1, 2, 11A, 118
- Environmental Studies 23, 24, 25
- Anthropology 2 or Philosophy 21, 22, 24, 28, or 80G

Upper-Division Requirements

- Economics 100A
- Economics 113
- Environmental Studies 100/L
- Six elective courses from the following, with at least three courses from each discipline:
  - Economics 108B, 120, 134, 140, 150, 152, 153, 160, 169, 170, 175, and 189
  - Environmental Studies 110, 115A, 120, 122, 123, 130/L, 130B, 140, 141, 149, 151, 152, 156, 158, 160, 164, 165, and 172

Graduate Program

This program is intended to prepare students for careers in the academy or other professional areas.

- Students satisfy the senior comprehensive requirement by completing the following:
  - For environmental studies, one of the options for environmental studies majors (see Comprehensive Requirement above);
  - For economics, pass those portions of the economics comprehensive examination administered in Economics 100A and 113.

- Graduate students must have completed a bachelor's degree or equivalent in a related disciplinary field. Students with degrees in interdisciplinary fields such as environmental studies should have discipline-specific work equivalent to a double major or a master's degree in an appropriate field.

- The GRE General Test score and letters of recommendation are strongly recommended. Other considerations for admission include grades, evaluations, publications, professional or extramural experience, and completion of more than one degree (second bachelor's or master's). In addition to the application materials, students should submit a substantial written project (undergraduate or master's), where possible.

- The graduate curriculum gives explicit attention to the need to provide students with the analytical tools, research methods, and project design capabilities required to undertake integrative, interdisciplinary research on environmental problems. These skills are essential to all environmental studies graduate students, whether they pursue careers in the academy or other professional areas.

- The concern to train graduate students in the methodological principles and practice of interdisciplinary research is the central purpose of the curriculum. In their first year, students are required to complete core courses 201A-B, 201M, and 201N, as well as the department's interdisciplinary research seminar (290/L) and attend lab group meetings (292). An upper-division or graduate-level course in quantitative methods is required by the time the student takes the qualifying exam.
The course should provide training in research design and the selection of appropriate quantitative tools for research and analysis. Examples of appropriate courses for fulfilling this requirement are available from the graduate program coordinator. In the fall and winter quarters of the second year, students are required to take a minimum of two area specialization courses, at least one of which must be in the natural sciences (220 or 230) and one in the social sciences (210 or 240), as well as the department's interdepartmental research seminar (250-L) and attend lab group meetings (292). Depending on the student's preparation, interests, and intentions, his or her adviser may suggest or require additional course work.

By the end of winter quarter of their third year, students take exams designed to measure depth in their disciplinary and interdisciplinary areas of expertise; these areas are defined by the student and the examining committee. Also during the course of their third year, students prepare and present a dissertation research proposal and take an oral candidacy exam in which they defend the proposal and are examined on subjects related to their research area. In addition, before advancing to candidacy, students are required to serve as teaching assistants in undergraduate courses for two quarters unless they can demonstrate equivalent experience. If a student's research is conducted in a non-English-speaking country, a language exam testing reading and speaking competence in the language of that area must also be passed before advancement to candidacy. To satisfy the requirements for a Ph.D., the student must present a dissertation that makes a significant scholarly contribution to the topic studied. The typical duration of the doctoral program is four to six years.

Lower-Division Courses

15. Natural History of the UCSC Campus (2 credits), S

Introduces students to the range of natural species and communities occurring on the UCSC campus. All class time is spent outside, and each week a different area of campus is visited. Course 24 is recommended. Enrollment limited to 21. The Staff

23. The Physical and Chemical Environment, S

Introduces students to basic physical and chemical processes that govern the structure and function of ecosystems. Topics to be covered include climate and weather, soil types and their formation, and biogeochemical cycles. (General Education Code(s): IN.) W. Cheng

24. General Ecology, F

Covers principles of ecology including limits to species abundances, evolutionary ecology, population dynamics, community interactions and patterns, and ecosystem and trophic dynamics. (General Education Code(s): IN.) The Staff

25. Political Economy and the Environment, W

Environmental policy issues are situated within historical developments in political and economic systems. Introduces some of the key concepts of politics and economics by way of examining the processes which have given rise to environmental issues, their social and political perception, and institutional responses. (General Education Code(s): IS.) B. Haddad

42. Student-Directed Seminar, F, W, S

Seminar taught by upper-division students under faculty supervision. (See course 192.) T The Staff

80A. The Future of Rain Forests, S

A broad overview of both ecological and social aspects related to tropical rain forests drawing on case studies worldwide. Topics include the biology and distribution of rain forests, causes and effects of their destruction, and management options to facilitate their conservation. (General Education Code(s): T7-Natural Sciences or Social Sciences.) D. Lortie-Courteau

80B. The Ecological Forecast for Global Warming, F

A broad overview of the impacts of human activities on the global climate system. Topics include how climate affects the distribution of ecosystems, the influence of global climate change on biodiversity, ecosystem function, and consequences for the human enterprise. (General Education Code(s): T7-Natural Sciences or Social Sciences.) M. Lisk

80C. Wilderness and the American West, *

Analyzes nature preservation in the West, particularly federal public lands policies. Examines contrasting perceptions of "wilderness," the nature preservation movement, enactment of federal legislation, California and Alaska wilderness issues, critiques of enclaves approaches to nature, plus current and emerging problems. (General Education Code(s): T3-Social Sciences.) The Staff

83. Environmental Studies Internship, F, W, S

A supervised off-campus learning experience related to environmental problem solving. Focuses on initial experiences in applied work and specific skill development. Students may be placed individually or with a team in government agencies, private organizations, citizen action groups. M. May be repeated for credit. T The Staff

84. Environmental Studies Internship (2 credits), F, W, S

Supervised learning experience designed to introduce environmental issues and problem solving. Places students with governmental and nongovernmental agencies, private organizations, schools, or in specialized apprenticeships. Two-unit internships require to focus intensively and to develop skills for more advanced work. Students submit petition to sponsoring agency. M. May be repeated for credit. T The Staff

93. Field Study, F, W, S

Supervised research or organized projects for lower-division students conducted off campus within regular commuting distance of the campus. Students submit petition to sponsoring agency. M. May be repeated for credit. T The Staff

93F. Field Study (2 credits), F, W, S

Provides for department-sponsored individual field study for lower-division students in the vicinity of the campus under the direct supervision of a faculty sponsor. M. May not be counted toward major requirements. Students submit petition to sponsoring agency. M. May be repeated for credit. T The Staff

99F. Tutorial (2 credits), F, W, S

Provides for department-sponsored directed reading, supervised research, or organized project for lower-division students under the direct supervision of a faculty sponsor. M. May be counted toward major requirements. Students submit petition to sponsoring agency. M. May be repeated for credit. T The Staff

Upper-Division Courses

100. Ecology and Society, F

Introduction to environmental issues in an interdisciplinary matrix. Focuses on three issues at the intersection of ecological questions and social institutions: agroecology and sustainable agriculture; population growth, economic growth, and environmental degradation; and biodiversity conservation and land management. Reviews the important role of disciplinary abstraction and of the application of that knowledge to context-dependent explanation of environmental problems. Prerequisite(s): course 23 or Chemistry 1A or 18 or 15 on Chemistry Placement Exam; course 24 or Biology 20C; course 25; and Applied Mathematics and Statistics 5 or 7. Concurrent enrollment in 100L is required. D. Kelso, E. Zavaleta

100L. Ecology and Society Writing Laboratory (2 credits), F

Required writing lab accompanying course 100. Students are introduced to writing in different styles and for different audiences typical of the ecosystem-society interface. Course 100 writing assignments are developed, written, and revised in conjunction with the lab. W credit is granted only upon successful completion of course 100. Prerequisite(s): course 23 or Chemistry 1A or 18 or 15 on Chemistry Placement Exam; course 24 or Biology 20C; course 25; and Applied Mathematics and Statistics 5 or 7. Satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) S. Rabkin, D. Kelso, E. Zavaleta

104A. Introduction to Environmental Field Methods, S

A course in basic field skills including habitat description, behavior observation, specimen collection techniques, mapping and map interpretation, vegetation analysis, population sampling, microclimate measurement, soil and water sampling. Emphasis on use of the scientific method: experimental design, data handling, statistical analysis and presentation; and basic field methodologies. Prerequisite(s): satisfaction of the Subject A and Composition requirements; course 100 or 24 or Biology 20C, and Applied Mathematics and Statistics 5 or 7. Enrollment limited to 44. (General Education Code(s): W.) M. Fusiari

105. Biology and Ecology of the Vertebrates, W

An introduction to the fundamentals of vertebrate biology and ecology including evolutionary history, basic anatomy and physiology, systematics, ecology and major specializations for locomotion, reproduction, homeostasis, energy balance, and thermoregulation. Prerequisite to the 106 series. Concurrent enrollment in 105L is required. (Also offered as Biology 138. Students cannot receive credit for both courses.) Prerequisite(s): course 24, Biology 20C, or 150; basic biology is recommended. Concurrent enrollment in 105L is required. Enrollment restricted to biological science majors, environmental studies majors, and students in the combined majors with biology. Enrollment limited to 50. M. Fusiari

105L. Biology and Ecology of the Vertebrates Laboratory (2 credits), W

Covers the basics of vertebrate anatomy and taxonomy with emphasis on local species identification. Lab includes a weekly 4-hour lab and two Saturday trips to the California Academy of Sciences. Concurrent enrollment in course 105 is required. Prerequisite to the 106 series. (Also
offered as Biology 138L. Students cannot receive credit for both courses. Prerequisite(s): course 24, Biology 20C, or 150. Concurrent enrollment in course 105 is required. Enrollment restricted to biological science majors, environmental studies majors, and students in the combined majors with biology. Emphasis is placed on environmental applications. Enrollment limited to 20. Offered in alternate academic years. S. Gliessman

107A. Natural History Field Quarter. *
A 15-unit field course that uses California wild lands to develop skills of natural history observation and interpretation. Students gain the ability to identify plants, animals, vegetation types, and landscapes, as well as address the complex issues of preservation and management of these resources. Enrollment limited to 24. Offered in alternate academic years. S. Gliessman

107B. Natural History Field Quarter. *
A 15-unit field course that uses California wild lands to develop skills of natural history observation and interpretation. Students gain the ability to identify plants, animals, vegetation types, and landscapes, as well as address the complex issues of preservation and management of these resources. Enrollment limited to 24. S. Gliessman

107C. Natural History Field Quarter. *
A 15-unit field course that uses California wild lands to develop skills of natural history observation and interpretation. Students gain the ability to identify plants, animals, vegetation types, and landscapes, as well as address the complex issues of preservation and management of these resources. Enrollment limited to 24. S. Gliessman

108. General Entomology. F
Introduction to entomology including anatomy, physiology, systematics, evolution, behavior, and reproduction of the world’s most diverse group of organisms. These topics are illustrated in several contexts, from the importance of insects as disease vectors to the historical and contemporary uses of insects by humans. Enrollment limited to 20. Offered in alternate academic years. D. Letourneau

108L. General Entomology Laboratory (2 credits). F
Laboratory sections are devoted to the identification of insects. Individual collections representing 15 orders, eight identification of 60 families, and use of taxonomic keys for positive designations are required. Concurrent enrollment in course 108 is required. Enrollment limited to 20. Offered in alternate academic years. D. Letourneau

110. Institutions, the Environment, and Economic Systems. *
Debate about environmental policy is often couched in economic terms. Environmental issues have become questions of political economy, as they influence international and domestic policy and reflect on the functioning of the market system. Examines the assumptions and implications of alternative approaches to political economy, as these pertain to questions of environmental policy and political institutions. Prerequisite(s): course 25 or Economics 1 or 2. M. Fitzsimmons

115A. Geographic Information Systems and Environmental Applications. F
Introduction to geographic information systems (GIS) as the technology of processing spatial data, including input, storage and retrieval, manipulation and analysis, reporting and interpretation. Emphasizes GIS as a decision support system for environmental and social problem solving, using basic model building, experimental design, and database management. Prerequisite(s): Engineering 5 or 7. Enrollment restricted to environmental studies majors and students majoring in the combined majors. Course 115L is required. A course in computer science, Earth sciences, mathematics, or geography is recommended. Enrollment limited to 40. B. Fulford

115L. Exercises in Geographic Information Systems (2 credits). F
Exercises in Geographic Information Systems and Remote Sensing that demonstrate the development of digital geographic data. Students gain hands-on experience with developing datasets, using imagery to create GIS layers, performing spatial analysis, and utilizing GPS technology. Emphasis is placed on environmental applications. Enrollment restricted to environmental studies majors and students majoring in the combined majors with biology, Earth sciences, and economics. Concurrent enrollment in course 115A is required. B. Fulford

120. Conservation Biology. F
Biological principles and their application to conservation with emphasis on the loss of biodiversity. Prerequisite(s): course 24 or Biology 20C or Biology 150. A course in statistics is strongly recommended and calculus is recommended as additional preparation. Enrollment limited to 70. E. Zavaleta

122. Tropical Ecology and Conservation. *
An introduction to the ecological processes, principles, and players of tropical ecosystems, and to conservation issues facing tropical American forests. We will look at how tropical ecosystems work, roles of humans in shaping them, and current conservation opportunities and dilemmas. Prerequisite(s): course 24 or Biology 20C or 150. A course in statistics and precalculus is recommended. G. Gilbert

129. Integrated Pest Management. S
Provides an extensive coverage of applied ecology, pest control technology, and the social, political, and economic factors regulating the ideologies and practice of pest management. Topics include agroecosystem design and population regulation of insects, weeds, vertebrates, and pathogens; field monitoring, chemical and biological control technologies; economic thresholds, decision-making processes, and the role of agribusiness. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 24 or Biology 20C or 150. A course in general entomology is recommended. (General Education Code(s): W). S. Sweazy

129L. Integrated Pest Management Laboratory (2 credits). S
Field trips and field exercises that demonstrate the practice of integrated pest management techniques. Individual and group projects provide hands-on experience with field sampling techniques, pest identification, recognition of biological control agents, experimental design, interview techniques, data interpretation and field report writing. Prerequisite(s): course 24 or Biology 20C or 150; concurrent enrollment in course 129. S. Sweazy

130A. Agroecology and Sustainable Agriculture. F
Ecological concepts and principles are applied to the design and management of sustainable agroecosystems. Alternatives for agriculture are discussed in terms of ecosystem structure and function. A weekly three-hour lab is required. Prerequisite(s): course 24 or Biology 20C or consent of instructor; concurrent enrollment in course 130L. Enrollment restricted to environmental studies and biology majors and students in the combined majors with Earth sciences, biology, and economics. S. Gliessman

130B. Principles of Sustainable Agriculture. W
Agricultural sustainability is examined as a complex set of interactions between ecological, social, and economic components of an agroecosystem. Case studies are drawn from issues facing current U.S. agriculture and a basis for formulating policy for change that ensures sustainability is developed. Prerequisite(s): Restricted to junior and senior majors in environmental studies and the combined majors with Earth sciences, biology, and economics. Enrollment limited to 40. Offered in alternate academic years. M. Fitzsimmons

130L. Agroecology and Sustainable Agriculture Laboratory (2 credits). F
Laboratory and field exercises to train in the analysis of ecological processes in agricultural systems, with a focus on the quantification of ecological sustainability. Experimental design, analysis, and data interpretation are emphasized. Prerequisite(s): course 24 or Biology 20C; interview required; bring class and work schedule to first class meeting. Enrollment restricted to environmental studies and biology majors and students in the combined majors with Earth sciences, biology, and economics. S. Gliessman

131. Insect Ecology. *
Advanced course in ecology featuring insect-plant interactions such as herbivory, pollination, and the effects of plants on insect population dynamics. Lectures emphasize current controversies in ecological theory and relationship to application. Prerequisite(s): course 24 or Biology 20C and Applied Mathematics and Statistics 5 or 7 (formerly Engineering 5 or 7). Enrollment limited to 20. Offered in alternate academic years. D. Letourneau

131L. Insect Ecology Laboratory (2 credits). *
Field and laboratory exercises are designed to test hypotheses or demonstrate principles in areas such as behavior, mutualism theory, community ecology, and agricultural ecology. Experimental design, analysis, and interpretation of data are emphasized along with observational skills. Prerequisite(s): course 24 or Biology 20C; Applied Mathematics and Statistics 5 or 7 (formerly Engineering 5 or 7); concurrent enrollment in course 131. Enrollment limited to 20. Offered in alternate academic years. D. Letourneau

133. Agroecology Practicum. W
Lectures and demonstrations are combined with field applications to give students direct experience and knowledge of sustainable agriculture and horticulture practices and principles. U.C.S.C. Farm and Garden are the living laboratories for testing agroecological principles. Emphasis is placed on small-farm systems. Prerequisite(s): courses 130A and 130L. Enrollment restricted to majors in environmental studies and the combined majors with Earth sciences, biology, and economics. Admission by interview only. Enrollment limited to 25. Offered in alternate academic years. The Staff

138. Field Ethnobotany. S
Lectures, laboratory, and fieldwork examine field botany from a human ecology perspective. Students have the opportunity to learn the skills of field botany and plant identification through the study of plants that are of major significance for human cultures. The emphasis of field skills is on applications to sustainable management of natural resources. Concurrent enrollment in course 138L is required. Enrollment limited to 40. Offered in alternate academic years. S. Gliessman

138L. Ethnobotany Laboratory (2 credits). S
Laboratory and field studies allow students to learn the taxonomy of important useful plant families, carry out
enrollment restricted to junior and senior environmental studies majors and biology. Earth sciences, and economics combined majors. Enrollment limited to 75. (General Education Code(s): W.) D. Press

141. Natural Resource Economics, F
Application of economic analysis to natural resource pol- icy and management. Topics include wealth economics, property rights and externalities, natural resource valuation, extractible and renewable resources, and sustainable development. Economics 1 is strongly recommended as preparation. Enrollment restricted to environmental studies majors or biology, Earth sciences, and economics combined majors. The Staff

143. Sustainable Development: Economy, Policy, and Environment, S
Considers whether and how global poverty can be alleviated without irreparably damaging the environment. Examines interactions among population, economic growth, poverty, global consumption ethos, property rights systems, global economy, state capacity, and environmental damage. Scrutinizes impact of various developmental strategies adopted during the past 50 years on poverty, governance, and the environment. Prerequisite(s): course 141 or equivalent. A. Richards

149. Environmental Law and Policy, S
Surveys a wide range of topics in environmental law, including population control, state and federal jurisdiction, land and resources control, public land management, pollution control, and private rights and remedies. Students read a large number of judicial cases and other legal documents. Prerequisite(s): Legal Studies 149. Students cannot receive course credit for both courses. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to juniors and seniors majoring in environmental studies and environmental studies combined majors. Enrollment limited to 60. (General Education Code(s): W.) D. Kels

151. Environmental Assessment, S
Introduction to methods for determining the use capability, suitability, and feasibility of terrestrial and marine environments. Emphasis on quantitative and qualitative methods for the identification, prediction, and evaluation of environmental changes produced by human activities. Analysis and critique of public policy and planning as mechanisms for minimizing adverse environmental changes by regulating human conduct. Development of strategies for effective application of environmental factors in the public decision-making process. Prerequisite(s): course 100. Environmental Assessment restricted to environmental studies majors and biology, Earth sciences, and economics combined majors. A. Schiffrin

152. Science and Land Use Decisions. *
Technical and policy dimensions of major land use decisions will be assessed through a detailed case study. Technical review will stress geographical constraints; policy review will stress the CEQA process. The initial case study will be the reuse of Ford Ord. One field trip is required. Prerequisite(s): one of courses 140, 149, 151 (recommended); 165 or Earth Sciences 20. J. Gill

156. Environmental Action through Writing, W
Guided practice in writing skills useful to environmental activists. Assignments emphasize reflecting quickly, rethinking adeptly, researching resourcefully, and tempering powerful passions with careful arguments. Toward the development of effective individual voices, students read each other’s drafts as well as the published work of established writers. Enrollment priority will be given to students who have not taken course 157. Prerequisite(s): course 100L or concurrent enrollment, satisfaction of the Subject A and Composition requirements. Enrollment restricted to majors in environmental studies and the combined majors with Earth sciences, biology and economics. Enrollment limited to 28. (General Education Code(s): W.) S. Rabin

157. Writing in the Natural Sciences, S
Guided practice in writing effectively about science and natural history for a variety of audiences. Assignments emphasize reporting first-hand observations, explaining processes and phenomena, understanding scientific papers, and writing about scientific and technical subjects for a general audience. Enrollment priority will be given to students who have not taken course 156. Prerequisite(s): course 100L or concurrent enrollment, satisfaction of the Subject A and Composition requirements. Enrollment restricted to majors in environmental studies and the combined majors with Earth sciences, biology, and economics. Enrollment limited to 28. (General Education Code(s): W.) S. Rabin

159. Nature Literature, W
Introduction to 19th- and 20th-century American writers who have influenced our understanding of humans’ place in the natural world. Readings include original works as well as biographical and critical texts. Discussions, field trips, and writing assignments emphasize active learning. Prerequisite(s): course 100 and satisfaction of the Subject A and Composition requirements. Enrollment restricted to environmental studies, environmental studies/biology, environmental studies/earth sciences, and environmental studies/economics majors. Enrollment limited to 40. S. Rabin

160. Restoration Ecology, F
A multidisciplinary overview of restoring degraded ecosystems. Among the topics addressed are links between ecological principles and restoration, implementing restoration projects, evaluating restoration success, and case studies of restoration of specific ecosystem types. Participation in one work day is required. Prerequisite(s): course 23 or Chemistry 1A or 1B and course 24 or Biology 20C. Enrollment limited to 40. K. Hall

160L. Restoration Ecology Lab (2 credits). *
Provides hands-on experience in restoration ecology to complement lecture material in course 160. Students work on implementing, monitoring, and evaluating a number of restoration projects in the vicinity of U.C.S.C. Concurrent enrollment in course 160 is required. Prerequisite(s): course 24 or Biology 20C, and courses 23 and 25. Concurrent enrollment in course 160 is required. Enrollment limited to 15. K. Hall

161A. Soils and Plant Nutrition. *
Provides fundamentals of soils and plant nutrition. The physical, biological, and chemical components of soils are investigated in relation to their ecological functions, fertility to plants, and sustainable management. Prerequisite(s): course 23 or Chemistry 1A or 1B. Enrollment limited to 35. W. Cheng

161L. Soils and Plant Nutrition Laboratory (2 credits). *
Practice analytical techniques for evaluation of physical, chemical, and biological properties of soils. Grow plants to observe some typical symptoms of plant nutrient deficiencies. Prerequisite(s): course 23 or Chemistry 1A or 1B. Concurrent enrollment in course 161A is required. Enrollment limited to 18. W. Cheng

162. Plant Physiological Ecology, *
Introduces the theory of plant interactions with the physical environment. Emphasizes influence of abiotic stresses on the recruitment, survival, growth, productivity, and reproduction of plants. Prior course work in ecology and/or plant physiology is recommended. Prerequisite(s): course 24 or Biology 20C and Applied Mathematics and Statistics 5 or 7 (formerly Engineering 5 or 7). Enrollment limited to 24. M. Lark

162L. Plant Physiological Ecology Laboratory (2 credits). *
Introduces techniques for the study of plant interactions with the physical environment. Examines the role of stress on energy budgets, water relations, photosynthesis, and reproductive allocation. Emphasizes experimental design, field techniques, and instrumentation during field trips to local chaparral and grassland ecosystems. Prior course work in ecology and/or plant physiology is recommended. Prerequisite(s): course 24 or Biology 20C, and Engineering 5 or 7 (formerly Mathematics 5 or 7). Enrollment limited to 24. M. Lark

163. Plant Disease Ecology, S
Introduces to ecological roles of plant diseases, including their importance in regulating plant population dynamics, community diversity, and ecosystem function in natural ecosystems; considerations of plant diseases in conservation ecology; and ecological approaches to managing diseases in agroecosystems. Students cannot receive credit for this course and course 263. Prerequisite(s): course 24 or Biology 20C or 150. A statistics course is strongly recommended. G. Gilbert

163L. Plant Disease Ecology Lab (2 credits). *
Introduction to techniques for studying plant diseases, including detection, isolation, cultivation, and identification of important groups of plant pathogens, completing Koch’s postulates; diseases assessment techniques; experimental manipulation of plant-pathogen systems; and basic epidemiological tools. One field trip required. Prerequisite(s): course 24 or Biology 20C or 150; concurrent enrollment in course 163 required. A statistics course is strongly recommended. Enrollment limited to 24. G. Gilbert

164. Alaska Environments, Peoples, and Policies, W
Examines Alaska’s environments/ecosystems, Native/Euro-American history, and environmental policy. Explores selected materials from natural and social sciences, history, Alaska Native oral traditions, natural resources law, and current policy proposals. Students prepare for internships and senior research in or about Alaska. One or more of the following courses is recommended: 80C, 100, 104, 120, 123, 140, 149, 160, or 161. Prerequisite(s): permission of
instructor: quality of preparation and prior course work. Enrollment restricted to junior and senior environmental studies majors and biology, Earth sciences, and economics combined majors. Enrollment limited to 16. D. Kelso

165. Freshwater Issues and Policy. *

Concepts, vocabulary, and skills necessary to the analysis of freshwater issues are introduced from hydrology, ecology, law, economics, engineering, and other disciplines. The skills are then applied to case studies involving local, state, and international freshwater conflicts and crises. Prerequisite(s): courses 23 and 25. Enrollment restricted to environmental studies majors and biology, Earth sciences, and economics combined majors. B. Haddad

166. Agroecosystem Analysis and Watershed Management. S

Explores a range of approaches to examine agroecosystem function, watershed management, and concepts of sustainability. Uses a combination of lecture, demonstration, field work, and field trips to illustrate approaches to analysis of managed ecosystems behavior and the integration of biophysical and socio-political knowledge to aid in watershed management. Prerequisite(s): course 130A/L or 130B or 129 or 133 or 160 or 167. Enrollment restricted to junior and senior environmental studies and combined majors. A 2-unit concurrent internship is strongly recommended. Enrollment limited to 30. C. Shennan

167. Freshwater and Wetland Ecology. *

Field and lecture course teaches the physical and biological patterns and processes in freshwater and wetland systems, primarily focusing on Central Coast systems from headwaters to coastal marshes. Prerequisite(s): course 24 or Biology 20C and Chemistry 1A. Enrollment limited to 30. The Staff


Studies biogeochemical cycles and related environmental issues such as global environmental change, eutrophication, ecosystem degradation, and agricultural sustainability. Discusses transformation and movement of major nutrient elements in context of watershed ecology and societal implications. Prerequisite(s): course 23 or Chemistry 1A or 1B or 1C. W. C. Cheng

172. Science, Policy, and the Environment. F

Introduces students to the dilemmas of science-based environmental policy and discusses their underlying philosophical underpinnings. Explores emergent alternatives, such as the precautionary principle and alternatives assessment, and examines the relationship between experts and the lay public in public controversies. Prerequisite(s): satisfaction of the Subject A and Composition requirements (General Education Code); W. I. S. Rajan

173. An Introduction to World Environmental History.

Introduces students to some of the central issues in world environmental history such as: human attitudes toward the natural environment; the role of human societies, their institutions and technologies in changing the face of the earth; and the historical impact of environmental and developmental policies on race, class, and gender differences in a variety of human communities across the world. Prerequisite(s): course 100. Enrollment limited to 30. The Staff

179. Environmental Interpretation. S

A field course in theory and practice of environmental interpretation in parks, museums, and school programs with special attention to local natural history and children. Students will work to define their own interpretive philosophy, skills, and style. Background in natural history and/or experience working with children recommended. Preference given to juniors. Prerequisite(s): course 100. Concurrent enrollment in course 184 required. Preference given to juniors. Enrollment limited to 18. The Staff

181. Arboretum Internship. *

Supervised learning experience working with the faculty and staff, utilizing facilities of the UCSC Arboretum. Students learn general horticultural techniques through work at the Arboretum. They also gain specialized knowledge of plant conservation, systematics, habitat restoration, and plant care. Prerequisite(s): course 100 or Biology 20C and permission of instructor. May be repeated for credit. The Staff

183. Environmental Studies Internship.

A supervised off-campus learning experience related to environmental problem solving. Students may work with government agencies, private organizations, citizen action groups, or in specialized apprenticeships on an individual or team basis. Internship intended for environmental studies majors. Prerequisite(s): permission of instructor. Students submit petition to course sponsoring agency. May be repeated for credit. The Staff

183B. Senior Internship, F, W, S

Prepared to declared majors only. This course combines field- work at an off-campus agency and a comprehensive analytical paper produced for the agency. Equivalent to a thesis in terms of the depth and quality of the work expected. It is combined with a 5-credit internship. Concurrent enrollment in course 183 required. Students submit petition to sponsoring agency. Enrollment restricted to environmental studies majors and the combined majors with Earth sciences, biology and economics. The Staff

184. Environmental Studies Internship (2 credits). F, W, S

A supervised learning experience related to environmental problem solving. Students may work with government agencies, private organizations, citizen action groups, or in specialized apprenticeships on an individual or team basis. This 2-credit internship focuses on specific skill development and must be connected to another internship, thesis, or course—except in rare circumstances for which students must petition. May be repeated for credit. The Staff

190. Capstone Course: Environment and Culture. W

A synthetic course that draws on the knowledge and skills students bring from other courses in the major. Focuses on written and oral individual and group projects in which students must take the initiative. Emphasizes developing skills critical for students in their future careers. Prerequisite(s): course 100. Enrollment restricted to senior environmental studies majors and the combined majors with Earth sciences, biology, and economics. K. Hadi

192. Directed Student Teaching. F, W, S

Teaching a lower-division seminar. (See course 42.) Prerequisite(s): upper-division standing permission of environmental studies faculty member and chairperson of department. The Staff

193. Field Study. F, W, S

Supervised research or organized projects relating to environmental problems, supplemented by guided individual study. May be repeated for credit with consent of the chairperson of environmental studies. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

193F. Field Study (2 credits). F, W, S

Provides for department-sponsored individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. May not be counted toward major requirements. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

194. Teaching Environmental Studies. F, W, S

T his provides an opportunity to participate in the preparation and teaching of introductory environmental studies courses. Students will have significant responsibility in leading discussion sections. Students submit petition to sponsoring agency. The Staff

195A. Senior Research. F, W, S

An individually supervised course, with emphasis on independent research that either results in a thesis or project or is done in conjunction with a senior internship. In order to receive credit, students must turn in two bound copies of the final write-up. Satisfies the senior comprehensive requirement. Students submit petition to sponsoring agency. The Staff

195B. Senior Thesis Group. F, W, S

Students involved in group or individual research that results in a senior thesis or project done in conjunction with an internship meet regularly with their faculty sponsor to discuss the progress of their work, to receive academic and technical guidance, and to critique one another's written work. To receive credit the student must submit two bound copies of the completed research and write-up. Satisfies the senior comprehensive requirement. Students must discuss details with faculty sponsor. Students submit petition to sponsoring agency. The Staff

195D. Senior Seminar: Methods in Environmental Policy Analysis. *

Introduction to some of the tools in environmental policy analysis, ranging from quantitative techniques (drawing on economics and statistics) to cross-cutting, qualitative designs. Students perform policy analysis exercises throughout the quarter and evaluate normative dimensions of competing analytic techniques. Prerequisite(s): instructor determination based on student's academic background. Enrollment limited to 18. The Staff

196D. Senior Seminar: Risks, Values, and Choices. *

Advanced readings and research on environmental risk and public choice and policy. Builds on course 172 and explores the values and choices implicit in conventional risk assessment methodologies as well as those in emergent alternatives, such as the precautionary principle. Prerequisite(s): course 172 and interview to determine level of preparation and appropriateness of background. Enrollment restricted to senior and graduate environmental studies majors and Earth sciences, biology, and economics combined majors. Enrollment limited to 20. S. Rajan

196E. Senior Seminar: Advanced Agroecosystem Analysis. *

Explores a range of approaches to examine agroecosystem function and concepts of sustainability. The Center for Agroecology and Sustainable Food Systems farm and its surrounding habitat will be the major focus of independent or group field research, but off-site locations may also be studied. Students will learn field and analytical techniques, formulate a research project, design a data collection scheme, conduct research, and provide a written analysis and discussion of their results. Prerequisite(s): course 130A or 130B. Enrollment limited to 15. C. Shennan
196K. Senior Seminar: Sustainable Development in Developing Countries. * 
Analyzes selected topics in policy issues surrounding sustainable development in developing countries. Theoretical issues/definitions of "sustainability" will be examined, and concrete cases of environmental and natural resource policy choices will be analyzed. Prerequisite(s): permission of instructor only with assessment of level and suitability of prior coursework. Enrollment limited to 20. A. Richards

196P. Senior Seminar: Regional Foodshed Research Practicum. W 
This course involves supervised individual and group interdisciplinary research on ecological and social justice dimensions of food production and community food security in the Monterey Bay region. Students are expected to actively engage with regional actors, local agencies, and community programs. Prerequisite(s): interview to determine background and interest in doing advanced field research on local agro-food issues with assessment of quality of work in relevant courses. Enrollment limited to 15. M. Fitzsimmons

196R. Advanced Research Topics in Applied Ecology. S 
Faculty-facilitated research projects conducted within a central theme to satisfy the senior exit writing requirement. Themes have theoretical and applied components and encompass multiple disciplinary approaches. Examples include "Forest Ecology and Exploitation" and "Transgenic technologies: Science and Policy." Prerequisite(s): interview to determine background and appropriateness of background. Enrollment restricted to senior environmental studies majors and the combined majors with biology, Earth sciences, and economics. Enrollment limited to 15. S. Giesman, S. Swayne

198. Independent Field Study. F,W,S 
Student's supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence) or student is doing all or most of the course work off campus. Prerequisite(s): suitable preparation for fieldwork and faculty and competence in subject matter area; students submit petition to sponsoring agency. M. Fitzsimmons

198F. Independent Field Study (2 credits). F,W,S 
Provides for department-sponsored individual off-campus for which faculty supervision is not in person but by correspondence. M. Fitzsimmons

199F. Tutorial (2 credits). F,W,S 
Provides for department-sponsored directed reading, supervised research, or organized projects relating to environmental problems. M. Fitzsimmons

Graduate Courses

201A. Keywords and Concepts. F 
Two-quarter course introduces keywords and concepts that underlie interdisciplinary work in environmental studies through lectures, directed readings, and discussion. Modules include resonant concepts in ecology and society; ecology and evolution; environmental and development; the global environment and society; agroecology and conservation biology; and public policy, economics, and law. Final grade for both courses assigned at the end of the second quarter. Enrollment restricted to graduate students. W. Cheng, B. Haddad, D. Letourneau, G. Gilbert, S. Rajan, M. Fitzsimmons

201B. Keywords and Concepts. W 
Two-quarter course introduces keywords and concepts that underlie interdisciplinary work in environmental studies through lectures, directed readings, and discussion. Modules include resonant concepts in ecology and society; ecology and evolution; environment and development; the global environment and society; agroecology and conservation biology; and public policy, economics, and law. Final grade for both courses assigned at the end of the second quarter. Enrollment restricted to graduate students. W. Cheng, B. Haddad, D. Letourneau, G. Gilbert, S. Rajan, M. Fitzsimmons

201M. Interdisciplinary Research Methods (3 credits). S 
This seminar focuses on the challenges of undertaking research in an interdisciplinary environment. Students analyze the conventions of their research communities and frame and focus research questions, evaluate appropriate methodologies for field, laboratory, and archival research, and develop a research proposal. Enrollment restricted to graduate students. M. Fitzsimmons

201N. Interdisciplinary Research Design in Environmental Studies (3 credits). S 
Provides students with opportunities to learn research protocols, practices, and methods used in environmental studies. Combination of lectures, reading, practical exercises, and short projects used to explore how these methods can be incorporated into interdisciplinary research design. Enrollment restricted to graduate students. G. Gilbert

210. Political Ecological Thought and Environment. F 
Provides an introduction to social scientific analyses of the relationships between capitalist development and the environment in the late twentieth century. It has a dual purpose: First, to develop a contemporary historical understanding and sensibility of how economic change, new institutional configurations, and world scale processes are shaping interactions with the environment. Second, to examine some recent political social theoretical perspectives on nature-society relations and radical environmental and social movements. Enrollment restricted to graduate students. A. Richards

220. Conservation Biology. F 
The principles of conservation biology, including a review of the core disciplines of demography, population genetics, island biogeography, and community ecology and discussion of area and edge effects, population viability, and ecosystem issues related to the maintenance of biological diversity, especially in fragmented landscapes. Enrollment restricted to environmental studies graduate students. Enrollment limited to 20. K. Hodd, G. Gilbert

230. Agroecology and Sustainable Agriculture. W 
The application of ecological concepts and principles to the design and management of agricultural systems. The long-term goal of sustainable agroecosystems examined in economic, social, and ecological contexts. Enrollment restricted to environmental studies graduate students. C. Shennan

235. Social Theories of Nature. * 
Intensive reading and discussion seminar on the treatment of nature in social theory. Focuses on major recent works which examine nature in social theory, in themselves, and in the context of the intellectual history of development of disciplinary discourses about nature. Students write critical reviews of assigned books and a research paper situating a particular book within its intellectual tradition. Prerequisite(s): interview with instructor to determine preparedness. Enrollment limited to 15. M. Fitzsimmons

240. Public Policy and Conservation. S 
Introduction to political and economic approaches to policy analysis, with particular reference to natural resource scarcity, property rights, and environmental conservation. Case studies apply economic and policy process concepts to the management of public lands, biodiversity, and renewable resources. Enrollment restricted to environmental studies graduate students. D. Press

247. Regional Approaches to Environmental Policy. * 
A research seminar combining theoretical issues in democratic theory, political economy, and planning with emerging concepts of bioregionalism. The focus is on institutional, scientific, and political innovations in managing the environment. Students evaluate current and historical proposals to regionalize environmental policy in the U.S. Enrollment restricted to environmental studies graduate students. Enrollment limited to 15. R. Sanchez-Rodriguez

263. Plant Disease Ecology. * 
Introduction to ecological roles of plant diseases, including their importance in regulating plant populations dynamically, community diversity and system function in natural ecosystems, considerations of plant diseases in conservation ecology, and ecological approaches to managing diseases in agroecosystems. Students cannot receive credit for this course and course 163. Prerequisite(s): one ecology course. Enrollment restricted to graduate students. G. Gilbert

271. Valuing the Environment. * 
Intensive seminar examining the normative underpinnings of environmental values. Draws on texts from analytical, ethical, and political philosophy to develop normative arguments concerning environmental inequality and justice, environmental preservation, and risk evaluation. Involve students in projects in which students develop cases on controversial contemporary issues such as biotechnology. Prerequisite(s): interview only. Enrollment restricted to graduate students. Enrollment limited to 20. M. Fitzsimmons

The Staff
Environmental Toxicology

269 Bakin Engineering Building
Telephone (831) 459-4719
FAX (831) 459-3524
http://www.etox.ucsc.edu

Faculty and Professional Interests

A. Russell Flegal, Professor
Anthropogenic perturbations of biogeochemical cycles, applications of isotopic tracers in anthropology and archaeology

Karen Ottoemman, Assistant Professor
Environmental responses of pathogenic bacteria

Chad Saltikov, Assistant Professor
Mycological anabolic respiratory process that influence the biotransformation of pollutants in the environment

Donald R. Smith, Professor
Organizational responses and therapeutic treatment of toxins

Fitnat Yildiz, Assistant Professor
Mycology, molecular genetics, genomics; the mechanism of persistence of survival of Vibrio cholerae

Zhiwu Zhu, Assistant Professor
Model systems of molecular mechanisms of metal homeostasis

Kenneth W. Bruland (Ocean Sciences)
Chemical oceanography, biogeochemistry of trace metals and radionuclides, aquatic chemistry, geochemistry

Donald Croll (Ecology and Evolutionary Biology)
Foraging ecology of marine birds and mammals, island conservation/ ecology

Anthony L. Funk (Chemistry and Biochemistry)
Molecular basis of protein deposition diseases— for example, Parkinson’s disease and amyloidoses; development of drugs to prevent protein deposition, protein folding, and aggregation; biophysical studies of protein structure

Andrew Fisher (Earth Sciences)
Hydrogeology, crustal studies, heat flow, modeling

Grant Hartzog (Molecular, Cell, and Developmental Biology)
Biochemistry, genetics, chromatin and transcriptional regulation

Lindsay Hinck (Molecular, Cell, and Developmental Biology)
Neurobiology, cell biology, development

Theodore Holman (Chemistry and Biochemistry)
Bioorganic and biological chemistry

Douglas K. Kellogg (Molecular, Cell, and Developmental Biology)
Coordination of cell growth and cell division

Raphael Kudela (Ocean Sciences)
Ecological modeling and remote sensing, satellite oceanography, phytoplankton ecology and harmful algal blooms

Pradip K. Maschak (Chemistry and Biochemistry)
Bioorganic chemistry; design of antitumor drugs, modeling of activities of metalloenzymes, design of catalysts for hydrocarbon oxidation, studies on intermediates in non-heme oxygenase chemistry; design of NO donors for photodynamic therapy

Matthew McCarthy (Ocean Sciences)
Organic geochemistry, marine organic geochemistry, global biogeochemical cycles

Glenn L. Millhauser (Chemistry and Biochemistry)
Electron spin resonance; nuclear magnetic resonance; melancortin receptor signaling; agouti proteins; prions; peptide synthesis

Peter T. Raimondi (Ecology and Evolutionary Biology)
Marine ecology, evolutionary ecology, experimental design, applied ecology
MARY W. SILVER (Ocean Sciences)
Biological oceanography, marine plankton, midwater ecology

FRANK J. TALAMANTES, Emeritus (Molecular, Cell, and Developmental Biology)

JONATHAN ZEHRT (Ocean Sciences)
Aquatic microbial ecology, biological oceanography

MARTHA C. ZÜNGA (Molecular, Cell, and Developmental Biology)
Molecular, cellular, and developmental biology of the immune system

Program Description

The Environmental Toxicology Department sponsors both undergraduate and graduate courses in environmental toxicology, both within the department and through affiliated departments. The curriculum offers a strong foundation in fundamental and applied toxicology, in order to provide the breadth and depth of perspective required for this interdisciplinary science. Research interests of students and faculty in environmental toxicology span the fields of biology, microbiology, chemistry, Earth sciences, ocean sciences, environmental studies, and human health.

Students are expected to combine rigorous academic training with development of sophisticated research skills needed to excel in the rapidly evolving field of environmental toxicology. By understanding (1) sources, transport, and fate of toxins and (2) their interactions with biological systems, students learn to critically assess the complex effects of toxins at the molecular, cellular, organismal, and ecosystem levels.

Graduate Programs

The graduate programs in environmental toxicology, M.S. and Ph.D., are designed to prepare students for the competitive job market and for graduate school in environmental toxicology or related disciplines. Students interested in environmental toxicology should major in a field such as biology, marine biology, molecular, cell, and developmental biology, environmental sciences, or environmental studies while taking environmental toxicology electives.

In addition, the program provides unique opportunities for exceptional undergraduates to conduct research in environmental toxicology. These opportunities are limited to students who have demonstrated their potential in underlying toxicity, factors influencing toxic action, and undergraduate courses in the basic sciences and environmental toxicology. With department approval, these undergraduates may also take graduate courses in environmental toxicology, with their course work applied toward a graduate degree in environmental toxicology if they are accepted into the program. With such advanced preparation, these students may be able to spend most of their fifth year on thesis research, completing a master's degree within one additional year.

Lower-Division Courses

80E. Aquatic Toxicology, F
An introduction to the sources, cycling, and impacts of toxicants in aquatic systems, including acid rain, groundwater, fresh water rivers and lakes, estuaries, and the ocean. Emphasis is on the properties of toxic chemicals that influence their bioavailability and factors that influence their toxicity to aquatic organisms and humans (General Education Code(s): T2-Natural Sciences, Q.) A. Flegal

Upper-Division Courses

102. Cellular and Organismal Toxicology, W
Emphasizes biochemical, cellular, and organ system basis of intoxication, including dose-response relationships, biodetoxification of toxicants, biochemical mechanisms underlying toxicity, factors influencing toxic action, and tolerance in physiological systems. Students interested in environmental toxicology should major in a field such as biology, marine biology, molecular, cell, and developmental biology, environmental sciences, or environmental studies while taking environmental toxicology electives.

110. Scientific Presentations (3 credits), F
Presentation of scientific research in academic formats. These include both oral and poster presentations. The presentations will be based on original research conducted by each student. A. Flegal

120. Environmental Statistical Analysis. *
Provides a fundamental understanding of data generation, sampling design, and statistical analysis. Environmentally related data sets will be analyzed either by hand or using the statistical package “Minitab.” S. Squire

125. Practicing Safe Science (2 credits), W
Introduces research safety principles and practices. Instructors and guest experts discuss research hazards and control measures. Students explore the safe use of research methods and materials via hands-on and outside exercises. Issues include compliance with hazardous waste and other environmental safety regulations. J. Schonover

135. Biological Chemistry of the Elements. S
Examines, from a biological point of view, how the chemistry of elements is played out by a cell and identifies chemical and biological factors that govern a cell’s selection of certain elements for biological reactions and processes. The goal is to inspire students, particularly the chemistry major, to learn and take cues from cells to appreciate and explore the beauty of chemistry. Prerequisite(s): Biology 100 or Chemistry 103 or Biochemistry 100A or equivalent. Z. Zhu

138. Biology of Disease, W
Primary objective is to provide an understanding of disease processes in humans. Integrates normal physiology and pathophysiology with the molecular and physiological bases of diseases. Major emphasis on the physiological, molecular, and biochemical basis of diseases, with particular emphasis on the neuromuscular, cardiovascular, respiratory, renal, immune, and central nervous systems. Also addresses environmental risk factors in the etiology of diseases. Overview provided, but covers selective topics considered most important in depth. (Also offered as Biology 118. Students cannot receive credit for both courses.) Prerequisite(s): Biology 20A and 20B or equivalent and Biology 110. Biology 130 is recommended. D. Smith

140. Molecular Biology of Prokaryotes. S
Focuses on several aspects of prokaryotic molecular biology. Covers transcriptional regulation, translational regulation, DNA replication and segregation, protein secretion, transport of small molecules, control of metabolism, stress response, bacterial differentiation, signal transduction, biofilm formation, and motility. Strong focus on experimental techniques and approaches used in prokaryotic molecular biology. Focus on model bacteria such as Escherichia coli and Bacillus subtilis. Students cannot receive credit for this course and course 240. T. Staff

144. Groundwater Contamination. *
Analyses of contemporary problems in groundwater contamination, based on current scientific understanding of contaminant transport in aquifers. Topics include both theoretical concepts and case studies. Prerequisite(s): Earth Science 110B. A. Flegal

150. Introduction to Research and Experimental Design, *
Lecture-based course for advanced undergraduates actively engaged in undergraduate research (e.g., independent study or senior thesis). Emphasizes basic lab skills, including laboratory safety and handling of laboratory equipment; experimental design; scientific record keeping; and literature searching, review, and management. Z. Zhu, K. Ottemann
151. Scientific Writing and Presentation. *  
For advanced undergraduates who are actively engaged in undergraduate research (e.g., independent study or senior thesis). Emphasizes the collection, reduction, analysis, management, and interpretation of scientific data; the presentation of scientific data in written and oral forms; and further development of critical thinking. Pre-requisite(s): satisfaction of the Subject A and Composition requirements. (General Education Codes(s): W.) The Staff

An individually supervised course, with emphasis on independent research culminating in a senior thesis. May be repeated for credit. The Staff

198. Independent Study, F,W,S  
Provides for individual programs of study (a) by means of supervision in person or (b) when the student is doing all or most of the course work off campus. With permission of the department, two or three courses may be taken concurrently, or the course repeated for credit. May be repeated for credit. The Staff

199. Tutorial, F,W,S  
Reading, discussion, written reports, and laboratory research on selected topics. May be repeated for credit. The Staff

Graduate Courses

201. Sources and Fates of Pollutants, F  
Focuses on in-depth important principles of environmental toxicology related to the introduction, transport, and fate of toxicants in aquatic and terrestrial environments including environmental chemistry and biogeochemical cycles as well as exposure pathways and uptake by organisms. Additional emphasis will be placed on the susceptibility and effects of toxicants across organ systems, toxicokinetics and biomarkers of exposure, and effects at the ecosystem level. Enrollment restricted to graduate students; qualified undergraduate science majors may enroll with permission of instructor. A. Flegal

202. Cellular and Organismic Toxicology, W  
Emphasizes biochemical, cellular, and organ system basis of intoxication, including dose-response relationships, biotransformation of toxicants, biochemical mechanisms underlying toxicity, factors influencing toxic action, and biomarkers of exposure. Emphasizes effects of various classes of toxins, including heavy metals and persistent synthetic organics, with a focus on susceptible biochemical/cellular processes of the central nervous, immune, hepatic, and renal target organ systems. Designed for advanced undergraduates. Taught in conjunction with course 102. (Also offered as Biology 202. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. D. Smith

203. Cellular and Molecular Toxicology, S  
Presents in-depth cellular and molecular principles of environmental toxicology. These include modes of action and cellular and molecular targets of toxicants, as well as mechanisms of cellular and molecular responses to toxicants and their detoxification. State-of-the art biological methodologies and approaches to identify and study cellular targets of toxicants. Designed to provide students with a broad and deep understanding of the biological aspects of toxicology at both cellular and molecular levels and the skills to approach emerging challenges in the field. Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's permission. Z. Zhu

205. Scientific Skills, Ethics, and Writing, F,S  
Course provides fundamental training of graduate students in the scientific method, experimental design, ethics in science, grant proposal and scientific writing, data presentation, and scientific speaking. Students are evaluated on class participation, performance, and a written NIH/NSF style research proposal. Enrollment restricted to graduate students. Z. Zhu, D. Smith, K. Ottmann

210. Molecular and Cellular Basis of Bacterial Pathogenesis, S  
Focuses on the molecular basis of bacterial pathogenesis with specific emphasis on gene expression, regulation, and ecology and evolution. Advanced undergraduates with extensive background in microbiology and biology may enroll with permission of instructor. Enrollment restricted to graduate students. Advanced undergraduates with extensive background in microbiology and biology may enroll with permission of instructor. The Staff

215. Advanced Prokaryotic Molecular Biology (2 credits), W  
Seminar focuses on aspects of prokaryotic molecular biology. Specific topics include transcriptional regulation, translational regulation, DNA replication, secretion of proteins, transport of small molecules, bacterial differentiation, signal transduction, biofilm formation, and motility. Discussions focus on model bacteria such as Escherichia coli and B. subtilis. Enrollment restricted to graduate students. The Staff, K. Ottmann

240. Molecular Biology of Prokaryotes, S  
Focuses on several aspects of prokaryotic molecular biology. Covers transcriptional regulation, translational regulation, DNA replication and segregation, protein secretion, transport of small molecules, control of metabolism, stress response, bacterial differentiation, signal transduction, biofilm formation, and motility. Strong focus on experimental techniques and approaches used in prokaryotic molecular biology. Focus on model bacteria such as E. coli and B. subtilis. Students cannot receive credit for this course and course 140. K. Ottmann

281A. Topics in Environmental Toxicology, F,W,S  
Selected topics in environmental toxicology. Topics vary from year to year. Enrollment restricted to graduate students; qualified upper-division science majors may enroll with instructor's permission. May be repeated for credit. The Staff

281F. Topics in Aquatic Toxicology, F,W,S  
Analyzes the sources and fates of aquatic pollutants. Discussions on processes at the air-water interface, within the water column, and in aquatic sediments. Topics vary from year to year. Enrollment restricted to graduate students; qualified upper-division science majors may enroll with instructor's permission. May be repeated for credit. A. Flegal

2810. Topics in Bacterial Pathogenesis (2 credits), F,W,S  
Intensive seminar focusing on mechanisms of bacterial pathogenesis of the ulcer-causing bacterium Helicobacter pylori. Participants are required to present results from their own research and relevant journal articles. (Also offered as Biology 2800. Students cannot receive credit for both courses.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 20. May be repeated for credit. The Staff

2815. Cellular and Organismic Responses to Toxins, F,W,S  
Intensive research seminar on the concepts, theory, and techniques in deriving physiologically based pharmacokinetic models of toxin exposure, metabolism, and efficacy of therapeutic treatment in mammalian models of human metal toxicity. (Also offered as Biology 2815. Students cannot receive credit for both courses.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. The Staff

281Y. Biofilms: Processes and Regulation (2 credits), F,W,S  
Intensive seminar series focusing on the most current work on genes and the processes that regulate biofilm development dynamics as well as the recent developments on visualization of biofilms. Presentation and discussion based. Enrollment restricted to graduate students. Qualified undergraduate students may enroll with instructor's permission. May be repeated for credit. The Staff

281Z. Genetic Responses to Metal Ions (2 credits), F,W,S  
Focuses on metal ion responsive gene transcription regulation and regulated protein degradation in metal ion homeostasis. The importance of these cellular mechanisms in human health and heavy metal ion detoxification is discussed. (Also offered as Biology 281Z. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Enrollment limited to 18. May be repeated for credit. The Staff

282. Current Approaches to Molecular Pathogenesis (2 credits), W  
Graduate level seminar focusing on the mechanisms by which bacterial pathogens cause disease. Specific topics include the concepts of virulence factor regulation, toxins, and interactions of pathogens with mammalian cells and organs. Discussions focus on several key pathogens, including H. pylori, Vibrio cholerae, Salmonella typhimurium, and Listeria monocytogenes. May be repeated for credit. K. Ottmann

290. Proseminar, F,W,S  
Special topics offered from time to time by faculty, visiting professors, or staff members. Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's permission. May be repeated for credit. The Staff

292. Introductory Graduate Seminar (no credit), F,W,S  
Weekly seminars by academic and research faculty on their areas of special interest. Students write weekly abstracts on articles covered by the seminars. Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's permission. May be repeated for credit. The Staff

297. Independent Study, F,W,S  
Independent study for graduate students who have not yet settled on a research area for the thesis. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

299. Thesis Research, F,W,S  
Students submit petition to sponsoring agency. May be repeated for credit. The Staff
Ethnic Studies

UC Santa Cruz is strongly committed to the educational value of multicultural perspectives, as demonstrated by the diversity of our faculty; the breadth of our curriculum and library holdings; the extent of the involvement of our students in field study, community work, and study abroad; and the campus-centered work of many thousands of our alumni globally. The campus integrates multicultural perspectives into the curriculum as a whole, rather than establishing them as the responsibility of a separate department or departments. Students interested in comparative ethnic studies or in the study of Chicano/Latino, African American, Asian American, Jewish American, or Native American experience in particular have, therefore, a wide range of curricular options.

More than 45 faculty from 18 departments have ethnic experience within the United States among their teaching and research specialties. These faculty offer at least 80 courses each year that focus on race and ethnicity as concepts and that deal comparatively or specifically with Native American, Jewish American, African American, Asian American, African American, or Chicano/Latino experience. If any other courses in this catalog deal with these issues in more general contexts. In addition, many UCSC faculty are concerned with the histories, cultures, and societies of the other countries of the world, which are places and cultures of origin for the diverse ethnic communities of California and the United States. Students with a special interest in ethnic studies should consult offerings in American studies, anthropology, community studies, East Asian studies, education, film and digital media, global economics, history, history of art and visual culture, history of consciousness, language studies, Latin American and Latino studies, literature, music, politics, psychology, sociology, theater arts, and women's studies. A list of U.S.-centered ethnic studies courses offered each quarter is published in the Schedule of Classes. A list of faculty for whom these studies are a professional specialty is published on the UCSC catalog web site reg.ucsc.edu/catalog.

Curricular and Extracurricular Options

Students can pursue their interests in ethnic studies in a number of curricular and extracurricular ways:

- by taking one or more ethnic studies courses to meet a concentration in ethnic studies. Women's studies courses offer a systematic cluster of elective courses. In rare cases, this option may lead to the construction of an individual major (see page 34);
- by regularly attending the array of talks, exhibitions, and performances focused on ethnic experiences and perspectives and by taking advantage of opportunities to participate in cultural, journalistic, and community activities with this focus.

American communities as an integral part of their academic study;
- by taking courses independently (in consultation with an academic advisor), as part of developing a systematic cluster of elective courses. In rare cases, this option may lead to the construction of an individual major (see page 34);
- by regularly attending the array of talks, exhibitions, and performances focused on ethnic experiences and perspectives and by taking advantage of opportunities to participate in cultural, journalistic, and community activities with this focus.

Film and Digital Media

101 Communications Building  (831) 459-3204
film@ucsc.edu
http://film.ucsc.edu

Faculty and Professional Interests

Professor

ELI E. HOLLANDER
Film and video directing, editing, cinematography, videography, digital image generation, screenwriting

CHARLES L. LORD
Film and video directing and editing, video theory and history, video installation, screenwriting, documentary production

MARGARET MORSE
Digital and electronic media theory and criticism, media art, media history, technology and culture, film history and theory, documentary and science fiction

Associate Professor

LAWRENCE ANDREWS
Film, video, installation and media art

SHARON DANIEL
Community based public art in information and communications environments, new art, social and political aspects of computer networks and databases, human-computer interface design

SHELLEY STAMP
Film history, theory and criticism; silent cinema; women's filmmaking; film censorship; histories of moving; feminist approaches to cinema

Assistant Professor

DAVID CRANE
Film and media theory, discourse on technology, digital culture, experimental media, critical and psychoanalytic theory

IRENE GUSTAFSON
Film and video production, hybridized approaches to genre, production design, issues of gender and sexuality studies

AMELIE FASTIE
Film theory and history, feminist film and television studies, Chinese cinemas, issues of authorship, interdisciplinary approaches

L. S. KIM
Television history and theory, racial discourse, postcolonialism, "New Orientalism" in popular and transnational media genres

Program Description

The film and digital media major at UCSC offers an integrated curriculum involving theory, criticism, and cultural analysis, as well as a production program in the aesthetics and techniques of film and digital media. This bachelor of arts degree program provides students with the critical skills, theoretical concepts, and historical knowledge necessary to conduct informed analysis of cinema, television, video art, and new media, along with the up-to-date technical knowledge, practical skills, and art史tic contexts needed for the production of film, video, and digital media. The major provides a course of study that develops an understanding of moving image and digital media as essential tools of communication and artistic practice.

Students in the general film and digital media major develop an understanding of major movements in world cinema and different aesthetic approaches to the medium, while studying the cultural impact of television and the rise of video and digital art in recent decades. Students in the highly selective production concentration are encouraged to demonstrate technical proficiency and creative vision in film and digital media production while also studying the histories and theories of these media. Students in both facets of the major acquire skills in media analysis while maintaining a broadly based liberal arts perspective. The UCSC program is interdisciplinary, combining theory and practice in film, video, and digital media with study in other areas of the arts, humanities, and social sciences that help students understand the role these media play in society.

As the technologies of film and video merge with digital computer-based moving images and interactive media, and as digital media continues to expand into everyday experience, students in the major are uniquely positioned to excel in these fields. Graduates of the UCSC film and digital media program have enjoyed considerable success both in the professional world and in gaining admission into top graduate schools in the field.
Students enrolled in film and digital media production classes have access to 16 mm film, audio, video, and digital production and postproduction equipment. Facilities include a new digital media lab; audio recording studio, sound stage with green screen; digital nonlinear editing rooms; telecine, film sound, and video format conversion rooms; a computerized sound effects library; and student equipment checkout. Additionally, computer laboratories equipped for digital image manipulation, web authoring, and interactive interface design and viewing rooms are available. The critical studies facilities include classrooms equipped for high-end film, video, and data projection. The library holdings in film and video history, theory, and literature are complemented by a large collection of films, videos, laser disks, and DVDs, including a diverse range of international feature films, experimental film and video work, animation, silent films, and documentaries.

Some courses offered by the Film and Digital Media Department are restricted in enrollment; admission is based on completion of prerequisites and other specific written application requirements. Admission to advanced production courses is generally restricted to third- and fourth-year students and is based on the submission of a portfolio of work produced in the introductory production class (course 170B) and other production workshops.

Declaring the Film and Digital Media Major

Prior to declaring the film and digital media major, students must complete two of the required three lower-division courses and receive a B- or better in each class. Students may use their third required 20-level course as one of the two courses that require a B- or above in order to declare the major. All 20-level courses must be taken for a letter grade by students who intend to declare film and digital media as their major.

20A The Film Experience
20B Introduction to Television Culture and Society
20C Introduction to Digital Media
20P Introduction to Production Technique

Students are encouraged to complete the lower-division courses as early in their studies as possible so that the petition to major status is accomplished no later than the first quarter of the junior year. Acceptance into the film and digital media major does not constitute acceptance into the production concentration. Transfer students should consult the Transfer Student section for instructions on declaring the major.

Students who feel that there were extenuating circumstances which prevented them from meeting the requirements for declaring the major may appeal their denial by submitting a letter to the Film and Digital Media Department. The appeal must be filed no later than 15 days after the denial notification was mailed or the 10th day of classes in the quarter of the denial, whichever is later. For further information regarding this process, contact the Film and Digital Media Department.

Program of Study

The general film and digital media major requires three lower-division and 10 upper-division courses in residence and satisfaction of the senior comprehensive requirement. Students must include among these 13 courses at least one upper-division S-credit course that focuses on diversity (i.e., non-Western, underrepresented ethnicity, gender, or sexual orientation). A list of courses satisfying the department’s diversity requirement is available at the department office. Students in the general film and digital media major may apply for admission to the highly selective and competitive production concentration within the major (see Production Concentration below).

Lower-Division Requirements

Students must take the lower-division classes for a letter grade, and they must earn a B- or better in two of the three required lower-division classes to petition for the major.

20A The Film Experience, and two of the following three courses are required for all majors:
20B Introduction to Television Culture and Society
20C Introduction to Digital Media
20P Introduction to Production Technique

General Film and Digital Media Major

Students must complete the upper-division core curriculum by completing one course from each of the following five groups in film and digital media:

120 Introduction to Film Theory and Criticism
130 Silent Cinema or
132A International Cinema to 1960 or
132B International Cinema, 1960 to Present or
132C Gender and Global Cinema
134A American Film, 1930–60 or
134B American Film, 1960–Present
136A Experimental Film and Video or
136B History of Television or
136C Visual Culture and Technology: History of New Media
194A Film Theory Seminar or
194B Electronic Media Theory Seminar, or
194C New Media Theory Seminar or
194D Film History Seminar or
194E International Cinemas or
194F Film and the Other Arts Music and Dance or
194G New Media

Five upper-division elective courses are to be chosen from the following:

• up to five additional upper-division history/criticism studies courses in film and digital media;

• up to two upper-division courses in film and digital media production (170A, 170B, 171, 172, 173, 175, 176, 177, 178A, 178B);

• course 150 or 151;

• up to two upper-division courses offered by other departments; course substitutions must be approved by the faculty adviser.

Film and Digital Media Major Planners

The following are two recommended academic plans for students to complete during their first two years as preparation for the film and digital media major. Plan One is a guideline for students who are committed to the major early in their academic career; Plan Two is for students who are considering the major.

Students who are interested in the production concentration should seriously consider Plan One in order to be better prepared for application to production studios.

<table>
<thead>
<tr>
<th>Plan One</th>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Film 20A</td>
<td>low/avg Film req</td>
<td>gen ed</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
<tr>
<td>(film) college core</td>
<td>gen ed</td>
<td>gen ed</td>
<td>(or alternate)</td>
<td>two gen eds (declare major)</td>
</tr>
</tbody>
</table>

*film and digital media

<table>
<thead>
<tr>
<th>Plan Two</th>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>low/avg Film req</td>
<td>gen ed</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
<tr>
<td>1st</td>
<td>low/avg Film req</td>
<td>gen ed</td>
<td>gen ed</td>
<td>gen ed</td>
</tr>
</tbody>
</table>

Production Concentration

Admission to the production concentration is highly selective, based on promise and accomplishment shown in the student’s work. After completing course 170B, students may apply to the production concentration by submitting works to a portfolio review conducted at the end of each quarter. These student works are reviewed by a committee of film and digital media production faculty. Application materials and instructions are available at the Film and Digital Media Department Office. Students should note that production courses are in high demand and that faculty workload considerations and equipment resources require a limitation on the number of applicants accepted into the production concentration. Students may reapply a second time if not accepted.

Requirements for the Production Concentration

Students in the production concentration complete the following required upper-division core curriculum (six courses):

120 Introduction to Film Theory and Criticism
170A Fundamentals of Film and Video Production

two of the following production courses:

150 Screenwriting
151 Fundamentals of Digital Media Production
171A Documentary Production Workshop: Sound
171C Special Topics: Found Footage
171D Social Information Spaces
172 Film and Video Studio
173 Narrative Workshop
175 Documentary Video Workshop
176 Experimental Video Workshop
177 Digital Media Workshop: Computer as Medium
178A Personal Computers in Film and Video
178B Advanced Personal Computers in Film and Video
178C Introduction to Digital Media Production

and two critical studies courses—one each from two of the following groups:

130 Silent Cinema or
132A International Cinema to 1960 or
132B International Cinema, 1960 to Present or 132C Gender and Global Cinema 134A American Film, 1930–60 or 134B American Film, 1960–Present 136A Experimental Film and Video or 136B History of Television or 136C Visual Culture and Technology: History of New Media and four upper-division elective courses from the following:
- up to two upper-division courses in film and digital media production (150, 151, one of the 171 series, 172, 173, 175, 176, 177, one of the 178 series);
- at least two upper-division film and digital media history/critical studies courses;
- up to two upper-division critical studies elective courses from another department; course substitutions must be preapproved by the faculty adviser.

Comprehensive Requirement
All seniors in the general film and digital media major or the production concentration may select one of three options to satisfy the campus exit requirement.
- Senior seminar: The senior seminars (courses in the 194 series) are restricted to majors in their senior year and are writing intensive. Students in the general major are required to complete one senior seminar. Students in the production concentration may complete the senior seminar to satisfy the senior exit requirement or as an elective.
- Senior thesis. With prior faculty approval, a student may elect to do a senior thesis (course 195). The student must contact a faculty member at least one quarter in advance to submit a proposal and obtain faculty approval for a senior thesis. The proposal may involve writing a screenplay, expanding on a paper from a previously completed upper-division critical studies course in film and digital media, or writing an original paper in a particular area resulting in a substantial research.
- Senior project: A limited number of students in the production concentration are able to participate in the senior project (course 196A or 196B or 197) during spring quarter only. Admission is by application, with review of previous works and evaluation of the proposed final project by film and digital media production faculty.

Transfer Students
All transfer students must earn a B- or higher in both 20-level courses (at least one must be taken at UCSC) in order to declare the major. Appeal procedures are the same as for non-transfer students. Three lower-division and 10 upper-division courses are required for completion of the major. With some lower-division preparation, transfer students should be able to complete the upper-division course work and the major within two years. As preparation, prospective transfer students are encouraged to fulfill at least one lower-division film and digital media major requirement (course 20 series) through UCSC Summer Session prior to their transfer. Transfer students must petition the department to have equivalent lower-division courses taken at their current institution count toward their UCSC major requirements provided they have earned a B- or higher in that course. Students who have completed none of the lower-division major requirements prior to transfer to UCSC, students who are interested in graduating with a double major, and students who must finish general education requirements may need additional time to complete their studies. Transfer students are strongly encouraged to speak with an academic adviser at the department office prior to enrolling in classes in order to determine their status and to begin the declaration of major process as soon as possible.

Minor Requirements
The minor in film and digital media offers a foundation in visual culture and contributes important scholarly techniques of value to other disciplines. Students earn a minor in film and digital media by completing eight courses: two lower-division courses as prerequisites for the minor and six upper-division courses including four from the core curriculum of the general major and two electives. There is no production component in the minor, nor is there a comprehensive requirement.

Two prerequisites
At least two lower-division courses:
20A The Film Experience and one of the following three courses:
20B Introduction to Television Culture and Society
20C Introduction to Digital Media
20P Introduction to Production Technique

Four upper-division core courses
Course 120, Introduction to Film Theory and Criticism, and at least three additional courses, including one from each of the following three groups:
130 Silent Cinema or
132A International Cinema to 1960 or
132B International Cinema, 1960 to Present or
132C Gender and Global Cinema
134A American Film, 1930–60 or
134B American Film, 1960–Present
136A Experimental Film and Video or
136B History of Television or
136C Visual Culture and Technology: History of New Media

Two electives
Any two upper-division film and digital media courses other than production studio courses (170A through 178A, 178B, and 178C) that have not been used to satisfy the above core curriculum.

Lower-Division Courses
20A. The Film Experience. F,S
An introduction to the basic elements, range, and diversity of cinematic representation and expression. Aesthetic, theoretical, and critical issues are explored in the context of class screenings and critical readings. Students are billed for a course fee. Enrollment restricted to first-year students, sophomores, and juniors. (General Education Code(s): H., A.) P. Limbrick, The Staff

20B. Introduction to Television Culture and Society. W
Introduction to the basic forms of television presentation, investigating narrative structure from movies and situation comedies to soap opera, plus modes of direct discourse in news, advertising, sports, music, television, and other genres. Alternative forms and modes in electronic media, such as independent video art and documentary, public television, cable, and electronic networks are explored, with their potential for expressing cultural diversity in relation to social, cultural, and political conditions. Students are billed for a course fee. Enrollment restricted to first-year students, sophomores, and juniors. (General Education Code(s): H., A.) L. Kim

20C. Introduction to Digital Media. F,W
Introduces fundamental features of digital media and examines the immense visual, social, and psychological impact of the "digital revolution" on our culture. Topics include the concepts and forms of the digital hypertext interface, Internet, and web, and the impact of digital media on conceptions of the self, body, identity, and community. Students are billed for a course fee. Enrollment restricted to first-year students, sophomores, and juniors. (General Education Code(s): H., A.) D. Crane, W. Sack

20P. Introduction to Production Technique. W
Introduction to production processes with emphasis on low-budget, independent film and video making. Explores conceptualization, planning, shooting, editing of documentary, personal essay, and feature narrative works. Emphasis on visualization and shooting style, and scriptwriting, but not hands-on editing. Open to students of varied backgrounds and goals. Students are billed for a course fee. (General Education Code(s): A.) I. Gustafson

42. Student-Directed Seminar. F,W,S
Seminars on selected topics taught by upper-division students under faculty supervision (see course 192). Students may submit petition to sponsoring agency. The Staff

80A. Technothrillers. *
Examination of recent films classified as "thrillers" that approach technology (computers, robotics, biotech, the Internet, etc.) through suspense, anxiety, and paranoia. It will also address how technologically produced popular culture negotiates attitudes towards technological change. Students are billed for a course fee. (General Education Code(s): T-H humanities and Arts or Social Sciences, A.) D. Crane

80B. Seeing Through the '80s: Film and Television. *
Study of film and television culture in Reagan-era America, focusing on concepts of ideology, post-modernism, and spectacle through an examination of such phenomena as MTV, teen pics, indie cinema, and Rambo. (General Education Code(s): T-H humanities and Arts, A.) The Staff

80C. Film Fashions. *
Examination of trends in cinematic styles and the role that fashion plays in films. Readings and screenings will investigate filmmaking fads, the representation of fashion, the work of film designers, and the creation of films in their own styles. (General Education Code(s): T-H humanities and Arts, A.) The Staff

80D. Urban Legends. *
Investigation of urban life through film. Readings and screenings will examine the role of legend in representing cities, the visual construction of cities, and how particular cultural, social, and historical identities shape definitions of the "urban" experience. (General Education Code(s): T-H humanities and Arts, A.) The Staff

Upper-Division Courses
120. Introduction to Film Theory and Criticism. F
An introduction to classical and contemporary film theory and those theoretical paradigms and methods that have li-
The Staff, S. Stamp

130. Silent Cinema. *
* Presents the development of silent film as a cultural form from the early period to the beginning of sound, addressing its historical evolution, technological development, aesthetic transformations, and varied cultural contexts. Students are billed for a course fee. Usually offered in alternate academic years. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code(s): W.) P. Limbrick

132A. International Cinema to 1960. W
A survey of significant developments in narrative film outside Hollywood from 1960 to the present. Major film movements and directors from around the world are studied. Students are billed for a course fee. Usually offered in alternate academic years. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code(s): A.) T. Staff

132B. International Cinema, 1960 to Present. F
A survey of significant developments in narrative film outside Hollywood from 1960 to the present. Major film movements and directors from around the world are studied. Students are billed for a course fee. Usually offered in alternate academic years. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code(s): A.) T. Staff

132C. Gender and Global Cinema. *
Offers students historical and critical tools to investigate global film through the framework of gender. Focused in particular on contemporary film (from 1960 to present), the class is structured both chronologically and via national and/or international contexts. Students cannot receive credit for this course and American Studies 210P. Students are billed for a course fee. Enrollment limited to 20. (General Education Code(s): E.) I. Gustafson

134A. American Film, 1930-1960. W
A survey of American narrative cinema from 1930 to 1960. Examines developments in style, style, and the film industry in relation to American cultural history. Students are billed for a course fee. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. Offered in alternate academic years. S. Stamp

134B. American Film, 1960-Present. S
A survey of American narrative cinema from 1960 to the present. Examines developments in style, style, film technology, and the film industry in relation to American cultural history. Students are billed for a course fee. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. Offered in alternate academic years. T. Staff

136A. Experimental Film and Video. *
A survey of various experimental styles and practices in film and video, addressing the historical developments of these media formats. The course situates experimental film and video work within the larger contexts of artistic traditions outside the Hollywood networks of production and reception. Students are billed for a course fee. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code(s): A.D.) J. Crane

136B. History of Television. S
Survey of the historical development of broadcast television from its origins to the present day phenomena of cable, satellite, and electronic networks. Examination of major genres, forms, and modes of production and consumption within cultural, social, and economic contexts. Offered every other year, alternating with course 136A. Students are billed for a course fee. Prerequisite(s): course 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code(s): A.) L. Kim

136C. Visual Culture and Technology: History of New Media. F
Explores the relationship between technology and change and surveys the history of various technologies of visual culture from print to computer based imagery and the Internet. Students are billed for a course fee. Prerequisite(s): course 20C. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. M. Morse

141. Information Architecture: Representing Digital Information. *
Combines critical studies and production exercises that explore how visual information for interactive media is conceptualized, structured, and represented. Readings on historical and contemporary information architecture and interactive design offer models for weekly assignments and a final project. Prerequisite(s): course 178. Enrollment restricted to film and digital media majors. Enrollment limited to 20. T. Staff

142. Beyond Cybernetics: Advanced Topics in New Media Technologies. *
Analysis of the effects of communication and information technologies on culture and production through the study of systems and networks. Assignments may include papers, Internet presentations, development/participation in virtual communities, interactive multimedia, Emphasis on advanced critical and experimental approaches. Students are billed for a course fee. Prerequisite(s): course 20C. Enrollment restricted to film and digital media majors. Enrollment limited to 40. S. Daniel, L. Andrews

150. Screenwriting. F
Problems in writing for film and television are explored through the writing of original material and analysis of existing works. Various film genres, conventions, and styles, both fictional and nonfictional, are examined. Prerequisite(s): satisfaction of the Subject A and Composition requirements, admission by application at first class meeting. May be repeated for credit. (General Education Code(s): W.) E. H. Allender

151. Film Directing. S
Workshop that explores the director’s involvement in film and video production. Topics will include the manipulation of time and space, continuity, script planning, and storyboarding. Students will participate in group and individual exercises in pre-production and scene direction. Courses 20A, 20P, and/or 170 are recommended. Prerequisite(s): Admission by application at first class meeting. Enrollment limited to 30. (General Education Code(s): A.J) T. The Staff

160. Film Genres. W, S
Concentrated study of one cinematic grouping: animated films, experimental films, a national cinema, adaptations, films with similar themes and narrative structures (e.g., westerns, musicals, science fiction). History, theory, and criticism of the genre are covered. Students are billed for a course fee. Prerequisite(s): courses 134A or 134B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. May be repeated for credit. (General Education Code(s): A.) T. The Staff, S. Stamp

161. Documentary Film and Video. *
Explores the category of nonfiction through a historical and theoretical study of documentary in film and video. Addresses ethnographic film, Soviet and Griersonian documentary, cinema verite and/or other selected documentary texts and the issues of representation they raise. Students are billed for a course fee. Prerequisite(s): course 20A or 20B. Offered in alternate academic years. I. Gustafson

162. Film Authors. F
Intensive critical study of the work of one film auteur (director, writer, actor, cinematographer). Themes, style, and structure are explored using various critical methods of analysis. Students are billed for a course fee. Prerequisite(s): course 20A or 20B. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. May be repeated for credit. I. Gustafson

162A. Cinema and History: Film Author Satyajit Ray. *
Ray’s films are widely acclaimed as a master of world cinema. Course considers film to examine "authorship" at multiple levels: the cultural, historical, social, and familial contexts and the relationship of his film to fiction, the politics and poetics of his vision, and its relationship to colonal, postcolonial and postcolonial India. Also explores the question of gender and the underclass. (Also offered as History 155. Students cannot receive credit for both courses.) (General Education Code(s): E.) I. Gustafson

163. Movies on the Border. *
Surveys a range of cinematic representations of the U.S.-Mexico border region from the 1950s to the present. Mexican, independent, Latin American, Mexican, examines the question of gender and the underclass. Enrollment restricted to film and digital media majors Latin American and Latino studies majors. (General Education Code(s): E.I.) Burton-Carvalho

165A. Film, Video, and Gender. W
A study of texts, theories, and issues of gender in film and/or video. Changing focus on one or more topics, including production and authorship, representation, reception, theories of identification, sexual preference, and related issues. Students are billed for a course fee. Usually offered in alternate academic years. Prerequisite(s): course 20A or 20B. (General Education Code(s): A.) I. Gustafson

165B. Race on Screen. W
Review of historical and critical tools to interpret representations of race on cinematic, television, and computer screens. Course will consider the place of race in theoretical and historical scholarship and examine the debates about race produced within and across film and digital media.
Students are billed for a course fee. Usually offered in alternate academic years. Prerequisite(s): course 20A or 20B.

165C. Lesbian, Gay, and Queer Film and Video. *
An overview of homosexuality in American film. Explores Vito Russo's The Celluloid Closet, as well as text. Explores a baseline Hollywood homophobia and the formal and historical attempts to change it. Recent independent queer film and video discussed. Topics include authorship, spectatorship, genre and genre reappropriation, historical gender constructs, the "art" film, mainstream vs. independent production, the relationship of film to popular music. Students are billed for a course fee.

165D. Asian Americans and Media.*
Examinations of media representations as well as by Asian Americans. Using critical essays on film theory, racial studies, feminist criticism, and independent cinema, students develop the skills necessary to conduct critical analysis of Asian Americans in film and television. Students are billed for a course fee. Enrollment restricted to juniors and seniors. Enrollment limited to 60. (General Education Code(s): E.) L. Kim

168. National Cinema and Culture, F,S
Study of a specific cinematic or other media tradition of a region, nation, language, diasporic collective or other unifying cultural entity. Not a survey, this course selects one focus or offers a comparative of cross-cultural frame work. Students are billed for a course fee. Prerequisite(s): course 130, 132A, or 132B. May be repeated for credit. D. Crane, P. Limbrick

170A. Introduction to Digital Media Production. *
Introduction to the conceptual and technical fundamentals of making digital media. Covers principles of digital image manipulation, basic web authoring, and interface design through projects that instruct production techniques and methods. Students are billed for a materials fee. Prerequisite(s): courses 20A and 20C; permission of instructor. Enrollment restricted to film and digital media majors. Enrollment limited to 20. (General Education Code(s): A.) The Staff

170B. Fundamentals of Film and Video Production, F,W,S
An introduction to the art and craft of making films and videos. Covers principles of cinematography, videography, editing, production planning, and lighting involving both production and techniques and methods. Students are billed for a materials fee. Prerequisite(s): admission by application and entrance essay. See the enrollment conditions section in the quarterly Schedule of Classes. Prerequisite(s): permission of instructor. Enrollment limited to 25. (General Education Code(s): A.) E. Hollander, G. Vazquez, I. Gustafson, C. Lord, L. Andrews

171. Special Topics Workshops.
Study of selected aspects of film, video, and/or digital media production.

171A. Sound, W
The cinematic equation equals images plus sound. What are sound-specific properties? What is the relationship between sound and image? Examines these and other questions through the creation of audio and audiovisual pieces. Students are billed for a materials fee. Prerequisite(s): by application at first class meeting. Priority given to students accepted into production concentration. Others who have completed course 170 may apply by submitting sample of production work at first class meeting. Enrollment limited to 25. L. Andrews

171C. Special Topics Workshop: Found Footage, *
Students will consider the practice of "recycling" images perhaps not intended by the original "owner" or "creator." In addition to assigned readings and technical workshops, students produce three video projects and give a presentation on a specific issue or artist/group. Prerequisite(s): course 170A or 170B; interview only by application at first class meeting. Priority given to students accepted into the production concentration. Enrollment limited to 25. The Staff

171D. Social Information Spaces, W
Investigates how information spaces can be designed to be inhabited, socially navigable spaces. Emphasizes the social navigation of information spaces, a set of techniques and ideas from computer-supported cooperative works, human-computer interaction, and architecture. Prerequisite(s): course 170A; interview only: application available in department office. Enrollment restricted to film and digital media majors. Enrollment limited to 25. W. Sack

172. Film and Video Studio, F,W,S
Intermediate workshop in film and video production. Topics include cinematography, sound, and non-linear digital editing techniques. Each student is responsible for the completion of a short project utilizing 16mm film or video. Students must bear the cost of materials and are billed for a materials fee. Prerequisite(s): admission by application at first class meeting; priority given to students who have been accepted into the production concentration. Other students who are not in the production concentration and who have completed course 170 may apply by submitting sample of production work at first class meeting. See the enrollment conditions section in the quarterly Schedule of Classes for other application instructions that may apply. Enrollment limited to 25. (General Education Code(s): A.) G. Vazquez

177. Digital Media Workshop: Computer as Medium, S
Introduction to the computer as a medium as well as a tool. Students explore art practice within digital imaging and information and communications environments through projects, readings, and "screenings." Assignments may include designing virtual communities and/or interactive, multimedia web works. Students are billed for a course fee. Prerequisite(s): course 170A; admission by application at first class meeting; priority given to students who have been accepted into the production concentration. Other students who are not in the production concentration and who have completed course 170 may apply by submitting sample of production work at first class meeting. See the enrollment conditions section in the quarterly Schedule of Classes for other application instructions that may apply. Enrollment limited to 25. S. Darad

178A. Personal Computers in Film and Video. F
Introduction to the specific applications of computers for film and video. By using computer-generated, enhanced and imported graphics, animation, text, sound, and moving video, students create still and time-based works in a computer environment. Prerequisite(s): course 170B; admission by application at first class meeting; contact department office for required forms; priority given to students who have been accepted into the production concentration. Enrollment limited to 20. L. Andrews

178B. Advanced Personal Computers in Film and Video. *
Study of advanced computer tools in digital media, including exploration, creation, and manipulation of sound with the same level of complexity as required in composing the moving image. Students produce a final project that demonstrates skills learned. Prerequisite(s): course 170A; admission by application at first class meeting; priority given to students who have been accepted into the production concentration. Other students who are not in the production concentration and who have completed course 170A may apply by submitting sample of production work at first class meeting. See the enrollment conditions section in the quarterly Schedule of Classes for other application instructions that may apply. Enrollment limited to 20. The Staff
178C. Introduction to Digital Media Production. *
Study of computer tools involving interactive forms and formats. Students will develop both personal and/or collaborative projects for dissemination as digital media, both on screen and online in networked information and communications spaces. Prerequisite(s): course 170A; admission by application at first class meeting; priority given to students who have been accepted into the production concentration. Other students who are not in the production concentration and who have completed course 170 may apply by submitting sample of production work at first class meeting. See the enrollment conditions section in the quarterly schedule of classes for other application instructions that may apply. Enrollment limited to 20. L. Andrews

179. Film Negative Cutting (3 credits). *
Theory and practice of conforming a film negative to work print, including procedures for preparing negative A & B rolls and sound for printing. Each student is responsible for conforming a film for submission to a laboratory. Students must bear the cost. Course 172 is required as preparation. Enrollment limited to 16. E. Hollander

185. Special Topics in Film and Video.
Study of selected aspects of film and/or video history, theory, or criticism. Students are billed for a course fee.

185B. African American Film. *
Survey of African American participation and representation within American film which examines the cultural and historical context of racist images in film as well as recent critical and theoretical work on issues of race and representation. Students are billed for a course fee. (General Education Code(s): E.) J. The Staff

185C. The Exploitation Film. *
Created to make a quick profit by shocking and titillating audiences with sensational topics, the exploitation film is addressed in terms of its historical significance. Topics include important filmmakers and movements including the "drug scare" film, the burlesque and nudist camp film, the work of Russ Meyer, John Waters, Doris Wishman, etc. Students are billed for a course fee. Prerequisite(s): courses 120 or 136A. M. Morse

185D. Sound and Image in Theory and Criticism. *
Explores theories and critiques of sound in culture and analyzes sound in relation to media images in film, video, digital media, and music/image practices such as Vjaying. Voice, noise, and music are addressed (but not scored). Students are billed for a course fee. Prerequisite(s): courses 20A and 120. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. Enrollment limited to 40. (General Education Code(s): A.) M. Morse

185E. Chicana/o Cinema, Video. *
Examines emergence of Chicana/o cinema and video from a place of social displacement, resistance, and affirmation. Looks at Chicana/o representation and spectatorship as it pertains to ethnicity, class, gender, and the beginning of a new Chicana/o film aesthetic. Students are billed for a course fee. Prerequisite(s): course 20A. Enrollment limited to 60. (General Education Code(s): E.) J. The Staff

187. Advanced Topics in Television Studies. S
Study of a selected aspect of television history, television criticism, or national television. Includes weekly screenings and historical/theoretical readings. Usually offered in alternate academic years, with rotating topics. Students are billed for a course fee. Prerequisite(s): course 20B. Enrollment restricted to junior and senior film and digital media majors during priority enrollment; may be opened if space allows. May be repeated for credit. T. The Staff

189. Advanced Topics in Digital and Electronic Media Studies. S
Study of a selected aspect of digital and/or electronic media history and criticism. Topics can include virtual environments, electronic networks, video installations, computer games, and hyper-media. Usually offered in alternate academic years. Students are billed for a course fee. Prerequisite(s): course 20C. Enrollment restricted to junior and senior film and digital media majors during priority enrollment; may be opened if space allows. May be repeated for credit. D. Crane

192. Directed Student Teaching, F,W,S
Teaching a lower-division course under faculty supervision (see course 42). Proposal supported by a faculty sponsor and department. T. The Staff

194A. Film Theory Seminar. F,S
Advanced senior seminar examining classical and contemporary film theory and those theoretical paradigms and methodologies that have dominated film studies, realism, structuralism, semiotics, psychoanalysis, Marxism, feminism, and phenomenology. Primary texts are read. Students are billed for a course fee. Prerequisite(s): course 120 or permission of instructor. Enrollment restricted to senior film and digital media majors. Enrollment limited to 20. A. Hadley T. The Staff

194B. Electronic Media Theory Seminar. *
Study of the major theoretical approaches to electronic media and their critical application to texts from television, independent video art and documentary, and electronic networks. Readings include a range of theoretical approaches selected from semiotic, ideological, feminist, cultural studies, reception theory, postmodernism, and other critical traditions. Students are billed for a course fee. Prerequisite(s): course 20B; satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior film and digital media majors. Enrollment limited to 20. (General Education Code(s): W.) T. The Staff

194C. New Media Theory Seminar. *
Study of theories of emerging genres of electronic culture, with emphasis on the discourse about computer-assisted and computer-generated forms of art and mass culture such as digital imagery, virtual environments, technologies, hyper- and multimedia, and electronic networks. Students are billed for a course fee. Prerequisite(s): course 20C or permission of instructor; satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior film and digital media majors. Enrollment limited to 20. (General Education Code(s): W.) M. Morse

194D. Film History Seminar. S
In-depth study of film history investigating developments in cinematic style, technological innovation, and industrial practice against the broad canvas of cultural history. Students will acquire the basic tools necessary to conduct informed film historical research. Students are billed for a course fee. Prerequisite(s): course 130 or 134A or 134B; satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior film and digital media majors. Enrollment limited to 20. (General Education Code(s): W.) J. Stamp

194E. International Cinemas, F,W
In-depth study of the history and theory of international cinemas with changing topics such as globalism and resistance, postcolonial theory, international productions and querying race, the "national," and cinema. Students are billed for a course fee. Prerequisite(s): course 132A, 132B, or 132C. Enrollment restricted to senior film and digital media majors. Enrollment limited to 16. P. Limbrond

194F. Film and the Other Arts: Music and Dance. *
Examines the use of artistic media within films and of films that thematically are about other media. What do other art forms allow for—in terms of the story, the film's meaning, the gaze, and the spectator? Students are billed for a course fee. Enrollment restricted to senior film and digital media majors. Enrollment limited to 16. L. Kim

194G. New(s) Media, S
Addresses the role of new media technologies in the production, distribution, and reception of the news, especially international news. Examines software and network technologies as amplifying, filtering, extending, and countering the forces of media. Students are billed for a course fee. Prerequisite(s): course 20C. Enrollment restricted to senior film and digital media majors. Enrollment limited to 16. W. Sack

195. Senior Thesis/Project, F,W,S
An individually supervised course, with emphasis on independent research, to culminate a senior thesis/project/production. Proposals should be submitted to advise one quarter in advance. Petition required, approved by instructor and department; thesis petitions available in the department office. T. The Staff

196A. Senior Project in Film and Video Production. S
Students accomplish a range of production work including script development, casting, and rehearsing to shooting and postproduction work. Students are billed for materials fee. Admission by application during winter quarter. See department office for more information. Enrollment limited to 18. L. Andrews

196B. Senior Project in Screenwriting. S
Students write a full-length (75-100 page) screenplay in this seminar while studying structural concepts and character development in selected films. Scheduling, outlining, pitching ideas, and critique are all part of the workshop format of the class. Prerequisite(s): satisfaction of the Subject A and Composition requirements; course 150 or another screenwriting course. Interview only; petition required; special application should be submitted to advise one quarter in advance see department office for more information. Enrollment restricted to senior film and digital media majors. Enrollment limited to 16. (General Education Code(s): W.) J. Lord

197. Senior Digital Media Workshop. *
Independent projects using the computer as a medium as well as a tool. Students will design and implement projects in digital imaging, information, and communications environments. Students' projects may include designing virtual communities, building collaborative networks, and/or interactive, multimedia web works. Students are billed for a course fee. Admission by application during winter quarter. See department office for more information. Enrollment limited to 20. S. Daniel

198. Independent Field Study, F,W,S
Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students engaging in field study must complete application procedures for such study by the fifth week of the previous quarter. Field study may not be used to satisfy major re-
198. Independent Field Study (2 credits). F, W, S
Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students engaging in field study must complete application procedures for such study by the fifth week of the previous quarter. Field study may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office. M ay be repeated for credit. T he Staff

199. Tutorial. F, W, S
Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office. M ay be repeated for credit. T he Staff

199F. Tutorial (2 credits). F, W, S
Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office. M ay be repeated for credit. T he Staff

Graduate Courses

222. Critical Methodologies in Film and Television. *
Core course introduces graduate students to critical methodologies in media studies and offers sustained examination of theoretical approaches to media studies. M et hodologies may include (but not limited to): contemporary theory (semiotic, psychoanalytic, ideological), cultural studies, intertextuality, feminist film, and television theory. Enrollment restricted to graduate students. Enroll ment limited to 14. A. H adie

283. New Media Art and Digital Culture. *
A study of new media art in the context of digital culture. Electronic, digital and online technology art are set in critical relation to discourse on history, aesthetics, hypermedia, the interface, hacks, embodiment, robotics, artificial life and other topics. Students are billed for a course fee. Enrollment restricted to graduate students. Enrollment limited to 15. M. M orse

284. Film, Culture, and Modernity. *
Traces the rise of motion picture culture from the late nineteenth century through the end of the 1920s, looking at films' emerging visual and narrative grammar, changing cultural status, and its engagement with shifting registers of class, ethnicity, gender, and sexuality. Enrollment restricted to graduate students. Enrollment limited to 15. S. St amp

297. Independent Study. F, W, S
Either study related to a course being taken or a totally independent study. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. M. M orse, C. L ord, S. Stamp, L. And rews

Additional Courses of Interest
Anthropology 120, Culture through Film
Anthropology 130G, Asian Americans in Ethnography and Film
History of Consciousness 126, Film Fantasies
Latin American and Latino Studies 123A, Cinema and Social Change: Feature Films
Latin American and Latino Studies 123B, Cinema and Social Change: Documentary Transformations
Latin American and Latino Studies 127, Mexico and the Movies
Latin American and Latino Studies 129, Women Filmmakers: Latin American and Latina English Language Literatures 180B, The Gothic Imagination in Fiction, Film, and Theory
Sociology 116, Communication and Media Sociology 129, Popular Culture

French

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language/program/index2.html

Faculty and Professional Interests

Professor
CARLA FRECCERIO (Literature)
Renaissance studies, French and Italian language and literature, early modern European history and literature, postcolonial theories and literature, contemporary feminist theories and politics, queer theory, pre- and early modern studies, contemporary fiction by women of color in the U.S., identity politics and political formations

PASCALLE GAUTET (Literature)
Nineteenth- and 20th-century French literature, sociolinguistics, political history, Céline, Genet

RICHARD TORDUAN (Literature)
Nineteenth- and 20th-century French and European literature and culture, literary and cultural theory, contemporary critical theory, cultural globalization

Associate Professor
SHARON KINOSHITA (Literature)
Intercultural relations in 12th- and 13th-century literature, Mediterranean studies, globalism, postcolonial theory, world literature and cultural studies

Lecturer
ANGELA ELSEY
Francophone, especially North American (Louisiana, Quebec, the Caribbean); French dialectology and sociolinguistics

GILDAS HAMEL
Latin, Greek, Hebrew; Bible, history of Judaism and Christianity, French

GRET A HUTCHISON
Foreign language pedagogy, second language acquisition, medieval French literature, and medieval literature and art

HERVE LE MANSEC
French phonetics and phonology, 20th-century French civilization, the nouveau roman, French opera

DAVID A. ORLANDO
Foreign language pedagogy; second-language acquisition; French proletarian writers of the 1920s and 1930s; French civilization, especially the Renaissance, Revolution, Belle Époque, and interwar periods

Programs

Students interested in acquiring proficiency in French can enroll in language courses from beginner to advanced levels. In addition, students may select from among the following programs: a major in language studies (262), a minor in language studies with an emphasis in French literature (292), or a minor in global economics (177). An individual major in French and Francophone studies is also available to qualified students (see French faculty for details).

Lower-division courses 1-6 are taught entirely in French and prepare students for advanced study either on campus or abroad. They are designed to develop proficiency in aural comprehension, speaking, reading, and writing skills.

Campus Language Laboratories and Placement Exams
Information on these topics can be found on page 275, under Language Program.

Study Abroad

The UC Education Abroad Program offers both semester and one-year plans of study in many regions of France, including Bordeaux, Lyon, Grenoble, Toulouse, and Paris. With the approval of an advisor, some French courses taken abroad may be applied to major requirements. For more information on the program, see UC Education Abroad Program (page 40).

Lower-Division Courses

1. Instruction in the French Language. F, W, S
Teaches speaking, writing, reading, and listening comprehension up to the intermediate proficiency level set by the American Council on the Teaching of Foreign Languages. T he Staff

2. Instruction in the French Language. F, W, S
Teaches speaking, writing, reading, and listening comprehension up to the intermediate proficiency level set by the American Council on the Teaching of Foreign Languages. Students interested in this course who do not have the prerequisite course must attend a placement interview. Pre-requisite(s): course 1, or placement by interview. T he Staff

Teaches speaking, writing, reading, and listening comprehension up to the intermediate proficiency level set by the American Council on the Teaching of Foreign Languages. Students interested in this course who do not have the prerequisite course must attend a placement interview. Pre-requisite(s): course 2, or placement by interview. T he Staff

Expansion of the students' familiarity with the spoken and written language through vocabulary building, grammar review, and discussion of contemporary issues. Readings taken from various literary genres as well as from related cultural material. Prerequisite(s): course 3. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): H.) T he Staff
Teaches speaking, writing, reading, and listening comprehension up to the intermediate proficiency level set by the American Council on the Teaching of Foreign Languages. Each level is taught each quarter. Prerequisite(s): course 4 or 4X or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

Teaches speaking, writing, reading, and listening comprehension up to the intermediate proficiency level set by the American Council on the Teaching of Foreign Languages. Each level is taught each quarter. Prerequisite(s): course 4 or 4X or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

13F. Oral Fluency Through Cultural Study (2 credits). F,W,S
A course for any student beyond level 3, developing oral fluency through discussion in cultural studies, covering a variety of topics. Listening comprehension and pronunciation are emphasized through exploration of situations common to France and francophone countries. May be offered more than once per year. Prerequisite(s): course 3. Students not having had French 3 at UCSC need to speak to a UCSC French lecturer. Enrollment limited to 25. May be repeated for credit. The Staff

94. Group Tutorial. F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. T he Staff

99F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

111. Stylistics. F
Intensive work in French composition with the aim of attaining grammatical correctness and excellence of expression. May be repeated for credit with consent of instructor. Prerequisite(s): course 6. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. The Staff

114. French Phonetics. W
Contrastive analysis of French and English sound systems and their practical application. Intensive conversational. Language laboratory. Prerequisite(s): course 6. Enrollment limited to 20. The Staff

125B. French Civilization: Nineteenth and Twentieth Centuries. S
A survey of the important historical and artistic movements contributing to the development of French culture from the end of the French Revolution to today (nineteenth and twentieth centuries). Prerequisite(s): course 6. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Enrollment limited to 22. The Staff

149. French Civilization: Twentieth Centuries. S
Covers the development of French culture in the 20th century. Prerequisite(s): course 6. Enrollment limited to 22. The Staff

149F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

Geology and Geophysics
See Earth Sciences, page 164.

German

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Associate Professor

LOISA NYGAARD [Literature]

Eighteenth- and 19th-century German literature, German romanticism, European and American romantic fiction, Goethe

Lecturer

WALTER CAMPBELL

Language teaching, 18th- and 19th-century German literature, history of German

JUDITH HARRIS-FRISK

German language and cultural studies, German literature and intellectual history, 1750-present, turn-of-the-century Vienna and Weimar German; German issues of national identity and multiculturalism

Programs

Students interested in acquiring proficiency in German can enroll in language courses from beginning to advanced levels. In addition, students may select from among the following programs: a major or minor in language studies (page 275), a minor in German studies (page 246), a major in literature with an emphasis in German literature (page 292), or a major in global economics (page 177).

The sequence of lower-division courses 1-6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills. Another sequence of lower-division courses, equivalent to levels 1, 2, and 3, is courses 1A and 1B, offering accelerated German language instruction. Courses 1A and 1B are taught sequentially, winter and spring quarters. Instruction takes place almost exclusively in German.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 275, under Language Program.

Study Abroad

The University of California maintains Education Abroad Program (EAP) centers in Göttingen, Bayreuth, and Berlin, Germany. Students may spend a spring semester in Göttingen (beginning German language program or regular course study), a year in Göttingen (regular course study), a spring semester in Bayreuth (intermediate German language and culture program), or a year in Berlin (regular course study). Students selected for the year-long program in Göttingen may also elect to spend their second semester (the spring semester) in Berlin. Language requirements for admission to these programs range from little or no German required (beginning German program in Göttingen) to one year of college-level German required (intermediate German language and culture program in Bayreuth) to two years of college-level German required (regular course study in Göttingen) to three years of college-level German required (regular course study in Berlin). The Bayreuth program courses may also be used to fulfill the language requirement for the year-long program in Göttingen. Selected students may continue directly from the spring semester in Bayreuth to the one-year program in Göttingen.

Academic and professional internship opportunities are also available to all EAP students in Germany.

Students may apply to any of these programs at any point in their student career. For the year-long programs, students generally apply in their sophomore year for a junior year abroad. As an exception, some students apply in their junior year for a senior year abroad; such students must sometimes spend an additional quarter at UCSC in order to satisfy all requirements for their major. Courses taken abroad can, with approval of an advisor, be applied to major requirements.

For more information on these programs, see UC Education Abroad Program (page 40). For information on credit applied to a major, contact the appropriate department.

Lower-Division Courses

1. Instruction in the German Language. F
Teaches beginning-level competence in speaking, reading, writing, and listening comprehension. Elementary sequence (1-2) starts in fall quarter only. (An accelerated course, course 1A-1B, begins winter quarter.) Not all levels are available each quarter. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Students who have completed course 1 and course 2 may take 1B for credit. The Staff

1A. Intensive Elementary German. W
Accelerated instruction in elementary German language. Taken in conjunction with German 1B, the two courses are equivalent to levels 1-2-3. Accelerated pace allows a more rapid acquisition of reading, writing, listening, and speaking skills; special attention is given to reading. Introduction to German culture. Students who have taken course 2 may take 1B for credit. The Staff

1B. Intensive Elementary German. S
Sequential to course 1A, completes the equivalent instruction offered through German 1-2-3. Open to students who have successfully completed either 1A or course 2; for students completing course 2, course 3 is preferable. Students who have taken course 1 may take 1B for credit. The Staff
2. Instruction in the German Language, W
Teaches beginning-level competence in speaking, reading, writing, and listening comprehension. (An accelerated sequence, course 1A-1B, begins winter quarter.) Not all levels are available each quarter. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Students who have completed course 1 and course 2 may take 1B for credit. Prerequisite(s): course 1 or 1A; or placement by examination. Students interested in a course who have not taken the prerequisites should meet with the instructor prior to the first class meeting. The Staff

3. Instruction in the German Language, S
Teaches beginning-level competence in speaking, reading, writing, and listening comprehension. (An accelerated sequence, course 1A-1B, begins winter quarter.) Not all levels are available each quarter. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Students who have completed course 1 and course 2 may take 1B for credit. Prerequisite(s): course 1; or placement by examination. Students interested in a course who have not taken the prerequisites should meet with the instructor prior to the first class meeting. The Staff

4. Intermediate Studies in German Language, F
Intermediate composition and conversation based on the reading of selected prose and related cultural material. Students submit petition to sponsoring agency. May be repeated for credit. Prerequisite(s) course 1B or 3; or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

5. Intermediate Studies in German Language, W
Intermediate composition and conversation based on the reading of selected prose and related cultural material. Students submit petition to sponsoring agency. May be repeated for credit. Prerequisite(s): course 1B or 3; or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

6. Intermediate Studies in German Language, S
Intermediate composition and conversation based on the reading of selected prose and related cultural material. Students submit petition to sponsoring agency. May be repeated for credit. Prerequisite(s) course 1B or 3; or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

99F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

119. German Media, W
Articles of current interest in German newspapers, news magazines, and World Wide Web sites are read and discussed. News videos from Germany are viewed and discussed also. Conducted entirely in German. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 5. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. May be repeated for credit. The Staff

194. Group Tutorial, F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. The Staff

199. Tutorial, F,W,S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. May be repeated for credit. The Staff

German Studies

Department of History
32 M erli College
(831) 459-2982
http://humanities.ucsc.edu (open History)

Program Faculty

WALTER CAMPBELL, Lecturer in German Language and Literature teaching 18th- and 19th-century German literature and history of German philosophy

MARC CIIOC, Professor of History

JUDITH HARRIS-FRISK, Lecturer in German Language and Literature

DONNA HUNTER, Associate Professor of History of Art and Visual Culture

VIRGINIA JANSEN, Professor of History of Art and Visual Culture

Core Courses

German

119 German Media

German Literature

102 Introduction to German Literature
Greek

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Professor
M. KAY GAMEL, PROFESSOR (Literature)
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

CHARLES W. HEDRICK JR., (History)
Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

JOHN P. LYNN (Literature)
Greek and Latin literature; Plato and Aristotle; Lucretius, Virgil, and Petronius; ancient education

Associate Professor
KAREN BASSI (Literature)
Greek and Latin literatures, Greek drama, Hellenistic poetry, feminist interpretation, literary and cultural theory, pre- and early modern studies

DAVID SELDEN (Literature)
African languages and literatures, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

Lecturer
GILDAS HAMEL
Latin, Greek, Hebrew; Bible; history of Judaism and Christianity; French

Program Description
The Language Program offers instruction in elementary Greek for students wishing to pursue a course of study in Attic Greek. It consists of a two-course sequence that begins in the fall quarter only. Students interested in Greek literature should see the course listings under Literature, page 294. Those interested in classical studies should see the program description on page 153.

Campus Language Laboratories and Placement Exams
Information on these topics can be found on page 275, under Language Program.

Lower-Division Courses

1. Elementary Ancient Greek, F
Instruction in the grammar of Attic Greek, together with readings, mostly in Plato, designed to prepare for the study of classical literature. The sequence begins in the fall quarter only. The Staff

2. Elementary Ancient Greek, W
Instruction in the grammar of Attic Greek, together with readings, mostly in Plato, designed to prepare for the study of classical literature. The Staff

99. Tutorial, F, W, S
Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. The Staff

Greek Literature
Students wishing to pursue a course of study in Greek literature should consult the concentration in national/transnational literatures under Literature, page 292.

Health Sciences
See Biological Sciences, page 134.

Hebrew

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Lecturer
TAMIR ROSMAN-BENJAMIN
Hebrew language and culture; biblical Hebrew syntax and semantics; the Hebrew Bible; Jewish thought; psychology; second-language acquisition and bilingualism

Programs
Students interested in acquiring proficiency in Hebrew can enroll in language courses from beginning to intermediate levels. In addition, credits from these courses may be counted toward the minor in Jewish studies (page 272). Lower-division courses are aimed at enabling students to gain proficiency in aural comprehension, speaking, and writing skills. Attention is also given to developing an understanding of the culture, history, and religion that have been expressed through the Hebrew language from antiquity to today. Some instruction takes place in Hebrew from the beginning level.

Campus Language Laboratories and Placement Exams
Information on these topics can be found on page 275, under Language Program.

Lower-Division Courses

1. Instruction in the Hebrew Language, F
Speaking, listening, comprehension, reading, and writing fundamentals. The use of M odern Hebrew is encouraged through classroom practice supplemented by language laboratory work. Elementary sequence (1-2-3) begins in fall quarter only. The Staff

2. Instruction in the Hebrew Language, W
Speaking, listening, comprehension, reading, and writing fundamentals. The use of Modern Hebrew is encouraged through classroom practice supplemented by language laboratory work. Pre-requisites(s): course 1. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. The Staff

3. Instruction in the Hebrew Language, S
Speaking, listening, comprehension, reading, and writing fundamentals. The use of Modern Hebrew is encouraged through classroom practice supplemented by language laboratory work. Pre-requisite(s): course 2. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. The Staff

4. Intermediate Hebrew, F
Development of students' familiarity with the spoken and written language through grammar review, discussions, and vocabulary building. Varied readings on literary and cultural topics related to modern Israel. Pre-requisites(s): course 3. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): H) The Staff

5. Intermediate Hebrew, W
Development of students' familiarity with the spoken and written language through grammar review, discus-
The Staff

6. Intermediate Hebrew, S
Development of the students’ familiarity with the spoken and written language through grammar review, discussions, and vocabulary building. Varied readings on literary and cultural topics related to modern Israel. Prerequisites: course 4. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): H1H) The Staff

80. Introduction to Biblical Hebrew, F
Introduces students to the basic lexicon and grammatical structures of biblical Hebrew, with an emphasis on the development of a set of useful translation strategies. Throughout the course, students will be applying their emergent skills to translating a variety of biblical texts. (General Education Code(s): T4-H humanities and Arts) The Staff

94. Group Tutorial, F, W, S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

99. Tutorial, F, W, S
Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

194. Group Tutorial, F, W, S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

199. Tutorial, F, W, S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. The Staff

Additional Courses of Interest

Check the Schedule of Classes for 2004–05 course offerings.
- Literature 80L, The Holocaust: The Destruction of European Jewry
- Modern Literary Studies 144D, Jewish Writers and the American City

Hindi

Language Program
239 Cowell College
(831) 459-2504
http://ang2.ucsc.edu/language_program/index2.html

Program Description
For students interested in acquiring proficiency in the Hindi language, beginning level language courses are offered. Students may also select a minor in South and Southeast Asian studies through the Language Program or an individual major in South and Southeast Asian studies through their college.

The sequence of courses is aimed at enabling students to begin to gain proficiency in aural comprehension, speaking, reading, and writing skills. Classes are taught in Hindi from the beginning level.

Campus Language Laboratories and Placement
Information on these topics can be found on page 275 under Language Program.

Lower-Division Courses

1. Elementary Hindi, F
An in-depth introduction to modern Hindi including the Devanagari script. Through a combination of graded text, written assignments, audiovisual material and computer-based exercises, provides cultural insights and increases proficiency in understanding, speaking, reading and writing Hindi. Emphasis on spontaneous self-expression. The Staff

2. Elementary Hindi, W
An in-depth introduction to modern Hindi including the Devanagari script. Through a combination of graded text, written assignments, audiovisual material and computer-based exercises, provides cultural insights and increases proficiency in understanding, speaking, reading and writing Hindi. Emphasis on spontaneous self-expression. Prerequisite(s): course 1 or permission of instructor. The Staff

3. Elementary Hindi, S
An in-depth introduction to modern Hindi including the Devanagari script. Through a combination of graded text, written assignments, audiovisual material and computer-based exercises, provides cultural insights and increases proficiency in understanding, speaking, reading and writing Hindi. Emphasis on spontaneous self-expression. Prerequisite(s): course 2 or permission of instructor. The Staff

3A. Urdu Script (2 credits), S
Introduction to writing and reading Urdu script (a modified Perso-Arabic right-to-left script) through the medium of Devanagari script (a Sanscrit-based left-to-right script). Urdu and Hindi are grammatically equivalent languages that differ most noticeably in their writing systems. Prerequisite(s): course 2 or equivalent; knowledge of Devanagari script. Enrollment limited to 20. The Staff

4. Intermediate Hindi, F
Continuation and completion of in-depth introductory sequence in modern Hindi including Devanagari script. Through combination of graded text, written assignments, audiovisual material and computer-based exercises, provides cultural insights and increases proficiency in understanding, speaking, reading, and writing Hindi. Emphasis on spontaneous self-expression. Prerequisite(s): course 3 or equivalent; familiarity with Devanagari script. Enrollment limited to 25. (General Education Code(s): H1H) The Staff

99. Tutorial, F
Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F
Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

199. Tutorial, F, W, S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. The Staff

Historical Studies

This campus offers an especially rich array of paths and courses—nearly 400 courses—in historical studies. Students interested in traditional “political” history, history of ideas and cultural achievement, social history, comparative history, history of science and technology, history of women, and historical theory will all find scope at UCSC for their interests. Many of the world’s major areas are studied in depth in regularly taught courses. Especially impressive is the large number of courses in industrialization and modernization.

Although there is no interdisciplinary “historical studies” major, the campus offers three formal programs in historical studies: history, history of art and visual culture, and history of consciousness (graduate-level only). Several interdisciplinary majors, including American studies and Latin American and Latino studies, have historical concerns at their center. In addition, students can pursue historically oriented concentrations in anthropology, economics, literature, philosophy, politics, sociology, and women’s studies.

History

32 Merrill College
(831) 459-2952
http://humanities.ucsc.edu/

Faculty and Professional Interests

Professor

- Jonathan F. Beecher
- Frederick, European intellectual history, Russian intellectual history, utopian socialism

Emeritus

- Robert F. Berkhofer Jr., Emeritus
- Edmund Burke III
- Mark Cioc
- Dana Frank
- Charles W. Hedrick Jr.
- Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

- Islamic history; modern Middle East and North African history; French history; European imperialism, world history
- American and Canadian geography; contemporary political economy
- German history; modern European history; environmental history
- U.S. social and economic history; women, labor, and working-class history; contemporary political economy
GAIL B. HERSHATTER
Modern Chinese social and cultural history; labor history; gender history; history of sexuality; feminist theory; history, memory and nostalgia

PETER KENEZ
Russian history; Eastern Europe; 20th-century Europe; Soviet film

NOEL Q. KING, Emeritus

BRUCE LEVINE
Civil War era; 19th-century U.S. economic, social, and political history; comparative slavery and serfdom

RICHARD MATHER, Emeritus

GARY B. MILES, Emeritus

BUCHANAN SHARP
English history

DAVID G. SWEET, Emeritus

MARK TRAUGOTT
Social and economic history; 19th-century France; French revolutions; European working class; historical methods; worker's autobiographies

MARILYN J. WESTERKAMP
British colonial and revolutionary America, early modern cultural and religious history; U.S. religious history; women's history; gender

ASSOCIATE PROFESSOR

DAVID HENRY ANTHONY III
African and African-American history; art, music, literature, and cinema; Eastern and Southern Africa; African languages; Indian Ocean world; African and African American linkages; Islamic civilization; African diaspora studies; world history

DILIP K. BASU
Modern South Asia, Modern China, world history; colonial and post-colonial, film and visual culture

PEDRO G. CASTILLO
Chicana/o history and culture; American social and urban history; race, class, and gender

ALAN S. CHRISTY
Early modern and modern Japan; history of social sciences; colonialism, nationalism

MARIA ELENA DIAZ
Colonial Caribbean and Latin America; social and cultural history; ethnicity; slavery; race, gender

LIBETH HAAS
US-Mexico borderlands; Chicano and Native American history; visual culture in the colonial Americas; the U. S. West and California; historical memory, theory, and historical methodology

CYNTIA POLECRITTI
Medieval, renaissance, and modern Italy; urban and cultural history; ritual and popular devotion

ALICE YANG MURRAY
Hisotrial memory, Asian American history; gender history; race and ethnicity, 20th-century U.S.; oral history

ASSISTANT PROFESSOR

BRIM A. CATLOS
Medieval Iberia and Mediterranean; ethnicity; minorities; social, and economic history

VISITING ASSISTANT PROFESSOR

NORIKO ASO
Japanese social and cultural history; women's history; race and ethnicity; colonialism, nationalism, Korean history

LECTURER

BRUCE THOMPSON
European intellectual and cultural history; French history; American Jewish intellectual and cultural history; British and Irish history; history of cinema; history of espionage

PROFESSOR

BETTINA APTEKE (Women's Studies)
Women's history, women's culture; African American women's history; feminist pedagogy; lesbian studies; Jewish women's studies; women's spirituality

RAOUL BRINBAUM (History of Art and Visual Culture)
Buddhist studies, especially Chinese paintings from medieval times to the present; religion and visual culture in China; Patricia and Rowland Rable Endowed Chair

JOHN DIZIKES, Emeritus (American Studies)

BARBARA L. EPSTEIN (History of Consciousness)
Social movements and theories of social movements; 20th-century U.S. politics and culture; Marxism and related theories of social change

JOHN HAY (History of Art and Visual Culture)
Visual and conceptual representation in pre-modern China, especially landscape painting; Asian art history

EMILY HONG (Women's Studies)
Gender, sexuality, and ethnicity in modern Chinese history; comparative labor history; Chicana history; nationalism, and sexuality in the third World; oral history

VIRGINIA JANSEN (History of Art and Visual Culture)
Medieval visual culture, urbanism, and secular building: Gothic architecture; campus planning and architecture

GARY L. LEASE (History of Consciousness)
Theory and origins of religion, history of religions; Hellenic mysteries; Christian origins; 19th- and 20th-century Germany, German Judaism; religion and political orders

PAUL M. LUBECK (Sociology)
Political sociology; political economy of development; globalization; labor and work; logic of methodology; religion and social movements; Islamic society and identities; information and networks

JOHN P. LYNCH (Literature)
Greek and Latin literature; Plato and Aristotle; Lucretius; Virgil, and Petronius; ancient education

JUDY YUNG (Emerita, American Studies)

ASSOCIATE PROFESSOR

DAVID T. BRUNIDGE (Community Studies)
American working-class and immigration history; history of U.S. social movements; Irish history and politics

CHRISTOPHER COKENER (Literature)
World literature and cultural studies; globalization and geographical thought; the 1960s, Marxism, post-modern and modern Chinese cultural studies, cultural revolution

BERNARD L. ELBAUM (Economics)
Economic history

SHARON KINOSHITA (Literature)
Intercultural relations in 20th- and 13th-century literature; Mediterranean studies; globalism, postcolonial theory; world literature and cultural studies

DANIEL SELDEN (Literature)
Afro-asiatic languages and literatures; Greek and Latin; Hellenistic culture, the classical tradition, history of criticism, literary theory

ASSISTANT PROFESSOR

GABRIELA ABRENDONDO (Latin American and Latino Studies)
U.S. and cultural history; Chicano history; critical race and ethnicity theory; immigration history; Latina/o studies in the U.S.; Chicana feminisms; “borderlands” studies; particularly interactions with gender and race

PAUL ORTIZ (Community Studies)
African American history; U.S. social and political history; documentary, oral history, subaltern studies; theories of resistance, U.S. South, Latina/o studies; social movements, working-class history

LECTURER/ASSOCIATE LIBRARIAN AND BIBLIOGRAPHER

ELIZABETH M. REMAK-HONG

PROGRAM DESCRIPTION

The program in history at UC Santa Cruz is designed to bring about an understanding of the ideas, experiences, and events that have shaped this country and the world at large. The program's main emphasis is in social and cultural history, with additional strengths in intellectual and political history. History is the attempt to understand the meanings of the lives humans experience, not generally and abstractly, but in terms of specific individuals, events, and circumstances. Consequently, of all academic pursuits, it is the one best equipped to help us locate phenomena in their specific contexts, whether we are concerned with political events, social changes, the production of art, the development of technology, scientific discoveries, or life stories. In this sense, then, the study of history can be an invaluable complement to any other major.

A degree in history opens up a wide range of career possibilities. Some careers fall within the historical profession, including teaching at the university, college, and high school levels and working in various areas of public and applied history, such as historic preservation, archives, libraries, and museums. For careers in fields as diverse as law, business, government, foreign service, publishing, journalism, and communications, a degree in history lays the foundation in research, analytic, and writing skills upon which later professional training can be built.

REQUIREMENTS FOR THE MAJOR

A minimum of 12 courses is required for the major. The history major does not require an exam for entrance and does not limit the number of students accepted into the program. It is advisable to complete at least one introductory history course before declaring the major.

At UCSC, the history curriculum offers three broad, geographically defined regions of concentration:

- The Americas and Africa
- Europe
- Asia and the Islamic world

Course requirements. Each history major selects one of the three regions of concentration listed above. History majors who enter UCSC during fall 2002 or later are required to take at least one quarter of a lower-division survey course within their chosen region of concentration. A list of the lower-division survey courses offered within each region is available from the history undergraduate advisor. Transfer students may be advised to apply survey courses taken prior to entering UCSC towards this requirement. In consultation with the history undergraduate advisor and a faculty advisor, the student plans a pro-
gram of study that will also fulfill the following distribution of courses:

- five courses in the region of concentration, one of which must be a lower-division survey course; three of the remaining courses must be upper-division;
- two courses from each of the remaining two regions of concentration;
- two upper-division history electives based in any of the regions of concentration;
- one senior comprehensive requirement (see below) based in the region of concentration.

Students may also choose to organize their course selection according to some general theme of special interest to them. Faculty and staff advisers will assist students who choose this option.

Distribution requirements: Among the 12 courses required for the major, at least three courses must be set in periods prior to the year 1800, and one of these must be set before 600 A.D. Also, no more than four of the minimum 12 courses may be lower-division.

Interspersed course work: The history department encourages its majors to take upper-division courses in disciplines related to history, including sociology, literature, community studies, American studies, politics, Latin American and Latino studies, and others. Students who wish to substitute one or two such appropriate upper-division courses for history electives must meet with their history faculty adviser and complete a course substitution form (available at the History Department office). These courses may not also be applied toward neither a second major nor a minor from another department.

Comprehensive requirement: The senior comprehensive requirement can be fulfilled by completing a senior seminar (one quarter: 194-series or 196-series) or a senior thesis (two quarters: courses 195A and 195B). Please consult the history undergraduate handbook, available at the department office, for a more detailed description of these courses.

Language requirement: Proficiency in a foreign language is strongly recommended for all history students and is essential for those who plan to pursue graduate study in history. Many Ph.D. programs in history require applicants to read one or two languages besides English. The UC Education Abroad Program (EAP) is appropriate for history majors as a means to both enhance language skills and take history courses elsewhere.

UC Education Abroad Program. A maximum of three courses in history completed through EAP may be applied toward major requirements. Consult the undergraduate handbook, and speak with the undergraduate adviser for further details.

Transfer students: Transfer students may apply up to three history courses taken elsewhere toward the history major or minor. A minimum of nine history courses must be taken at UCSC for the major and five for the minor. Students transferring from other UC campuses must take a minimum of five upper-division courses, including the senior comprehensive requirement, at UCSC for the major.

Intensive Concentration

The intensive major in Mexican/Chicano history has been suspended. Students may consult Associate Professor Pedro Castillo (pcastil@ucsc.edu) or the department's undergraduate adviser to identify courses of interest in this subject area.

Requirements for the Minor

Students whose major area of interest is not history may nonetheless find that a minor in history makes an invaluable contribution to their studies. For the minor in history, eight history courses, four of which must be upper division, are required. There is no senior comprehensive requirement for the minor.

Graduate Program

The Ph.D. program in history at UC Santa Cruz emphasizes an interdisciplinary and cross-cultural approach to historical studies. We offer a rigorous program of instruction and independent work that trains students in the techniques of original historical research and equips them to teach university-level courses in history. We only admit those highly motivated students who are most qualified to pursue advanced studies in history. We also only admit those applicants who can best benefit from the specific strengths of our faculty.

Just as the work of most professional historians centers around research and teaching, training in these areas constitutes the two essential poles of the graduate program in history.

Research Clusters

The History Department has created a series of thematic research clusters to coordinate the training of graduate students in historical research. Each research cluster is composed of several history department faculty and graduate students as well as faculty outside the department who share broad scholarly interests. The clusters serve as a way to coordinate the research of faculty and graduate students whose work encompasses different geographic regions and chronological periods. Although the nature and number of the research clusters may change over time, the department currently offers two basic groupings: (1) colonialism, race, and transnational migrations and (2) the history of gender.

The faculty of each cluster provides at least one research seminar every other year in addition to readings courses. All the affiliated graduate students must take at least one research seminar during their first two years; they are encouraged to take more than one. The combination of research seminars and other cluster activities ensures not only that graduate students build close and sustained working relationships with faculty but also that students at all levels, from first year to advanced, share common intellectual experiences. Faculty and graduate students in each cluster join with those from other departments to meet informally to read and discuss the work of cluster members, bring in outside speakers, and organize conferences.

In addition to cluster activities, faculty and graduate students participate in interdisciplinary forums outside the department. These include programs sponsored by The Chicano/Latino Research Center, the Pre- and Early Modern Studies Group, the Center for Cultural Studies, and the UCSC Institute for Humanities Research.

Advanced graduate students may also have the opportunity to work in programs sponsored by the University of California Humanities Research Institute at UC Irvine. Finally, multi-campus groups in which students and faculty are involved include the Bay Area Seminar in Early American Studies, the Bay Area Pre- and Early Modern Studies Group, and the French Studies Group at Stanford.

Research and Teaching

In preparing graduate students for research and teaching at the university level, the department offers training in four geographically defined fields: U.S. history, European history since 1500, East Asian history since 1600, and world history since 1500. U.S., European, and East Asian history are defined as primary teaching fields; each graduate student is required to choose one. Students of U.S. history may incorporate Latin American history in their coursework, while students of European history might include the history of European colonialism and imperialism. Every year the faculty in each field offers introductory readings, seminars, and, when possible, classes on more specific topics (see below for information on course offerings). Each graduate student also prepares a second teaching field different from the primary field and can choose from among U.S., European, East Asian, or world history.

Courses

Until they pass the qualifying exam and are formally advanced to candidacy for the Ph.D. degree, students must be in residence at UCSC and are expected to complete two courses each quarter to maintain normal academic progress. Completion of a minimum of 12 courses (in addition to 290A, 290B, or 290C) is required for advancement to candidacy. Courses taken are graduate seminars, independent study courses, and most upper-division undergraduate courses.

During the first year, students take courses 201, M ethnography and Theories of History, and one or two quarters of the historiography seminar in the appropriate field. The remaining quarters will be taken during the second year. Other required reading courses include two courses in either American, European, East Asian, or world history to satisfy the second teaching field requirement and two quarters of graduate course work outside the history department.

In addition, students take at least one research seminar during their first four quarters and the supervised research seminar in their second year. During this two-year period, students are expected to complete one substantial (25–30 page) research paper. Students are also required to take courses 290A, 290B, and 290C, History Graduate Seminar series, during their first and second years.

Foreign Language Requirement

No prior foreign language preparation is required for admission with a primary teaching field in U.S. history. Two to three years of college work, or its equivalent, in at least one foreign language is required for admission to the European program. Students who choose East Asian history as their primary teaching field will be required to have completed at least three years of college-level Chinese or Japanese prior to admission; more years are recommended. Depending upon the student's intended field of research, Japanese language study may also be required of China specialists as part of the graduate program of study.

Students with a primary teaching field in U.S. history are expected to demonstrate a reading competency in at least one foreign language prior to taking the Ph.D. qualifying exam. Students in all other teaching fields must demonstrate a reading competency in at least two foreign languages prior to taking the Ph.D. qualifying exam; competency in one of the languages must be demonstrated by the end of the sixth quarter of enrollment. Usually,
M.A. Degree

The M.A. degree is awarded to all students after two years in residence, successful completion of 12 courses and a substantial essay (25–30 pages), and, for those in primary teaching fields other than U.S. history, demonstrated competency in one foreign language.

The program brochure, admission requirements, and further details are available from the Department of History web site: http://humanities.ucsc.edu or by phoning (831) 459-4192.

M.A. in History (Terminal)

The Department of History offers a master of arts degree in history for those individuals who are interested in postgraduate work, but who are not planning to complete a Ph.D. It is a degree program that can fulfill in-service education requirements for current teachers as well as for future teachers earning a single subject credential in social studies. Part-time enrollment is allowed.

Each student will be required to choose one of four areas of specialization (U.S., Europe, East Asia, world); select one of two topical research areas—colonialism, nationalism, and transnational migration or history of gender; and pass two graduate courses outside the History Department. To complete the degree, each student must pass a total of 12 courses of 5 credits each and six courses of 2 credits each including courses 290A, 290B, and 290C. Students must also write a master’s paper. For M.A. students specializing in European, U.S., and East Asia, the curriculum will be nearly identical to that taken by Ph.D. students in their first two years, except that there will be no language requirement. Those specializing in world history will take courses 221A and 221B instead of the corresponding courses for the other fields (courses 205A, 205B, and so on), but otherwise their curriculum will be the same as that of a typical incoming Ph.D. student.

Lower-Division Courses

Examines film portrayals of ideology, combat, atomic weapons, and war legacies in the U.S. and Japan. Students analyze propaganda, popular films, and documentaries made during and after the war. Complements course 26, but can be taken alone. A. Yang-Murray, A. Christy.

10. Theories of History/Theories of Society
Nineteenth-century European theorists (Tocqueville, Marx, Weber, Durkheim) believed history was directional, leading to definite outcomes that could be understood with help from emerging social sciences. Course examines implications for study of history and impact on modern conceptions of social life. (General Education Code(s): IH.) M. Traugott

20A. Classical World: Greece. S
An overview of Greek history from the beginnings through the Hellenistic period, with emphasis on the Archaic and Classical periods (ca. 800 B.C. through 323 B.C.). (General Education Code(s): IH.) C. Hedrick

20B. Classical World: Rome.
A lecture course offering an overview of Roman history and civilization from the legendary founding of Rome in 753 B.C. to the collapse of the Roman Empire's central administration in the West in 476 A.D. (General Education Code(s): IH.) C. Hedrick

21. Approaches to Classical Myth. F
Introduction to Greek myths, including selected ancient texts and visual artifacts, historical and cultural context of their creation and reception, modern theoretical approaches such as structuralism and psychoanalysis, and interpretations in various media. (Also offered as Literature 61M. Students cannot receive credit for both courses.) (General Education Code(s): IH.) M. Gamez

25A. United States History to 1877. F
A survey of the political, social, and cultural history of the U.S. from the founding of the North American colonies to 1877. Satisfies American History and Institutions Requirement. (General Education Code(s): IH.) B. Levine

25B. United States History 1877 to Present. W
A survey of the political, social, and cultural history of the U.S. from 1877 to the present. Satisfies American History and Institutions Requirement. (General Education Code(s): IH.) L. Haas

29. Histories of Traditional India. S
A survey of the early histories of Indus Valley, Vedism, the epics, Buddhism, Jainism, with an exploration among original sources: archaeological, visual, ritual, literary, and epic texts. Thematic focus on communities, social systems, elite and popular cultures, and their mutual interaction. (General Education Code(s): IH, E.) D. Basu

30A. Modern European History. F
A survey of economic, social, and political history of Europe since the late fifteenth century: 1500–1789. A is not prerequisite to B, nor B to C. (General Education Code(s): IH.) M. Cioc

30B. Modern European History. W
A survey of economic, social, and political history of Europe since the late fifteenth century: 1789–1914. A is not prerequisite to B, nor B to C. (General Education Code(s): IH.) B. Sharp

33. Medieval Europe: 200–1000. F
A survey of the early Middle Ages, the Carolingian period to the time of the “Catholic Monarchs.” Emphasis will be placed on issues of ethnicity and acculturation of Christians, Muslims, and Jews. (General Education Code(s): IH.) B. Calos

34A. Introduction to the History of the Americas: Colonial Period. F
Introduces the social, cultural, economic, and political history of the New World through a close examination of the process of European “conquest” in the sixteenth century and its consequences for both native and settler peoples. Medieval and Renaissance European and African backgrounds. Inca, M aya, Aztec, plains, woodland, and tropical rainforest native American societies; processes of military and cultural conquest; epidemics and ecological changes; native resistance and the establishment of the fundamental institutions of colonial society. (General Education Code(s): IH.) M. Diaz

34B. Introduction to Latin American History: National Period.
An introduction to the study of Latin American history from the Independence Wars in the early nineteenth century to the twentieth century. Topics include changing economic models of development, U.S. role, rural and urban life, women, nationalism, populism, revolution, the military in politics, and the problem of democracy. (General Education Code(s): IH, E.) The Staff

An introduction to Japanese popular culture from 1945 to the present. We pursue the impact of mass media on Japanese society through analyses of popular movies, animation, comic books, music, weddings, and tourism in historical context. (General Education Code(s): E.) N. Aso

38. Introduction to American Religious Culture.
Introduction to the many communities found within the American religious landscape, balancing extraordinary diversity characterizing American pluralism against the dominant religious culture. Proceeds historically, engaging major problems and developments including utopianism, the rise of evangelicalism, religion and reform, manifest destiny, secularization and modernity, and the intersection of politics and religion. (General Education Code(s): IH.) M. Westerkamp

39. Film and the Holocaust.
Examines a series of distinguished documentary and feature films about the destruction of European Jewry. Each film is placed in its historical context, and wherever possible, the readings include the original documents on which films were based. Emphasis is placed on the strategies the filmmakers used to address the problem of representing genocide with succumbing to mere melodrama. (General Education Code(s): E.) B. Thompson

40. The Making of Modern East Asia. F
A broad introductory survey of the political, social, economic, philosophical, and religious heritage of modern China, Japan, and Korea. Emphasis on the historical foundations of modern nationalism, the colonial experience, and revolutionary movements. (General Education Code(s): IH, E.) B. Marotti

42. Student Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

46. Introduction to Modern Jewish History. F
Examines major turning points in Jewish history from the seventeenth century through the twentieth: the challenge of modernity, the rise of political anti-Semitism, the migration of European Jews to America, the near-total destruction of European Jewry in the twentieth century, and the origins and development of the conflict between Israel and its Arab neighbors. (General Education Code(s): E.) B. Thompson

50. The Making of Modern Africa. S
Examines the loss and reassumption of local and state autonomy in Africa during the nineteenth and twentieth centuries. Delineates the modalities of the colonial state and society, modes of resistance to alien occupation, and
the deformation of social, class, and gender relations. (Formerly course 80E.) (General Education Code(s): IH, E.) D. Anthony

55A. The World to 1500. F
Surveys the rise of complex societies: the formation of classical civilizations in Afroeurasia and the Americas, post-classical empires and cross-cultural exchange, technology and environmental change, the Mongol Empire, and oceanic voyages and the origins of the modern world. (General Education Code(s): IH.) B. Catlos

55B. The World Since 1500. W
Examines major world issues over the past 500 years. Topics include European expansion and colonialism, the Muslim empires, East Asia from Ming to Qing, the Americas, Africa, the scientific-technological revolution, decolonization, and modern environmental problems. Designed primarily for first- and second-year students, it provides a time frame for understanding events within a global framework. (Formerly course 555. Introduction to the Modern World, 1500 to Present.) (General Education Code(s): IH.) The Staff

80K. Spies: History and Culture of Espionage.
Examines the “golden age” of espionage during the 1930s, the Second World War, and the Cold War with emphasis on the relationship between intelligence and resistance movements in wartime, the importance of code breaking, and the links in certain notorious cases between espionage and treason. (General Education Code(s): T4-H humanities and arts.) B. Thompson

80M. Autobiographies and Social Life.
Readings from life stories of “ordinary workers” reveal the changes shaping European societies in age of industrialization. (General Education Code(s): T5-H humanities and arts or Social Sciences.) M. Traugott

80W. The Holocaust: The Destruction of European Jewry. W
Focuses on the destruction of the Jews of Europe by Nazi Germany. Issues are historically grounded, and include works of literature, social sciences, philosophy, and film. Also offered as Literature 80L. Students cannot receive credit for both courses. (General Education Code(s): T4-H humanities and arts, E.) P. Kenaz, M. Baumgarten

80Y. World War II Memories in the U.S. and Japan.
Examines how the meaning of such issues as war origins, war responsibility, the atomic bomb, reparations, and racism have been subjects of contention in postwar U.S. and Japan. Students explore the relations between history, memory, and contemporary politics. (General Education Code(s): T4-H humanities and arts, E.) A. Yang-Murray A. Christy

Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

100. Historical Skills and Methods.
Designed to train students in the fundamental skills required for advanced historical research. Students read historical theory and learn the basics of historical analysis, research, and disciplinary writing. Recommended to majors but open to all interested students. A. Christy

101. Athenian Democracy.
Athenian democracy from foundation to the fourth century B.C., with emphasis on its practices and ideologies. Readings from ancient sources and modern theory. Topi-
124. Revolution in France, W
Examines the great political upheavals of 1789, 1830, and 1848 in light of the other sweeping changes brought to nineteenth-century France by those other great "revolutions" of the age, the industrial and the democratic. Offered in alternate academic years. M. Traugott

125A. European Intellectual History, F
Study of European thought, literature, and art, 1680-1914. Focus on relation of ideas to their social and cultural context. Age of Enlightenment from Swift and Montesquieu to Rousseau and Goya. J. Beecher

125B. European Intellectual History, W
Study of European thought, literature, and art, 1680-1914. Focus on relation of ideas to their social and cultural context. Nineteenth-century emphasis on romanticism and development of socialist and aesthetic critiques of industrial civilization. J. Beecher

126. The Holocaust: Institutional Complicity
Analyzes Nazi corruption and utilization of German institutions in the implementation of the Holocaust. Also examines the institutional complicity and worldwide indifference that marked each step in the Final Solution, from state-sponsored euthanasia to the death camps. T. Hogan

127. Fascism and Resistance in Italy
Examines Italian politics, society, and culture during the fascist regime and World War II; interdiscipli nary focus, emphasizing history, literature, and film. C. Poli tritti

131A. English History
Emphasis on the interaction between social, economic, religious, and political developments. An attempt to place these phenomena in the context of the wider European and world scene. The period from 1485 to 1689. B. Sharp

131B. English History, F
Emphasis on the interaction between social, economic, religious, and political developments. An attempt to place these phenomena in the context of the wider European and world scene. The period from 1689 to 1990. B. Thompson

133. German History, S
The development of German civilization, including philosophy and literature as well as politics and diplomacy in the nineteenth and twentieth centuries. M. Cloc

134A. French History: Old Regime and Revolution
French history from the Middle Ages through the Revolutionary and the period of "absolutist" monarchical rule, the nature of the Old Regime, the causes and significance of the French Revolution. Attention to those who endured as well as to those who made events. J. Beecher

134B. French History: The Nineteenth Century
Social, political, and cultural history of France from the Revolution to W.W. I. Focus on the Revolutionary tradition, the Napoleonic myth, the transformation of Paris, and the integration of the peasantry into the national community. Readings include novels by Stendhal and Balzac. J. Beecher

135A. Medieval Russia
Medieval Russia. P. Kenez

135B. Russian History
Imperial Russia. P. Kenez

135C. Russian History, W
Twentieth-century Russia. P. Kenez

136. German Film, 1919-1945
Introduction to most important German films from 1919 to 1945. Through combination of movies and documentaries, gain insight into political, economic, social, and cultural conditions of Weimar and Nazi Germany. M. Cloc

137. Modern Jewish Intellectual History
Surveys European Jewish intellectual history from the Enlightenment to the present. Major themes include the romance of assimilation, the flowering of Yiddish literature, the competition between Zionism and socialism, new variations on the messianic idea, and Jewish contributions to the culture of urban modernism. Offered in alternate academic years. B. Thompson

138. Women and American Religious Culture
Historical introduction to religious culture of the U.S. as experienced and created by women. Explores religious ideas about women, the treatment of women by mainstream institutions and religious and secular communities, and religious leaders and followers. Taking an explicitly feminist analytical approach and using a variety of "texts," including historical and literary scholarship, sacred texts, fiction, autobiography, material artifacts, visual art, and music. M. Westerkamp

140A. Colonial and Revolutionary America
Explores the political, social, economic, and cultural development of British North America from the first European/Indian contacts in the late sixteenth century through to the establishment of the U.S.: founding to 1750. A is not prerequisite to B. Satisfies American History and Institutions Requirement. M. Westerkamp

140B. Colonial and Revolutionary America
Explores the political, social, economic, and cultural development of British North America from the first European/Indian contacts in the late sixteenth century through to the establishment of the U.S.: 1740-1815. A is not prerequisite to B. Satisfies American History and Institutions Requirement. M. Westerkamp

141. African Cinema
Historical study of modern African cinematic expression from the emergence of film as a tool of social control in the imperial and colonial periods to its theoretical and practical transformation by African cineastes in the post-independence era. Films and videos from northern, eastern, western, central/equatorial, and southern Africa viewed. (General Education Code(s): E) D. Anthony

141A. Africa to 1800
Introduction to history of Africa. Topics include states and "stateless" societies, culture, society and economy in the pre-modern era, stratification, oral traditions, long distance trade, the coming of Islam, and the evolution of the South Atlantic system and its social, political, and religious implications. Some background knowledge of Africa helpful. (General Education Code(s): E) D. Anthony

141B. Africa from 1800 to the Present
How Africa lost its continental, regional, and local autonomy in the era of European imperialism. The components of European hegemony, Christian proselytization, comparative colonial strategies and structures, nationalism, decolonization and independence and the divergence from neo-colonial patterns and the colonial legacy. Case studies from northern and sub-Saharan Africa. Some background knowledge of Africa helpful. (General Education Code(s): E) D. Anthony

143A. African American History to 1877 F
A survey of pre-contact Africa, indigenous social structures, class relations, the encounter with Europe, forced migration, seasonings, resistance, African gift to America, slavery and its opponents, industrialization, emigration vs. assimilation, stratification, Conventione Movement, Black feminism, Civil War, and Reconstruction. (General Education Code(s): E) D. Anthony

143B. African American History: 1877 to the Present, W
A survey of the period from 1877 to present, highlighting Jim Crow, Militarism, Black feminism, WWI, New Negro, Garveyism, Harlem Renaissance, Black Radicalism, Pan Africanism, Depression, WWII, Desegregation Movement, Black Power, 1960s, Reaganes. Cultural and economic emphases. (General Education Code(s): E) D. Anthony

144. Race and the American City
History of racial and ethnic minorities in the American city in the nineteenth and twentieth centuries. Examines the experiences of several non-white groups, with analyses of race, class, culture, gender, acculturation, and implications for social policy in the urban environment. Satisfies American History and Institutions Requirement. (General Education Code(s): E) P. Castillo

145. Chicana/Chicano History
A survey course on the social history of the Mexican (Chicana/Chicano) community and people in the U.S. through the twentieth century. Themes include resistance, migration, labor, urbanization, culture, and politics. Satisfies American History and Institutions Requirement. (General Education Code(s): E) P. Castillo

146A. Religion in Early America
Studies major trends and developments in the history of American religion from the founding of the colonies to the mid-nineteenth century. Examines institutional, social, and theological components within the context of American colonialization, revolution, and expansion, both geographic and economic. M. Westerkamp

146B. Modern American Religion
Explores the growth and transformation of American religious culture from 1870 to the present. While investigating individual church institutions, leaders, and theologies, focuses upon religion as part of the larger, pluralistic American culture. M. Westerkamp

147. California History
Offers a comprehensive view of California history, beginning with a study of native societies, Spanish conquest, and the vast changes wrought by the U.S.-Mexican war and the gold rush. Ecological, social, cultural, and urban change to the present are traced. L. Haas

149. History of the Southwest: Colonial Period to 1920, S
Examines the social organization of Spanish colonial, Mexican, and early American society in the Southwest. Themes include colonization, popular culture, religion, work, gender relationships, and immigration. (General Education Code(s): E) L. Haas

150B. History of China, 1644-1911, F
Explores in depth the late imperial Chinese state: the society, the economy, major intellectual trends, the-
counter with the expansive West, rebellions and revolutionary movements, and the end of the imperial system. Uses original sources in translation. M. Dale Huang

150C. Revolution in China 1895-1960. W
Explores the history of China from the late nineteenth century to the early 1960s, focusing on the development of the People’s Republic, the cultural revolution, and early attempts at socialist transformation. (Formerly Twentieth Century China). (General Education Code(s): E.) The Staff

150D. Recent Chinese History. S
Explores the history of China from establishment of the People’s Republic of China to the present, focusing on major events and developments. Satisfies the post-Mao economic reforms. (General Education Code(s): E.) The Staff

151. Classical Chinese Culture and Literature, Tenth Century B.C.E. through Sixth Century C.E.*
Survey of writing and culture from the tenth century B.C.E. through the sixth century C.E., focusing on poetry, philosophical and historical writing, supernatural fiction, Buddhist/Taoist texts in contexts of fragmentation, empire building, dynastic collapse, rebellion, emigration, and county society. Satisfies the Pre- and Early Modern and World Literature concentrations; also satisfies the Global, Poetry, and Pre- and Early Modern distribution requirements. (Also offered as World Lit & Cultural Studies 133. Students cannot receive credit for both courses.) Enrollment limited to 45. (General Education Code(s): E.) The Staff

152. Classical Chinese Culture and Literature, Sixth Century through Sixteenth Century.*
Survey of writing and culture from the Tang through early Ming dynasties (sixth century B.C.E. through sixteenth century C.E.). Themes include literary, religious, and philosophical innovation, courtly life, cultural contacts with non-Chinese people, and transformations of state and society. Satisfies the Pre- and Early Modern and World Literature concentrations; also satisfies the Global, Poetry, and Pre- and Early Modern distribution requirements. (Also offered as World Lit & Cultural Studies 133. Students cannot receive credit for both courses.) Enrollment limited to 45. (General Education Code(s): E.) The Staff

153. Mediterranean Empire, 1100–1500.
Political, social, economic, and cultural history of the Crown of Aragon, a major medieval Mediterranean power which failed to survive the transition to the modern world. Emphasis on interaction between diverse ethnic/religious groups within and outside of the Crown. Prerequisite(s): course 32, 33, or 163. B. Catlos

154. The Mediterranean in the Modern Era, 1730–1930. The cultural transformation of the Mediterranean region in comparative historical perspective from the rise of the Habsburg and Ottoman empires to modern times. Topics include orientalism, political and economic transformations, social movements, cultural change, gender, colonialism, and imperialism. E. Burke

155. Cinema and History: Film Author Satyajit Ray.*
Satyajit Ray is widely acclaimed as a master of world cinema. Course considers his work to examine "authorship" at multiple levels: the cultural, historical, social, and familial contexts and the relationship of his film to fiction, the politics and poetics of his vision, and its relationship to colonial, nationalist, and postcolonial India. Also studies the question of gender and the underclass. (Also offered as Film and Digital Media 162A. Students cannot receive credit for both courses.) (General Education Code(s): E.) D. Basu

156A. History of Premodern India.
A study of religions (Vaisnavism, Tantrism, Islam, Sikhism), art, literature, and social movements in their historical contexts from 1000 A.D. to 1800. (General Education Code(s): E.) D. Basu

156B. Political and Social History of Modern South Asia. W
Social, political, and religious movements in the colonial and postcolonial contexts of the nineteenth and twentieth centuries in modern and contemporary South Asia. (Formerly Political and Social History of Modern India.) (General Education Code(s): E.) The Staff

157. Vietnam War Memories. S
Compares memories and interpretations of war in Southeast Asia by diverse groups in France, America, and Vietnam. Topics include war origins, military strategies, propaganda, combat, civilians, media, activism, MIA’s, refugees, mixed race children, memorials, textbooks, films, music, literature, and art. (General Education Code(s): E.) M. Yang Murray

158. Ethnicity and Community in the Middle Ages.
Survey and analysis of ethnicity in the Middle Ages, covering both the Islamic and Christian-dominated West. Examines topics including the nature of community and identity, political consequences of diversity, and social and economic relations across community lines. (General Education Code(s): E.) B. Catlos

159A. Ancient Japan. F
Surveys the history of the peoples of the Japanese islands from prehistorical migrations to the middle of the fifteenth century. Emphasizes include examination of social structures, political formations, cultural production, and religion. B. M. Murata

159B. Tokugawa Japan. W
Surveys the history of the peoples of the Japanese islands from the middle of the fifteenth century to the middle of the nineteenth century. Focus is on the era of civil war, the formation of the early modern federated state, social structure, and cultural production. B. Murata

159C. Modern Japan.
Surveys the history of the peoples of the modern Japanese empire and nation from the Meiji Restoration to the present. Focuses on the formation of the modern state, international relations, social structure, and cultural history. (General Education Code(s): E. N. Asao

160. The Crusades, 1000–1300. F
Examines history of the Middle East from 1000-1300, in particular, Latin Crusade and colonization and Mamluk response. Format chronological; topics include the role of Christian cities in the Crusades, the Crusades and the development of the Ottoman Empire, and the eventual collapse of the Crusader states. B. Catlos

165. Conflict of Interest: War, Holocaust, and Industry in the Lodz Ghetto. W
Examines how Nazi war machine exploited Jewish slave labor in the Lodz ghetto industrial complex while a state apparatus systematically exterminated the workers. Includes a visit to a survivor of ghetto factories and graphic accounts from ghetto workshops. Enrollment restricted to juniors and seniors. (General Education Code(s): E.) M. Thaler

169. Bioscience, Nazi “Racial Hygiene,” and the Holocaust. Traces the Nazi “Superstate” project from its origins at the turn of the twentieth century to its conclusion in the Holocaust, providing a historical perspective for social and political dilemmas raised by contemporary biomedical advances. (Formerly course 190.) (General Education Code(s): E.) M. Thaler

170. Women in Latin America. Introduction to the social history of Latin America through a focus on the intersections of class and ethnicity on gender in this region. First six weeks focuses on the colonial period. The last three weeks covers the nineteenth and twentieth centuries. (General Education Code(s): E.) M. Diaz

171A. History of the Caribbean: Colonial Period. A study of the Caribbean from the conquest to the abolition of slavery in the nineteenth century. Focuses on the Greater Antilles, particularly the Spanish Caribbean. Emphasizes economic and social issues such as colonialism and the role of sugar production, slavery, and race/ethnicity in these multicultural societies. (General Education Code(s): E.) M. Diaz

173. Inter-American Relations. Covers Latin American relations with the U.S. through cultural, economic, and political history. Three historical pivots between the U.S. and Latin America—the war between Mexico and the U.S., the circumstances surrounding the “Spanish-American War,” and U.S. intervention in Guatemala in the 1950s—discussed as exemplars of the complex and often disastrous relations between the two Americas. L. Segal

175B. History of Mexico, 1850 to Present. Social, cultural, economic, and political history from the triumph of Liberalism to the present, focusing on four key periods: the dictatorship of Porfirio Diaz (1900–1910), the armed phase of the Revolution (1910–1920), the consolidation of revolutionary programs and a “single-party democracy” (1926–1940), and the developmentalist counter-revolution since 1940. Provides background for understanding the Mexican diaspora to the U.S. (General Education Code(s): E.) L. Segal

177. History of Modern Cuba. W
Covers from the Cuban sugar revolution (late eighteenth century) to the socialist revolution and its aftermath (1959–present). It is intended to be not only a modern history of Cuba but also a broader history of Latin America through the case of Cuba. (General Education Code(s): E.) M. Diaz

180. Origins of the U.S. Civil War. W
Examines economic, social, cultural, and political changes that ultimately produced civil war. Focuses on how diverse segments of the population—North and South, urban and rural, rich and poor, slave and free, black and white, male and female—were influenced and affected by these changes. Prerequisite(s): course 25A. B. Levine

182. The Second American Revolution: The Civil War and Reconstruction. S
Social, political, and economic history of the American Civil War and Reconstruction, focusing on the war's changing nature and significance, emancipation, and the postwar struggle over the future of the South and the nation. B. Levine
186. Asian American History, 1941-Present. Analyzes immigration, race relations, war, gender ideology, family life, acculturation, political activism, interracial marriage, multiracial identity, and cultural representations between 1941 and the present. Emphasis on discussion, writing, research, and group presentations. (General Education Code(s): E.) J. Yang-Murray

192. Directed Student Teaching. Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students submit petition to sponsoring agency. The Staff

193. Field Study. To allow promising, well-qualifed undergraduates to pursue directed programs of archival or archaeological study in the field under supervision of the Santa Cruz history faculty, concentrating their work within a single given quarter. Students may take two or three courses concurrently. Students submit petition to sponsoring agency. M ay be repeated for credit. The Staff

194. Senior Research Seminar. An opportunity for advanced students to focus on specific research problems and acquire experience in practical research skills and the writing of a substantial research paper, totaling approximately 25 pages.

194A. Modern Irish History. W Aim to illuminate major themes and turning points of modern Irish history: the causes and consequences of the famine; the development of Irish nationalism; revolution, civil war, and partition; and the recent economic boom. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses. Enrollment limited to 15. (General Education Code(s): W.) B. Thompson

194C. Research Seminar in the Americas. W Students learn how to conduct research and write history. Primary and secondary sources are extensively read. Research sources include a rich array of government documents, newspapers, and diaries, visual material and film. Prerequisite(s): two upper-division history courses, satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) L. Haas

194D. Early American Society and Culture. W Explores subjects and themes in the political, social, and cultural history of early U.S. history from the colonial period through 1850. Includes critical reading of current scholarship and research in primary texts. The focus of the course is the production of a research essay. Recommended for senior history majors. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) M. Waterkamp

194E. Special Topics in Ancient History. F Seminar focuses on different topics in ancient history. In addition to assigned readings, the student is expected to do additional research that culminates in a 20-page paper on a topic of the student's choice. General topics for the course will vary from year to year. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) C. Hedrick

194H. Tale of Two Cities. W A comparative study of the social, economic, cultural, political, and geographical development of Los Angeles and Mexico City in the twentieth century. Emphasis is on the diverse peoples, changing physical environment, and various images/interpretations of these two world cities. (Also offered as Latin American/Latino Studies 194H.) Students cannot receive credit for both courses. Prerequisite(s): two upper-division history courses and satisfaction of the Subject A and Composition requirements. Enrollment restricted to junior and senior Latin American and Latino studies and history majors. Enrollment limited to 20. (General Education Code(s): W.) E. J. Castillo

194J. Comparative Studies in Modern Asian History. S Seminar on cultural and social changes in Asia, mainly in the nineteenth and twentieth centuries. Topics include colonial encounters, cities, narratives of ordinary persons, nationalism and identity, visual cultures, and Orientalism. Prerequisite(s): two upper-division history courses and satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) P. Castiño

194M. Topics in Chicano/o History. A seminar on the history of Chicanos/Mexicans in the United States, 1848 to the present. Topics include Chicano and Chicana labor, family, social, urban, cultural, and political history. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) E. D. Basu

194N. Topics in Ancient History. A seminar on the history of Chicano/o societies in the New World, including the history of the Incas, Maya, and Aztecs. Prerequisite(s): two upper-division history courses, satisfaction of the subject A and Composition requirements; two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) E. J. Castillo

194P. Students cannot receive credit for both courses. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) E. J. G. Hershatter

194Q. Russian Revolution, 1917-1932. Study of the major political, social, and intellectual conflicts and transformations of the period. Topics include February and October revolutions, Civil War, NEP, rise of Stalinism, and collectivization. Prerequisite(s): two upper-division history courses; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) M. Diáz

194R. Modern Italian Culture. Developments in Italian culture and society from the postwar through the 1990s. Topics include north-south divisions, family and gender, cinema and modernity, urbanization, mafia, terrorism, and separatism. Prerequisite(s): two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) P. Kenz

194U. China Since the Cultural Revolution: Histories of the Present. F Analyzes tensions leading to the Cultural Revolution, the construction of collective memory, memory changes during the post-Mao reforms, the development and suppression of the 1989 demonstrations, and contemporary debates about nation and globalization. Prerequisite(s): two upper-division history courses; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) E. J. G. Hershatter

194V. Topics in African History. Examines contemporary crises in Africa: the new South Africa; refugees, HIV/AIDS; children of war, blood or conflict diamonds, civil war, and genocide in Rwanda. Seminar format where students will be prepared to undertake studies on specific subjects and two rounds of 15-20 page papers. Prerequisite(s): satisfaction of the Subject A and Composition requirements and two upper-division history courses. Enrollment limited to 15. (General Education Code(s): W.) E. D. Anthony

194W. Gender, Family, and State in China: 1600-Present. Explores gender, family, and state power in China from 1600 to present, examining gender norms, education, political movements, revolutionary practice, sexuality, and sex work, and state interventions in contemporary families. Responses to reading and research paper required. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W.) E. J. G. Hershatter

194X. Saints and Holiness in Medieval Europe. W Examines popular religious belief and practice, including conversion, the cult of the saints, relics, pilgrimage, miracles, and visions. Emphasis on medieval through Reformation Europe, but some attention also paid to modern patterns of devotion. Prerequisite(s): course 33, or 120A, 120B, or 122 and one upper-division history course; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) C. Poleritti

195A. Thesis Research. Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 20. (General Education Code(s): W.) The Staff

195B. Thesis Writing. Prerequisite(s): satisfaction of the Subject A and Composition requirements; petition on file with sponsoring agency. (Students should have completed two upper-division courses, preferably in their area of concentration.) The Staff

196. Senior Readings Seminar. Discussion classes providing a broad overview of some general area or theoretical concern within an “area of concentration.” Discussion of assigned readings plus either a series of short papers or a single final paper. Either case, totaling approximately 25 pages.

196A. Hitler and Stalin. A discussion of twentieth-century totalitarianism. Prerequisite(s): two upper-division history courses, preferably in area of concentration; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) P. Kenz
196B. The Cold War and East Asia. W

Considers through primary and secondary sources the impact and aftermath of the cold war in East Asia in terms of state formation, domestic and foreign policy, and protest movements in China, Taiwan, Korea, and Japan with reference to Vietnam. Prerequisite(s): two upper-division courses, satisfaction of the Subject A and Composition requirements. Enrollment restricted to history majors. Enrollment limited to 20. (General Education Code(s): W, E) B. M. Arato

196D. Eastern European Jewish Social History. S

Study of nineteenth- and twentieth-century Eastern European and Russian Jewish social history. Prerequisite(s): satisfaction of Subject A and Composition requirements and two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W, E) B. Levine

196F. Modern Germany and Europe. W

A senior reading and research seminar that explores the major historiographic debates in German history during the nineteenth and twentieth centuries. Prerequisite(s): two upper-division courses, satisfaction of the Subject A and Composition requirements. Enrollment restricted to history and German studies majors. Enrollment limited to 20. (General Education Code(s): W) M. Cioc

196G. Problems of the Civil War Era. F

The era of the Civil War is generally acknowledged to be the most important turning point in U.S. history, no less than a second American revolution. New questions are asked about the role of war in the study of this pivotal era. Provides a critical, in-depth look at key aspects of this subject. Prerequisite(s): course 180 or 182; satisfaction of the Subject A and Composition requirements. Enrollment limited to 15. (General Education Code(s): W) B. Levine

196H. Afro-American Historiography. S

Major themes in contemporary African American historiography on a topical basis. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history courses, preferably in area of concentration. Enrollment limited to 20. (General Education Code(s): W, E) D. Anthony

196I. California and the Borderlands. F

Complete original research in California and borderlands history in this senior research seminar. Focus on selected problems and themes. Assignments and discussions help students frame their research and edit their writing. Prerequisite(s): two upper-division history courses and satisfaction of the Subject A and Composition requirements. Enrollment restricted to juniors and seniors. Enrollment limited to 15. (General Education Code(s): W) L. H. Aas

196K. Topics in Medieval History. S

Addresses contemporary and modern interpretations of the events relating to the Crusades in the Middle East. Through critical discussions, will access value of various historical sources. Prerequisite(s): course 153 and one upper-division history course; or course 32 and two upper-division history courses. Enrollment limited to 15. (General Education Code(s): W, E) B. Catsos

196M. End of Slavery and Serfdom. S

Senior seminar compares the United States’ experience with slavery and its elimination with historical trajectory of slavery in the U.S. with the rise and decline of this and other forms of bound labor elsewhere in the western hemisphere, Europe, and southern Africa. Prerequisite(s): course 25A and/or course 182 and one other upper-division history course; satisfaction of Subject A and Composition requirements. Enrollment limited to 15. (General Education Code(s): W) B. Levine

196N. Women and War.

Seminar examines the role of women in war, both as combatants and noncombatants. It commences with a discussion of theories of war and gendered aspects of combat. It covers a wide historical range beginning with the “legendary” Amazons and ending with the rescue of Private First Class Jessica Lynch. Prerequisite(s): two upper-division history courses, satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W) S. Purdy

196R. Women in Japanese History.

Examines through both primary and secondary sources such issues as work, sexuality, education, class, and ethnicity in relation to constructions of female gender in Japanese society over the past several centuries, particularly focusing on the modern era. Prerequisite(s): satisfaction of the Subject A and Composition requirements and two upper-division history courses. Enrollment limited to 20. (General Education Code(s): W) N. Aso

1965. Who Controls Broadcasting? F

Focuses on the social and political construction of major telecommunications and broadcasting systems in the U.S. including wireless, telephone, radio, television, and the Internet. Emphasis on reading and analyzing prominent scholarly and popular works on this subject. Prerequisite(s): two upper-division history courses; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W) M. Lasar

196U. U.S. and Globalization in Late 20th Century. S

Examines U.S. and global political-economic dynamics, including development of U.S. global economic domination after World War II, deindustrialization, emergence of “globalization,” racialized domestic impacts, and global grassroots resistance. Special emphasis on U.S. relations to Latin America. Prerequisite(s): two upper-division history courses. Enrollment restricted to juniors and seniors. Enrollment limited to 15. (General Education Code(s): W) D. Frank

196Y. Memories of WWII in the U.S. and Japan. W

Research seminar comparing U.S. and Japanese memories of World War II. Topics include war origins, total war, the atomic bomb, war responsibility, reparations, memorials, museums, and monuments. Primary work devoted to research in original texts and documents. Prerequisite(s): course 26 and two upper-division history courses or permission of instructor; satisfaction of the Subject A and Composition requirements. Enrollment limited to 15. (General Education Code(s): W, E) A. Yang M. urray

196Z. Women and Social Movements in the U.S.

Examines history of women and social movements in the U.S., including abolitionism, antilynching, Chinese and Jewish garment workers, Chicana farm labor activism, the American Indian Movement, the Ku Klux Klan, and the Civil Rights movement. Prerequisite(s): two upper-division history courses and satisfaction of Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W) D. Frank

198. Independent Field Study.

Student’s supervision is conducted by a regularly appointed officer of instruction by means other than the usual supervision in person (e.g., by correspondence) or student is doing all or most of the course work off campus. M ay be repeated for credit. The Staff

199. Tutorial.

Students submit petition to sponsoring agency. M ay be repeated for credit. The Staff

199F. Tutorial (2 credits).

Students submit petition to sponsoring agency. M ay be repeated for credit. The Staff

Graduate Courses

201. Methods and Theories of History. F

An overview of theories, methods, and philosophies concerning the nature and production of history. Topics vary with instructor. Enrollment restricted to graduate history students and others by permission of instructor. Enrollment limited to 20. M. Traugott

202. Readings in Late Imperial China.

A survey of the major works and historiographical controversies in Qing Dynasty (1644–1911) China. Enrollment restricted to graduate students. Enrollment limited to 20. D. Basu

203. Readings in Twentieth-Century China. F

A survey of major Western-language works and historiographical controversies in Chinese history from 1900 to the present. Weekly readings emphasize particular social and political movements as well as long-term changes in urban and rural society. Enrollment restricted to graduate students. Enrollment limited to 20. G. Hershatter

204. Engendering China.

Reading seminar on the history of Chinese gender, focusing on the Qing dynasty (1644–1911) to the present. Topics include marriage and family, sexuality, work, the gendered language of politics, and major reform movements. Enrollment restricted to graduate students. Enrollment limited to 20. G. Hershatter

205A. Readings in European Social and Cultural History.

A readings seminar that introduces beginning graduate students to some of the major conceptual and methodological approaches to early modern European social and cultural history, 1400–1789. Enrollment restricted to graduate students. Enrollment limited to 20. B. Sharp

205B. Readings in European Social and Cultural History. F

A readings seminar that introduces beginning graduate students to some of the major problems in modern European social and cultural history, 1789 to the present. Enrollment restricted to graduate students. Enrollment limited to 20. J. Beecher

208A. Readings in U.S. History.

Introduction to major themes and controversies in the interpretation of U.S. history. Readings cover both chronological eras and topical subjects, often in a comparative context: Colonial period. Enrollment restricted to graduate history majors. Enrollment limited to 15. M. Wet erkamp
208B. Readings in U.S. History. Introduction to major themes and controversies in the interpretation of U.S. history. Readings cover both chronological eras and topical subjects, often in a comparative context: nineteenth century. Enrollment limited to graduate history majors. Enrollment limited to 15. B. Levine

208C. Readings in U.S. History. S Introduction to major themes and controversies in the interpretation of U.S. history. Readings cover both chronological eras and topical subjects, often in a comparative context: twentieth century. Enrollment restricted to graduate history majors. Enrollment limited to 15. P. Castillo

210. Readings in Modern Japan. A graduate course intended to give students a fundamental understanding of the major themes in the study of modern Japanese history. Central themes include modernity and modernization, colonialism, postwar recovery, gender, race, and nationalism. Enrollment restricted to graduate students. Enrollment limited to 15. A. Chirdy

216A. Topics in American History: U.S. Labor and Working Class History, W Addresses topics in history of working people, the labor movement broadly defined, and political-economic change in the U.S. Topics include race, ethnic and gender dynamics, and U.S. labor and working-class history in global context. Formerly Topics in American History: U.S. Working Class History. Enrollment limited to graduate students. Enrollment limited to 15. D. Frank

216D. Topics in American History: The Atlantic World 1500–1800. Explores the economic, social, and cultural history of early America in terms of its Atlantic connections and intersection with the cultures of early modern Europe, Africa, and Latin America. Builds upon previous work in early America and early modern Europe, challenging students both to work comparatively and to break out of traditional geographic models. Enrollment restricted to graduate students. Enrollment limited to 15. M. Westerkamp, M. Diaz

221A. Patterns of World History, 1500–1750, W A graduate introduction to world history, 1500–1750. Focuses on social and economic change in the societies of Asia, Africa, and the Americas through a comparative study of European imperial hegemony, labor systems, global economic exchange, and cultural interactions. Enrollment limited to 15. E. Burke

221B. Patterns of World History, 1750–Present, S The history of the modern world, 1750–1990. Focuses on patterns of social and economic change attendant to the rise of the capitalist world market. European imperialism and indigenous self-strengthening movements, processes of cultural and economic globalization. Enrollment limited to 15. E. Burke

222. History of Gender Research Seminar, F Introduction to theories and methods employed in gendered historical research. Readings are drawn from a range of chronological, national, and thematic fields and explore the intersection of gender analysis with questions of the body and sexuality, modernity, colonialism, race and ethnicity, constructed space, and production/consumption. Enrollment restricted to graduate history majors. Enrollment limited to 15. M. Westerkamp

224. Society and Culture Research Seminar, S A graduate course introducing students to research using primary historical materials to explore topics in society and cultural history from 1500 to the present. Enrollment restricted to graduate students. Enrollment limited to 15. J. Becker

226. Colonialism, Nationalism, and Race Research Seminar. Research seminar introducing theories and methods of the comparative histories of race, ethnicity, and nationalism. Enrollment restricted to graduate history students. Enrollment limited to 15. L. Haas

228A. Research Methods: China. An introduction for graduate students to the use of major research tools and sources in Chinese history since 1600, with a focus on twenty-century materials. Students complete a series of bibliographical exercises and prepare a research prospectus. Enrollment restricted to graduate students. Enrollment limited to 20. G. Hershatter

228B. Research Methods: China. Building on the research and bibliographic skills developed in course 228A, students develop a research topic and write a paper of 20–30 pages using primary sources appropriate in English, Chinese, and/or Japanese. Enrollment restricted to graduate students. Enrollment limited to 20. G. Hershatter

230. Directed Research Colloquium. W Having already prepared a bibliography and research prospectus in a graduate research seminar, students will undertake further research on their projects, write a 25–30 page research paper, and present their work to their fellow students. Prerequisite(s): history graduate research seminar. Enrollment restricted to graduate history students. Enrollment limited to 15. A. Yang-Murray

243A. Nationalism, Anti-Semitism, and Jewish Resistance in World War II. Jewish resistance to Nazism during World War II, in Europe, and its historical context. Includes the prewar rise in nationalism and anti-Semitism in Poland and Lithuania, Jewish integration in the Soviet Union, and the consequences for wartime resistance. Also offered as History of Consciousness 243A. Students cannot receive credit for both courses. Enrollment restricted to seniors and graduate students. Enrollment limited to 15. The Staff

290A. History Graduate Proseminar: Teaching Pedagogy (2 credits), F Devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. Topics include TAships, designing course syllabi, pedagogy, teaching technologies, and teaching in different venues. This course is required for first-year students; however, it is open to all other history graduate students as needed. Enrollment restricted to graduate history majors. M ay be repeated for credit. A. Yang-Murray

290B. History Graduate Proseminar: Research Presentations and Grant Writing (2 credits), W Devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. Topics include TAships, designing course syllabi, pedagogy, teaching technologies, and teaching in different venues. This course is required for first-year students; however, it is open to all other history graduate students as needed. Enrollment restricted to graduate history majors. M ay be repeated for credit. A. Yang-Murray

290C. History Graduate Proseminar: Job Market (2 credits), S Devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. Topics include TAships, designing course syllabi, pedagogy, teaching technologies, and teaching in different venues. This course is required for first-year students; however, it is open to all other history graduate students as needed. Enrollment restricted to graduate history majors. M ay be repeated for credit. A. Yang-Murray

291. Foreign Language Preparation (2 credits). F,W,S Independent study course in which history graduate students choose selected texts to fulfill foreign language requirement. Students meet with instructor to discuss readings, deepening their knowledge of the foreign language. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. The Staff

292. Qualifying Examination Preparation (2 credits). F,W,S Independent study course designed to help students prepare for qualifying exams. Students meet on regular basis with one or more members of qualifying examination committee to monitor preparation for exam. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. The Staff

293. Readings in Research Field (2 credits). F,W,S Independent study focusing on selected topics or authors in history or historical theory. Students meet on regular basis with instructor to discuss readings and deepen their knowledge of a particular author or historical theory. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. The Staff

294A. Research Colloquium on Colonialism, Nationalism, and Transnational Movements (2 credits), F,W,S Acquaints students with the department's thematic research clusters in their field to coordinate training in historical research. Students meet on a regular basis with a faculty member of a particular cluster to discuss most important readings in the field. Enrollment restricted to graduate students. M ay be repeated for credit. The Staff

294B. Research Colloquium on Gender (2 credits), F,W,S Acquaints students with the department's thematic research clusters in their field to coordinate training in historical research. Students meet on a regular basis with a faculty member of this cluster to discuss most important readings in their field. Enrollment restricted to graduate students. M ay be repeated for credit. The Staff

295. Teaching Assistant Preparation (2 credits). F,W,S Independent study designed to help history graduate students prepare to teach in an area of history outside their specialization. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. The Staff

296. History Colloquium (2 credits). F,W,S Independent study designed to foster departmental and cross-disciplinary participation in campus talks, colloquia,
Faculty and Professional Interests

Professor

Harry Berger Jr., Emeritus

Rouel Birnbaum, Patricia and Rowland Rebele Chair in History of Art and Visual Culture

Buddhist studies, especially Chinese practices from medieval times to the present; religion and visual culture in China

Carolyn S. Dean

Cultural histories of the Native Americas and colonial Latin America

John Hay

Visual and conceptual representation in pre-modern China, especially landscape painting; Asian art history

Virginia Jansen

Medieval visual culture, urbanism, and secular building; Gothic architecture; campus planning and architecture

Jasper A. Rose, Emeritus

Catherine M. Soussloff

European cultural theory, aesthetics, and the historiography of art; performance studies; Early Modern Italian art; media history including film; Jewish identity and representation

Associate Professor

Jennifer A. Gonzalez

Contemporary theories of visual culture, semiotics; critical museum studies; photography; public and activist art in the United States

Donna M. Hunter

European painting (especially French) from 1600 to the 1960s; German art and visual culture between the two world wars; art as social practice; portraiture

Assistant Professor

Elizabeth Cameron

Visual cultures of central Africa; issues of gender, post-colonialism, and iconism

Sheila Crane

20th-century art and architecture in Europe and North America; modern French architecture and urbanism

Stacy Kamehiro

Visual cultures of the Pacific; 19th-century Hawai‘i; (inter)nationalism; culture contact; (post)colonialism

Lecturers

Elisabeth Remak-Honner

History of book production and use in the West from antiquity to modern times; relationship between text and image

Ernestina Osoro

Architecture of Mexico City during the first half of the twentieth century

Kirtana Thangavelu

Religion and visual culture in India and Asia

Program Description

Visual culture, as a contemporary academic field evolving from the historical study of art, investigates the production, form, and reception of images past and present. It incorporates the painting, sculpture, and architecture conventionally defined by art history, but it extends throughout the fields of visual imagery beyond the cultural boundaries formerly drawn by academic tradition. The history of art and visual culture program at UCSC directs its cultural and historical investigation across a wide variety of representations in the cultures of Africa, the Americas, Asia, Europe, and the Pacific Islands; from masks and mountains to mass media.

Students of visual culture at UC Santa Cruz encounter complex questions raised from a variety of viewpoints. Foremost among these are questions about the social, economic, religious, and psychological influences on those who produce visual images as well as on those who view them. Also considered is how images form beliefs and values, taking into account the issues of gender, sexuality, ethnicity, race, and class. Questions of theory and methodology are addressed throughout the range of courses, although some courses emphasize these more than others.

The history of art and visual culture curriculum guides students in acquiring skill in critical thinking about visual culture. Courses are organized in four levels, with each level providing a progressively sophisticated study of materials and problems. The lower-division courses number 1-99 and intended for general education students and prospective majors; provide an introduction to the field of visual culture according to geographic areas and visual traditions within those areas. Upper-division courses, numbered 100-149, cover a broad range of issues in various aspects of world culture from earliest times to the present. Advanced courses, numbered 150-189, focus on selected fields, topics, and methods. The most advanced courses, numbered 190 and 191, are taught in seminar format. Each student majoring or minoring in visual culture devises an individual study plan with a faculty adviser.

Declaring the Major

Prospective majors must complete two of the lower-division 10-series courses in history of art and visual culture before declaring the major. All students considering this major should consult with a member of the faculty as soon as possible. Students must complete the work sheet for declaring the major in preparation for a meeting with an adviser to finalize the proposed Study Plan and Declaration of Major petition form.

Lower-Division Requirements

Five courses, as follows:

• courses 100, 10E, and either 10F or 10G
• two courses selected from the following:
  • additional 10-series courses
  • visual practice courses: Art 20–30, 70; Theater Arts 14, 18
  (transfer courses—a total of 9 or 10 quarter credits)

(Up to two upper-division history of art and visual culture courses may be substituted with prior approval of a faculty adviser.)

Upper-Division Requirements

Ten 5-credit courses, as follows:

• nine upper-division history of art and visual culture courses:
  • course 100A recommended during sophomore or junior year
  • courses 101–149: two courses recommended
  • courses 150–189: four courses recommended

(190–191: two courses required, one of which must satisfy the senior comprehensive requirement (see below)

In courses 100–191, a student must study with four different faculty members to ensure methodological and theoretical diversity as well as to study visual cultures in a variety of historical eras and cultural settings (refer to the course descriptions).

• tenth course: one course from another discipline, approved by a faculty adviser. The course taken outside of the History of Art and Visual Culture Department to fulfill the upper-division major requirement should complement a student’s history of art and visual culture program focus. Courses from the following departments are especially relevant: American studies; anthropology; film and digital media; history; history of consciousness; Latin American and Latino studies; literature; theater arts; and women’s studies. Courses from other departments may be considered.

Comprehensive Requirement

One of the two seminars, 190–191, taken to meet the requirements for the major must be taken in the senior year to fulfill the senior comprehensive requirement. Within the context of an advanced seminar, this course provides supervised, culminating work leading to the completion of a major coherent project that meets the standards of the senior level of achievement in the history of art and visual culture. Students whose performance is outstanding are eligible for Honors. Students taking the course for Pass/No Pass who do not pass will receive a “fail” (F).

Concentration in Religion and Visual Culture

This program is for students who wish to pursue the study of religion in conjunction with studies of visual culture. It consists of an individually planned sequence of courses, including a core set of lower-division courses (1–99), to provide grounding in issues, methods, and a
general history of visual culture; upper-division courses (100–199) from within the department; and at least four upper-division courses from other departments that focus on the study of religion.

A student enters the concentration by petitioning the History of Art and Visual Culture Department and proposing, in consultation with the primary adviser, a sequence of upper-division courses to fulfill the religion and visual culture concentration requirements. Students must complete two 10-series lower-division courses in history of art and visual culture before declaring the major.

Requirements
Fourteen courses are required; four lower-division and six upper-division courses from within the department and four relevant upper-division courses from other departments.

Lower-Division Courses
- Courses 10D, 10E, and either 10F or 10G
- One course selected from the following additional 10-series courses, 80-series courses, or Art 20–30 (A lower-division course from another department or an upper-division history of art and visual culture course may be substituted with prior approval of a faculty adviser)

Upper-Division Courses
- Six upper-division history of art and visual culture courses (course 100A, two numbered 101–149, two numbered 150–189, and one in the senior year numbered 190 or 191).
- Four upper-division courses in the study of religion from programs on campus such as anthropology, history, literature, and philosophy. (A current list of courses on campus that focus on the study of religion is maintained by the History of Art and Visual Culture Department Office.)
- Students must include at least two seminars in their program; at least one should be taken in the History of Art and Visual Culture Department in the senior year specifically to fulfill the senior comprehensive requirement.

Double Majors
History of art and visual culture may be studied as part of a double major. A student must fulfill all of the requirements for both majors.

Minor Requirements
Nine courses, as follows:
- lower-division: three courses (10D, 10E, and either 10F or 10G)
- upper-division: six courses planned in consultation with a faculty adviser (one history of art and visual culture 80-series course may be substituted for one upper-division course).

Transfer Students
A student may transfer up to five history courses toward the major, only two of which may be upper division. Upper-division transfer credit must be approved by the students faculty adviser. Transfer students are invited to contact the History of Art and Visual Culture Department before enrolling at UCSC.

Study Abroad
The University of California’s Education Abroad Program (EAP) operates in countries throughout the world and serves over 750 upper-division students from the nine UC campuses annually. Students may receive transfer credit for a maximum of three upper-division art history courses taken through the EAP program. Credit for courses taken at other institutions is given only with the permission of the student's adviser. It is strongly suggested that students consult with a faculty member about their course of study before going abroad in order to avoid any confusion about these transfer credits.

Recommendations for Students Who Plan Graduate Study
There are many graduate programs of visual culture that lead to the M.A. and Ph.D. in fields such as art history, cultural history, semiotics, rhetoric, history of religions, comparative arts, theory and criticism of art, and so forth. Most graduate programs require a reading knowledge of one or two languages other than English. Students who are contemplating graduate study should consult with their advisor as early as possible in their undergraduate career.

Lower-Division Courses
10D. Introduction to Visual Culture. An introduction to the history of art and visual culture. Need not be taken in sequence.
10E. Presence and Power in the Visual Cultures of Asia. S An introduction to the art and architecture of East Asia, including China, India, Southeast Asia, and Japan. In order to achieve a fuller understanding of the arts of these countries a historical, cultural, and religious context is provided. (General Education Code(s): H, A, K.) T. Hangavelu
10F. Africa, Oceania, and the Americas. W A comparative study of the arts of selected cultures which developed outside the spheres of influence of the major European and Asian civilizations. Emphasis is on the function of the arts in these disparate geographic regions. Students cannot receive credit for this course and course 100E. (General Education Code(s): H, A, E.) E. Cameron, C. Dean, S. Kamehiro
10G. Europe.* An introduction to the European tradition in visual culture, from antiquity to the present, but not in chronological order. All media, including history, theory, art, architecture, film, video, and installation and performance are incorporated. Presents the major visual arts and social sciences. A.) J. Gonzalez

80A. Introduction to Architecture. F
80B. Tourist Art. * How indigenous people from Africa, Oceania, and the Americas respond to the demand for souvenirs by tourists in their homelands. (General Education Code(s): T5-Humanities and Arts or Social Sciences, A.) V. Janan
80C. Museum Cultures: The Politics of Display.*
80D. Ancient Mediterranean Visual Cultures.* The role that ancient art and visual culture play in constructing social identities, sustaining political agendas, and representing various cultural, ritual, and mythological practices in Mesoamerica, Egypt, Greece, and Rome, including the sociology of ancient cultures, mythology, religious studies, gender studies and history. (General Education Code(s): T5-Humanities and Arts or Social Sciences, A.) J. Gonzalez
80E. Ancient Mediterranean Visual Cultures.* The role that ancient art and visual culture play in constructing social identities, sustaining political agendas, and representing various cultural, ritual, and mythological practices in Mesoamerica, Egypt, Greece, and Rome, including the sociology of ancient cultures, mythology, religious studies, gender studies and history. (General Education Code(s): T5-Humanities and Arts or Social Sciences, A.) J. Gonzalez
80F. Form and Feeling in Indian Art.* Rasas is the juice of something, its essence or flavor. In the arts of India, the theory of rasas unites all media. Using rasa theory to examine Indian visual culture, this course looks at painting, sculpture, film, performance, and literature. (General Education Code(s): T5-Humanities and Arts or Social Sciences, A, E.) K. Changavelu
80G. Religion and Visual Culture in China. F Introduction to the study of religious currents and practices in China and their visual expression. In addition to “religious art,” topics include such pivotal matters as body concepts and practices, representations of the natural world, and logics of the built environment. (General Education Code(s): T5-Humanities and Arts or Social Sciences, A, E.) R. Birnbbaum
80H. Constructing Home, 1900–1960.* Examines ways in which architects in Europe and the United States created not only modern houses but also blueprints for modern living. Focuses on issues of gender, domesticity, public versus private space, and mass housing versus single-family home. (General Education Code(s): T5-Humanities and Arts or Social Sciences, A.) T. S. Thompson
80I. Saints and Sites in Medieval Visual Culture.* What makes a body holy? How were the saints of Christianity created? How did the commercial trade in relics develop, and why was it sanctioned? (General Education Code(s): T5-Humanities and Arts or Social Sciences, A.) T. S. Thompson

References:
Course numbers are numbered 150–189, and one in the senior year numbered 190 or 191.

General Education Codes:
- H: Humanities
- A: Arts
- E: Environmental
- K: Knowledge
Upper-Division Courses

100A. Methods in History of Art and Visual Culture. W
Introduction to major issues of method and critique in study of art and visual culture. Focuses on understanding disciplinary and critical modes of scholarly inquiry in the visual arts, including role of historical research. Emphasizes intensive reading, discussion, and writing. (Formerly Readings in Visual Culture.) Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, E) The Staff

100E. Introduction to Visual Culture: Africa, Oceania, and the Americas. W
Examination of interaction between image and ritual in African religious art. Case studies from different historical periods and geographical locations (e.g., China, Tibet, Japan, Indonesia, India). Examples include mandalas, ritual bronzes, tankas, sacred caves, temples, tea ceremonies, and calligraphy. (General Education Codes: A, E) K. Thangavelu

105H. Paris: "Capital of the Nineteenth Century". 
Examine the places, spaces, practices, and representations of Paris in the nineteenth century. Tracing the changing face(s) of Paris by way of its literary and visual representations by considering the experiences and constructions of the modern city. Enrollment limited to 90. (General Education Codes: A, E) The Staff

105K. The Body in Crisis: Three Fin de Siècles. 
Examines changing representations of the body in art at the turn of the nineteenth, twentieth, and twenty-first centuries in Europe and North America. Topics include body as political metaphor and as a site for the construction of racial, ethnic, and gender identities. (General Education Codes: A) The Staff

105P. Visual Cultures of the Pacific Islands. 
Interdisciplinary course examines visual cultures of Australia, Melanesia, Micronesia, and Polynesia from the archaeological past through contemporary periods. (General Education Codes: A, E) S. Kamehiro

105U. The Ugly in Western Visual Culture. 
Significant attention has been given to the beautiful; little thought is given to the ugly. Course addresses some of the aesthetic theories regarding the ugly and examines how the ugly has been applied in artistic practices. (General Education Codes: A) The Staff

106A. Religious Traditions in Indian Art. F
Examines ways in which religious traditions are embodied in (or embodied within) art of the Indian subcontinent. Topics include Hindu temples; Jain art; Buddhist sacred narratives and cosmology; royal elite and popular patronage; and functions of icons. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 80. (General Education Codes: A, E) The Staff

106B. Building the California Dream. 
From colonial architecture of Spanish missions to Daniel Libeskind's Jewish Cultural Center; Case Study Houses to Watts Tower; and Hearst Castle to Disneyland, students examine architecture, landscapes, cities, and spaces of California. (General Education Codes: A) The Staff

106D. Architecture as Visual Culture. 
Focusing on designers who have challenged the boundaries of architecture through the incorporation of and experimentation with diverse media, including drawing, photography, film, and new media, this course examines architecture as a critical paradigm for visual culture. (General Education Codes: A) The Staff

107A. Central Africa. W
Examination of visual cultures of Central Africa within a historical sequence from the Sanga archaeological excavations to contemporary easel painting. Prerequisite(s): course 10E suggested. Enrollment restricted to sophomores, juniors and seniors recommended. Enrollment limited to 90. (General Education Codes: A, E) The Staff

107B. West Africa. 
Explores visual cultures of West Africa through time (Nok to present). Attention paid to relationships between peoples and impact of European/Arab presence on visual cultures. Prerequisite(s): course 10E recommended. (General Education Codes: A, E) The Staff

110. Topics in Pre-Hispanic Visual Culture. 

110A. Mexico. 
The art and architecture of selected pre-Hispanic cultures from the Gulf coast, central, western, and southern Mexico including the Olmec, Zapotec, Toltec, Mixtecs, and Aztecs. (Also offered as Latin American and Latino Studies 110B. Students cannot receive credit for both courses.) Offered in alternate academic years. (General Education Codes: A, E) The Staff

110B. The Andes. 
The art of selected pre-Hispanic cultures of Colombia, Ecuador, Peru, and Bolivia including the Nasca, Moche, Chimú, and Inca. (Also offered as Latin American and Latino Studies 110B. Students cannot receive credit for both courses.) (General Education Codes: A) The Staff

114. Buddhist Visual Worlds. F
Introduction to the study of Buddhist visual traditions, from their beginnings to the present day. Case studies examined with careful attention to historical, social and cultural contexts; particular emphasis on the relation of visual traditions to Buddhist practices. Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A) The Staff

260 Programs and Courses
115. **Italian Renaissance: Representation and Institutions.**
Lives of Italian Renaissance people from birth to death, examining the nature and roles of the institutions which defined human existence in this period. Uses visual arts both illustratively and to study how institutions fashioned their images through art and architecture. (Formerly course 801.) (General Education Code(s): A.) **The Staff**

120. **The Arts in Japanese History.**

120A. **Early Japanese Temples.**
The construction and images, and the liturgical, political, and social functions of the principal Japanese temples surviving from the formative period of Japanese history, from approximately 500 to 1100 C.E. These temples are all prime historical and social sites in modern Japan. Most of them are mainly Buddhist, but the religious context of the course will be the general one of Japan during this period, including Shinto. Enrollment limited to 35. (General Education Code(s): A.) J. Hay

121. **The Arts in Chinese History.**

121A. **Early Chinese History.**
N politico to the first extended age of imperial China (the Han Dynasty, 206 B.C.–220 A.D.), themes such as ritual and technology in the language of form, within a cultural and historical framework concluding in the age when representation of everyday life first became prominent. (General Education Code(s): A.) J. Hay

121C. **Later Chinese History.**
The arts of China, from the second century A.D. to the twentieth century. Architecture, sculpture, ceramics, calligraphy, art and painting, setting these in contexts of social structure, political, and cultural values. Enrollment limited to 45. (General Education Code(s): A, E.) J. Hay

121D. **Twentieth-Century Chinese Art.**
Chinese art during the socially and politically tumultuous twentieth century, a period when artists were challenged by an increased awareness of world art and the need to adapt to politically-motivated artistic constraints. General narrative history, leading artists, decisive moments, and poignant questions. (General Education Code(s): A, E.) J. Hay

124. **Contemporary Architecture, 1968-Present.**
Examination of practitioners, projects, issues, and theories in contemporary architecture from 1968 to the present. Topics include pop culture and architecture, deconstructivist architecture, and questions of place and identity in recent architecture. Enrollment limited to 90. (General Education Code(s): A.) **The Staff**

125. **The Languages of Medieval Visual Culture.**
The visual culture of the European Middle Ages with emphasis on why certain formal languages were used and how they functioned in their societies. One course from the 10 or 80 series or a course in medieval culture is recommended as preparation. (General Education Code(s): A, E.) **The Staff**

126. **America in Art.**
Introduction to American visual arts: architecture, painting, photography, sculpture, and performance art, from the sixteenth through the twenty-first century. Explore social and political meanings of art and what art reveals about our nation's values and beliefs, in particular, gender and race. (General Education Code(s): A.) **The Staff**

127. **Campus Planning and Architecture.**
Campus planning and architecture from earliest beginnings in the Middle Ages at Oxford, Cambridge, and Wien and from the most recent urban campuses, with particular emphasis on UCSB and other 1960s plans. Fosh should contact instructor if interested in enrolling. Enrollment restricted to sophomores, juniors, and seniors. Fosh should contact instructor if interested in enrolling. Enrollment limited to 90. (General Education Code(s): A.) V. Jansen

129. **Themes in the Study of Medieval Visual Culture.**
Many issues associated with contemporary artistic production and visual culture originated in the Middle Ages. Themes to be considered: role of secular art; women as artists and patrons; aesthetic attitudes; relationship between cultures in holy war, crusade, and pilgrimage. (General Education Code(s): A.) V. Jansen

131. **Media History and Theory.**
An introductory examination of the writing about the issue of "medium" and media theory in visual culture. Technologies, discourses, and practices from all periods that use the comparison of media as a major approach to understanding the problems of the visual are highlighted. New media, film, television, video, traditional arts are also treated. Prerequisite(s): course 10G, or any of the following courses: Film and Digital Media: 20A, 20B, 20C or 120. Enrollment restricted to sophomores, juniors, and seniors. (General Education Code(s): A.) C. Sosloff

136. **German Art, 1905-1945.**
Expressionism, agitprop, the Bauhaus, New Objectivity, attacks on modernism, National Socialist realism. Painting, sculpture, graphic art, and some architecture and film. Studied in the context of political events from the eve of World War I to the end of World War II. (General Education Code(s): A.) D. Hunter

137. **Impressionism to Pop Art: Art in Modern Culture.**
Critical reading of modernism as a high art tradition. Emphasis on context: culture of capitalism, shift in power from Europe to the U.S., role of gender and race, and the aesthetic as other apolitical refiguring of disruption and critique. T. Third in a sequence of three courses on French art and its historical context; see courses 176 and 177. (General Education Code(s): A.) **The Staff**

138. **Modern Architecture, 1880-1968.**
Developments in twentieth- and twentieth-century architecture, focusing on issues of modernity, technology, and industrialization, new building types, competitions, and urban growth as well as major movements, buildings, and architects. (General Education Code(s): A.) **The Staff**

139. **The Art and Architecture of Islam.**
Study of Islam as a religious and political entity and analysis of how the Islamic world has defined itself in the realm of cultural production. Presentation of a variety of Islamic artistic media from different historical periods and geographic areas provides a general overview of artistic production in diverse Islamic lands. (General Education Code(s): A, E.) **The Staff**

140. ** Surrealism to Postmodernism, Paris-New York.**
From Paris to New York, World War II to Vietnam, consumerism to conceptualism, an introduction to visual arts and theories of representation produced in the U.S. and Western Europe between 1930 and 1990, with attention to the social and political role of the art market, criticism, and censorship. (General Education Code(s): A.) J. González

140A. **The Power of Images in the Roman World.**
Exploration of major visual media of the Roman Republic and Empire focusing on political and social ideology that examines the context of artistic products. Examines public monuments, domestic architecture, funerary vocabulary, and pudeikas: images as examples of the imagery of Roman culture. (General Education Code(s): A.) **The Staff**

141. **The Last Ten Years.**
Issues in recent visual art theory and practice are explored in light of contemporary exhibitions and publications. The course identifies themes and new media that have emerged or risen to prominence in museums and galleries over the past decade, nationally and internationally. (General Education Code(s): A.) J. González

147. **Technologies of Visual Culture Since 1950: Art, Media, and the Computer.**
An interdisciplinary study of the histories and critiques of technology as they relate to visual culture. Ideas about modernist architecture, suburbia, television, alternative video, sci-fi, pop, minimalism, conceptual art, and performance art in connection with computer culture. (General Education Code(s): A.) **The Staff**

149A. **Histories of Photography.**
Introduction to the histories of photography and the critical debates around different photographic genres such as medical photography, art photography, and political photography. Students will develop a critical language in order to analyze photographs while considering the importance of social and institutional contexts. (General Education Code(s): A.) J. González

150. **Advanced Studies in Pre-Hispanic Visual Culture.**

150A. **The Maya.**
The art and architecture of the Maya of southern Mexico from the first century C.E. to ca. 1500. Prerequisite(s): course 10E or 100E or 110A. Enrollment limited to 40. (General Education Code(s): C.) D. Dean

151. **Topics in Colonial/Post-Colonial Visual Culture.**

151A. **The Native in Colonial Spanish America.**
Indigenous contributions to colonial Spanish American visual culture including architecture, manuscripts, sculpture, painting, textiles, featherwork, and metalwork. Focus on colonial Mexico, the Andes, and California. (Also offered as Latin American & Latino Studies 151A. Students cannot receive credit for both courses.) Enrollment limited to 35. (General Education Code(s): A, E.) C. Dean

153. **History of the Book.**
History of book production and use in the West from antiquity to modern times. Development from roll to codex and from script to print. Emphasis on the relationship between text and image. Class conducted in special collec-

154A. Sacred Geography of China. *
An examination of the close relationship of religious traditions and the natural world in China, and its expression in visual representation. Particular emphasis on the ways in which competing groups sought to define or re-envision an understanding of the terrain. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A.) R. Birnbaum

154B. Architecture and Religion in China. *
An examination of the built environment—houses and shrines, palaces, and temples, walls and gates, monuments and tombs, village and city plans—in relation to cosmological views and religious traditions. Special focus on the Chinese Buddhist monastery. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A.) R. Birnbaum

Consideration of biographies and portraits in China as representations of human types and individuals, and the use of these representations as models for constructing lives. Attention to historical and social contexts, early times to present. Special focus on Chinese Buddhist traditions. A previous course that focuses on traditional China or Buddhist studies strongly recommended. Enrollment limited to 35. (General Education Code(s): A.) R. Birnbaum

158. Desert, Plains, and Palaces. *
An examination of the built environment—houses and shrines, palaces, shrines and temples, walls and gates, monuments and tombs, village and city plans—in relation to religious and social contexts, early times to present. Special focus on the Chinese Buddhist monastery. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A.) R. Birnbaum

159. Thematic Topics in Chinese Art.

159B. Chinese Landscape Painting. *
Examines the history and significance of the subjects most prominent in Chinese painting during the past one thousand years, focusing on the cultural factors that made landscape a fundamental value in the Chinese tradition and the methods whereby painters created pictorial equivalents. Enrollment limited to 35. (General Education Code(s): A., E.) R. Birnbaum

160. Storytelling in Asian Art. W
Combination of theoretical perspectives on narrative from literary criticism, rhetoric, folklore, and film theory with the historical focus on images (cave temples, stone reliefs on stupas, scrolls, dance-drama, etc.) from India, Pakistan, China, Japan, Cambodia, and Indonesia. Enrollment limited to 35. (General Education Code(s): A., E.) K. Hangaveu

161. Japanese Arts and Crafts. *
Examines premodern and modern developments in the production, dissemination, and use of Japanese arts and crafts. Includes a unit focusing on the tea ceremony as a key site for shaping craft aesthetics. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A., E.) The Staff

163. Early Medieval Visual Culture.

163A. The Mediterranean, F
Visual culture from the late Roman Empire to the early Byzantine Empire. Imperial triumphal monuments, Roman, early Christian, and Jewish catacombs, frescoes, manuscripts, and mosaics. Enrollment restricted to sophomores, juniors, and seniors; other students should contact instructor. One quarter of a 10-series course or a course in ancient or medieval culture is recommended as preparation. Enrollment limited to 35. (General Education Code(s): A.) V. Jansen

164. Early Medieval and Romanesque Architecture. *
Meaning and form of building in western European society, 1000–1130, within monastic, imperial, ducal, and urban environments. Course 80A or one quarter of the course 10-series or a course in medieval studies is recommended as preparation. Prerequisite(s): satisfaction of the Subject A and Composition requirements for writing-intensive sections. Enrollment restricted to sophomores, juniors, and seniors; other interested students should contact instructor. Enrollment limited to 35. (General Education Code(s): W or C for designated sections, A.) The Staff

165. Gothic Architecture.

165A. Gothic Cathedral. *
Theory, form, structure, and social conflict in the building of cathedrals and large churches in western European urban society, 1140–1300, with emphasis on northern France. Course 80A or one course from the 10-series or a course in medieval studies is recommended as preparation. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A.) V. Jansen

165B. Gothic Beyond. *
Parish, friar, and special-purpose churches, chapels, synagogues, and colleges within episcopal, royal, noble, burgher, merchant, and artisan society throughout western Europe, c.1150-1500, with particular emphasis on Late Gothic structures. Course 80A or one course from the 10-series or a course in medieval studies is recommended as preparation. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A.) V. Jansen

166C. Visual Culture in the Middle Ages. *
Scholarship since the 1970s has reframed issues and even the very character of the Middle Ages in exciting ways. By studying representative works from both recent and traditional perspectives we shall probe how the Middle Ages constitute “medieval” and deconstruct earlier interpretations. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. May be repeated for credit. (General Education Code(s): A.) V. Jansen

167. Colonial and Postcolonial Cities: Morocco and Algeria. *
Through examination of architecture, urban planning, and images of cities in photography and film, considers the changing forms, representations, transformations, and experiences of cities in Morocco and Algeria during colonial and postcolonial periods. Enrollment limited to 35. (General Education Code(s): A.) The Staff

168. High Renaissance. *
An investigation of the High Renaissance as a period and stylistic concept, using the major artists and monuments of the period 1490–1525 to discuss issues of theory, history, and art. Artists considered include Leonardo da Vinci, Michelangelo, and Raphael. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 35. (General Education Code(s): A.) The Staff

169. Studies in Seventeenth-Century Italian Art. *
Italian painting and sculpture of the seventeenth century in cultural and historical contexts, with special attention to figures such as Caravaggio, Carracci, Bernini, and Algardi, and places such as Bologna, Florence, Rome, Genoa, and Naples. Problems considered include the rise of the academies and connoisseurship, art theory, patronage, and definitions of style. Enrollment limited to 35. May be repeated for credit. (General Education Code(s): A.) C. Soussloff

170. The Image of the Artist in History and Fiction. *
Examination of the representation of the visual artist in historical writing and contemporary fiction and film. Investigation of the models, structure, and language of the biography of the artist. Enrollment restricted to juniors and seniors; other students should contact instructor. Enrollment limited to 35. (General Education Code(s): A.) C. Soussloff

171. Methods and Historiography: Aesthetics and H istoricism. *
Examination of the representation of the visual artist and art in German historical and philosophical writing from 1790 to World War II. Focus on critical readings of texts for the purpose of analyzing and contextualizing them, both historically and theoretically. Enrollment limited to 35. (General Education Code(s): A.) C. Soussloff

An exploration of the theoretical and practical or experiential applications of Jewish identity in European visual representation. Brief background on pre-eminacnt textual and cultural issues followed by study of the Jewish subject and Jewish subjectivities in modernity. Formerly course 190L. Enrollment restricted to juniors and seniors. Enrollment limited to 18. Formerly course 190L. (General Education Code(s): A., E.) C. Soussloff

173. Culture and Society in Early Modern Europe. *
Visual culture and representation explored through close study of texts, images, and institutions that register the fundamental theoretical and societal changes from the late Middle Ages through the seventeenth century. Readings in literature, drama, visual art, religion, science, philosophy, and politics. Enrollment limited to 40. May be repeated for credit. (General Education Code(s): A.) C. Soussloff

174B. Architecture as Collaboration: Shaping Modern Environments, 1910–1940. *
Critical examination of collaboration in projects and writings by selected architects. This course will consider disjunctions between actual practices and retrospective histories: questions of gender, sexuality, and creative processes; and relationships between architecture and the visual arts. Enrollment limited to 35. (General Education Code(s): A.) The Staff

175. Feminism and Aesthetics. *
Addresses the feminist critique of art history and visual culture; queries the viability of a feminist sensibility or politics in visual representation and reception. Approaches these topics through the problem of the representation of the “woman artist” and the feminine/feminist voice in cultural institutions and discourse. Enrollment limited to 35. (General Education Code(s): A.) C. Soussloff

The palace and grounds of Versailles as a representation of the French state since the time of Louis XIV. Architecture, garden design, fountains, and fortifications; painting, sculpture, and court ceremony. The links between absolutism and the making of the “classical” French style are ex
189. Special Topics in Art History.

189A. European Graphic Arts and Print Media. *
Study of graphic media in their practical, theoretical, and historical contexts, including their institutional and technological aspects. Content varies to include some of the following areas of graphic media—drawings, prints (woodcuts, engravings, etchings, lithographs, silkscreens), technologies of the book, and digitized images. Media are discussed in their social and cultural contexts and in relationship to other visual material. Gives an introduction to specific areas in and various aspects of graphic media. Enrollment limited to 35. (General Education Code(s): A.) The Staff

189N. Impressionism. *
Focusing on work of artists Monet, Degas, Morisot, Cassatt, Carroll, and others, course themes include development of a Parisian avant-garde, representing modernity, new art exhibition strategies, issues of gender in and representation, and rise of landscape painting. Prerequisite(s): course 137 recommended. Enrollment limited to 35. (General Education Code(s): A.) The Staff

189O. Mediterranean Cities in the Nineteenth and Twentieth Centuries. *
A study of architecture and urban landscapes in cities including Casablanca, Barcelona, Algiers, Marseille, Athens, and Istanbul. Considers myths and realities of Mediterranean identity in architecture through drawings and buildings, photography and film during colonial and postcolonial periods. Enrollment limited to 35. (General Education Code(s): A.) The Staff, S. Crane

189Q. Eighteenth-Century European Aesthetics. *
Organized theoretically to provide a historical and critical treatment of eighteenth-century European aesthetic theory, art writing, art production, collection, and exhibition practices. Topics include the status of artists, the sublime and the beautiful, antiquarianism, and the Grand Tour. Enrollment limited to 35. (General Education Code(s): A.) The Staff

189U. The Visual Culture of Catastrophe. *
Analysis of the various aesthetic and rhetorical responses to catastrophe. The content of the course largely focuses on cinematic representations of the Holocaust and Hiroshima. It is these specific catastrophic events which have supposedly generated an crisis in representation itself. Enrollment limited to 35. (General Education Code(s): A.) The Staff

189V. Venetian Renaissance Art and Architecture. *
Examines the painting, sculpture, and architecture of Renaissance Venice. Systems of patronage, the social functions of art, and the particular institutions of Venice are the main focus. Enrollment limited to 35. (General Education Code(s): A.) The Staff

189W. Performance Anxiety in Seventeenth-Century Dutch Painting: Portraits, Still Lifes, and Other Genres. *
The acts of posing and painting, called portraits, studied as aesthetic performances within a system of genres and as representational strategies that respond to peculiar instabilities—social, political, and economic—of the Dutch Republic during the Eighty Years War. Enrollment limited to 35. (General Education Code(s): A.) H. Berger

190. Seminars in Visual Culture.

190A. Theories in Architecture. *
How do we construct architecture in words? Which discourses do we use, and what do they tell us about how we understand architecture? How are technology and the techniques of architectural representation understood? Enrollment restricted to juniors and seniors. Enrollment limited to 17. (General Education Code(s): A.) The Staff

190B. The Virgin of Guadalupe: Images and Symbolism in Spain, Mexico, and the U.S. *
Focuses on the histories of miraculous images of the Virgin of Guadalupe de Extremadura (Spain) and the Virgin de Guadalupe de Tepayac (Mexico). The foundations and growth of the cult of the Mexican Guadalupe during the colonial period is examined along with the multivalent symbolism of her image. Considers contemporary 'appearances' of the Virgin of Guadalupe, from the miraculous images on a tree in central California and the compositions of Chicano artists, to mass-produced kitsch. This course can be taken for senior exit credit only by permission of the instructor. This course can be taken for senior exit credit only by permission of the instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 18. (General Education Code(s): A, E.) C. Dean

190C. Subalternatives: Representing Others. *

190D. The World of the Lotus Sutra. W
Close study of the principal text of East Asian Buddhism as a self-enclosed vision of reality, with careful consideration of the forms and functions of the world of visual and aural representation that it has inspired. Prerequisite(s): course 114. Enrollment limited to 17. (General Education Code(s): A.) R. Birnbaum

190F. Mountains and Religion in China. *
Topical approach to the visual culture of mountains in Chinese history—encompassing both imaginative constructions and physical realities—especially in relation to religious practices. Considers examples and contexts in relation to such topics as pilgrimage, local and state religion, and individual or group retreat and reunion. Interview only: a previous course on Chinese history or culture (in such departments as history of art and visual culture, history, literature, or anthropology) or permission of instructor; instructor determines if prerequisite is met. Enrollment restricted to juniors and seniors. Enrollment limited to 17. (General Education Code(s): A.) R. Birnbaum

190G. Word and Image in Chinese Culture. *
The Chinese tradition, from the earliest material evidence to the most recent, has persistently emphasized a close relationship between written language and pictorial image. This concern has appeared equally in artistic and theoretical forms. Its best-known representation is in the association of calligraphy with painting. Course examines the evolution and meaning of that association. A knowledge of the Chinese lan-
Programs and Courses

190H. Representing Cultural Narratives: Japanese Handscrolls. *
Narrative handscrolls were one of the most characteristic and vivid productions of Japanese visual culture for over a thousand years. They were used to represent and re-present almost every aspect of institutional and social history. Examines their cultural categories and historical development. This course can be taken for senior exit credit only by permission of the instructor. This course can be taken for senior exit credit only by permission of the instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 18. (General Education Code(s): A.) J. Hay

190Q. Portraiture: Europe and America, 1400–1990. W
Western portraiture and self-portraiture at certain key moments (early modern Italy, sixteenth-century Germany, seventeenth-century Holland, France from the reign of Louis XIV to the Revolution, contemporary U.S.) are explored by reading twentieth-century interpretations and some primary sources. This course can be taken for senior exit credit only by permission of the instructor. Enrollment limited to 18. (General Education Code(s): A.) D. Hunter

190R. Voudou Art. *
The arts of Dahomean voudon and Haitian voudou examined from a series of perspectives: as African beliefs and diasporic retentions, as manifestations of contemporary convictions and practices, as subversion of or resistance to colonial authorities, as H'ollywood commodifications. This course can be taken for senior exit credit only by permission of the instructor. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 18. (General Education Code(s): A.) The Staff

190S. Semiotics and Visual Culture. W
How can visual culture be understood as the production, circulation, and recirculation of signs? This course offers a history of semiotics and its methodological application in the analysis of images in popular culture and within the discipline of art history. This course can be taken for senior exit credit only by permission of the instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 18. (General Education Code(s): A, E.) The Staff

190T. Feminist Theory and Art Production. *
A close reading of works of art and theoretical texts by feminists working from 1970 to the present. The course encourages debate around the past, present, and future relevance of feminist theories to visual cultural studies, paying particular attention to issues of cultural and ethnic difference. Enrollment limited to 18. (General Education Code(s): A.) J. González

190U. Representations of Women in Indian Art. F
Deals with representations of the female body in Indian religious imagery, and of women in secular and courtly paintings. Also examines roles women play in the production of art in the Indian subcontinent. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 17. (General Education Code(s): A, E.) K. Thangavelu

191D. Spectacle, Ceremony, and Display in Medieval Pilgrimage and Contemporary Tourism. *
Medieval pilgrimage and contemporary tourism studied as social, cultural and economic phenomena with analogous structures. Examines some of the most significant medieval pilgrimage sites (Rome, Jerusalem, Santiago de Compostela) through contemporary literatures of tourism. Enrollment limited to 18. (General Education Code(s): A.) The Staff

191E. Prints and Print Culture in Europe: 1400–1900. *
Examines issues surrounding the technology and uses of printed images from early Renaissance through the end of the Early Modern period. Topics include political, religious, and satirical uses of prints as well as the representation of women in prints. Enrollment limited to 18. (General Education Code(s): A.) The Staff

191F. Play and Ritual in African Visual Cultures. *
Compares how play and ritual construct worlds and regulate visual cultures—from dolls to “ritual” objects and performances. Attention given to areas where play and ritual overlap and the visual cultures that result. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 17. (General Education Code(s): A, E.) E. Cameron

191G. New Texts for Old Greek Pots. *
Discussion and research focused on recent criticism and new approaches to study of Greek painted pottery. In addition to fundamental aspects of vase painting, gender, politics, representing the body, the heroic tradition, and mythology are examined. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 17. (General Education Code(s): A.) E. Cameron

191H. Chan Texts and Images. *
Examines selected issues in history of Chan (Zen) Buddhist traditions in China from medieval times to the present day. Concepts, methods, and visual expression of Chan practice situated through study of texts and visual materials. Prerequisite(s): course 114 or permission of instructor. Enrollment limited to 17. (General Education Code(s): A.) R. Birnbaum
* Embracing the last great transition between imperial dynasties in China, the seventeenth century was a period of extraordinary creativity in Chinese painting. Both the proponents of traditional values and the seekers after viable individualism were equally vigorous and inventive. Much of their work still has a strong and immediate appeal to the eyes and minds of today. Explores both the working of this period and the nature of its continuing appeal. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 17. (General Education Codes(s): A.) J. Hay

191J. Constructing Memory and Place in Postwar Architecture. 
* How have architects engaged memory and place in architectural projects and built landscapes since World War II? Examines memorializing, memory, and erasure of place in reconstruction of cities, creation of memorials, and design of buildings. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 17. (General Education Code(s): A.) J. Hay

191K. Theories of Postmodernism and the Visual Arts. 
* Discourse of postmodernism and the critical view of modernism that has emerged with it. Considers structuralism, poststructuralism, semiotics, and phenomenology along with three types of postmodern discourse: poststructural, neo-Marxist, and art critical. Enrollment restricted to juniors and seniors. Enrollment limited to 17. (General Education Code(s): A.) The Staff

191M. Manet, Painter of "Modern Life." 
* Focuses upon French artist, Édouard Manet (1832-1883) and his role in the history of the "modern" in representation. Oriented toward recent scholarship, seminar provides an examination of Manet's life and work and analyzes artistic historical constructions of his modernity. Enrollment restricted to juniors and seniors. Enrollment limited to 17. (General Education Code(s): A.) The Staff

* Theoretical discussions and Pacific Basin case studies on: 1) definitions of cultural, ethnic, and national identities; 2) relationship between art, museums, and construction of historical and cultural narratives; 3) ways "tradition" defined in art practices and used by groups to assert an identity in their present. Participants first develop a theoretical framework and vocabulary for analyzing artistic production in a variety of cultures. Throughout specific case studies, will explore how art, architecture, and museums actively contribute to define and challenge ethnic and national identities. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 17. (General Education Code(s): A, E) S. Kamemho

* Students submit petition to sponsoring agency. May be repeated for credit. The Staff

198. Independent Field Study, F, W, S
* Independent field study away from the campus. Students submit petition to sponsoring agency. The Staff

198F. Independent Field Study (2 credits), F, W, S
* Independent field study away from the campus. Students submit petition to sponsoring agency. The Staff

199. Tutorial, F, W, S
* Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency. The Staff

Graduate Courses

294. Teaching-Related Independent Study, F, W, S
* Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

297. Independent Study, F, W, S
* Independent study or research for graduate students. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

History of Consciousness

218 Oakes College
(831) 459-2757
http://humwww.ucsc.edu/history/HistCon.html

Faculty and Professional Interests

James T. Clifford, Distinguished Professor of History of Consciousness
* History of anthropology, travel, and exoticism; transnational cultural studies, museum studies, indigenous studies

Angela Y. Davis, Professor of History of Consciousness and Women's Studies
* Feminism, African American studies, critical theory, popular culture and social consciousness, philosophy of punishment (women's jail and prison)

Teresa de Lauretis, Professor of History of Consciousness
* Semiotics, psychoanalysis, feminism, film theory, literary theory, queer studies

Barbara L. Epstein, Professor of History of Consciousness
* Social movements and theorizing social movements, 20th-century U.S. politics and culture, Marxism and related theories of social change

Donna J. Haraway, Professor of History of Consciousness and Women's Studies
* Feminist theory, cultural and historical studies of science and technology, relation of life and human sciences, and human-animal relations

Gary L. LeRoi, Professor of History of Consciousness
* Theories and origins of religion, history of religions (Hellenistic mysteries, Christian origins, 19th- and 20th-century Germany, German Judaism), religion and political orders

David S. Marriott, Associate Professor of History of Consciousness
* Literary theory, psychoanalysis, black cultural theory and philosophies of race, literary and visual cultures of modernism

Neperti Tadjari, Associate Professor of History of Consciousness
* Third World feminisms, postcolonial theory, critical theory of race and racism, literary and social theory, cultural studies of the Asia Pacific region

Victor Burgin, Professor Emeritus of History of Consciousness

Hayden White, University Professor Emeritus of History of Consciousness

Extended Department Faculty

John Brown Childs, Professor of Sociology
* Ethnic conflict and transnational cooperation, sociology of knowledge, African American and Native American interactions

Michael H. Cowan, Professor of American Studies
* American cultural theory and history, history of American studies, symbolic expression in American life, urban cultural studies, American literary studies, studies in the institutional cultures of higher education

Gina Dent, Assistant Professor of Women's Studies
* African American studies, popular culture and social problems, feminist legal theory, postcolonial and cultural studies

Shelly Errington, Professor of Anthropology
* Globalization of folk art, visual and social semiotics, photography, film, the Internet and digital media, Southeast Asia, and Latin America

Carla Freccero, Distinguished Professor of History of Consciousness
* Renaissance studies, French and Italian language and literature, early modern European history and literature, postcolonial theories and literature, contemporary feminist theories and politics, queer theory, pre- and early modern studies, contemporary fiction by women of color in the U.S., identity politics, postcolonial theory

Herma S. Gray, Professor of Sociology
* Cultural studies, media and television studies, black cultural politics

Susan Harding, Professor of Anthropology
* Culture, politics, narrative, gender, local/global studies, ethnographic writing, feminism, Christianity, state-making, aging, America, and Spain

David C. Hoy, Distinguished Professor of Philosophy
* UC President Chair
* Contemporary French and German philosophy

Earl Jackson Jr., Associate Professor of Literature

Robert L. Meister, Professor of Politics
* Political and moral philosophy, law and social theory, Marxism, and political theory

Helen M. Moglen, Professor of Literature and Women's Studies
* UC Presidential Chair
* The English novel, feminist, cultural, and psychoanalytic theory, Richard Ellmann, knocking on the door of modernism

Andrew Szez, Associate Professor of Sociology
* Environmental sociology, political sociology, contemporary critical theory, cultural globalization

Richard T. Tiedeman, Professor of Literature
* Nineteenth- and 20th-century French and European literature and culture, literary and cultural theory, contemporary critical theory, cultural globalization
A. Davis

Asia, and the U.S.

pursue. Experience of advanced work in one or more

cinctly identified as studies at the intersection of race,

cross-disciplinary work in graduate courses offered

Reflecting a serious concern for social, historical, and cul-

tural theories, these areas of research can be most suc-

c, science and technology studies; theories and histo-

ty of religion; and social movements. Seminars are regu-

dinary. History of consciousness has strong cooperative

Since the curriculum concentrates on methodological
and theoretical issues and is concerned with the integra-
tion of disciplines, candidates for admission are expected
to have a relatively clear idea of the project they wish

t. Experience of advanced work in one or more

Although history of consciousness does not have for-

Although history of consciousness does not have for-

Requirements

Students are required to enroll in a minimum of two
courses per quarter until advancement to candidacy (nor-
mally achieved no later than the fourth year), after which
they need enroll in only one course per quarter to qualify
for full-time enrollment.

Incoming students are required to take a minimum of
five history of consciousness graduate seminars during
the first two years. In the first year, students are required
to take the introductory seminar, course 203. Approaches

ciency of a student's work; demonstration of pro-

Applications

Admissions information and the links to complete an on-
line application or download an application form are

Information on sources of support is included in the
application materials, which must be postmarked by
December 1, 2003. Your completed application must be
accompanied by a nonrefundable $60 check, draft, or
money order payable to UC Regents. Fee waivers are
available for cases of hardship. Funds for waivers are very
limited (international applicants are not eligible), but if
you feel you qualify for a waiver, you should obtain a
Request for Graduate Application Fee Waiver form from
the Division of Graduate Studies to submit with your
application for admission.

Applications are invited from students with back-
grounds and interests in the humanities and social sci-
ences and are especially encouraged from individuals with
a clear idea of the project they wish to undertake. Strong
preferences are given to applicants working in areas for
which the faculty resources in history of consciousness are

appropriate and available. Graduate Record Examination
scores are required as is a writing sample of no more than
10 pages. Admission is for fall quarter only.

It is important to note that in light of California's
elimination of affirmative action as an admissions crite-

These principles mean a commitment to diversity, equal
opportunity, and outreach to underrepresented commu-
nities. Further, this commitment underlines our under-
standing that the very fabric and quality of our scholar-
ship depends on the representation and interplay of
diverse experience and perspectives. So defined, affirma-
tive action is reflected in every aspect of the history of
consciousness program, including scholarship, teaching,
admissions, hiring, and the process of departmental gov-
ernance.

Program Description

History of consciousness is an interdisciplinary graduate
program centered in the humanities, with links to the
social sciences, physical and biological sciences, and arts.

It is concerned with forms of human expression and
social action as they are manifested in specific historical,
cultural, and political contexts. The program stresses flex-
ibility and originality. Interest is focused on problems
rather than disciplines. Although students are prepared
to teach in particular fields, the emphasis is on questions
that span a number of different approaches.

Over more than 30 years of existence, the history of consciousness program has won increasing recognition as
a leader of interdisciplinary scholarship. Program gradu-
ates are prolific scholars at prominent universities, and
dissertations have been published by major publishing
houses and academic presses. Graduates currently find
academic employment in a wide range of disciplines,
including literature, women's studies, science studies,
anthropology, sociology, American studies, cultural stud-
ies, ethnography, communications, the study of religion,
and philosophy. In addition, history of consciousness
graduates can be found as filmmakers, museum researchers, free-lance writers, postdoctoral researchers, and
academic administrators.

Since the curriculum concentrates on methodological
and theoretical issues and is concerned with the integra-
tion of disciplines, candidates for admission are expected
to have a relatively clear idea of the project they wish
to pursue. Experience of advanced work in one or more
fields is preferred, but not required.

Although history of consciousness does not have for-
mal tracks, it does emphasize a variety of topics and
approaches in its seminars and research pursuits.

Reflecting a serious concern for social, historical, and cul-
tural theories, these areas of research can be most suc-
cindly identified as studies at the intersection of race,
sexuality, and gender; global capitalism and cultural
process; psychoanalytic and semiotic theories of the
image; science and technology studies; theories and histo-
ries of religion; and social movements. Seminars are regu-
larly offered in these and other areas of ongoing faculty
research.

History of consciousness has strong cooperative rela-
tions with associated faculty from other campus pro-
grames, scholars who offer seminars and participate in
advising, qualifying exams, and thesis committees for the
department. Within the limits of seminar size and faculty
time, cross-disciplinary work in graduate courses offered
in other departments is encouraged. The formal list of
associated faculty is a nonexhaustive indication of advis-
ing possibilities beyond the program's core faculty.

Campus research organizations, such as the UCSC
Center for Cultural Studies, the Institute for Humanities
Research, the Institute of Advanced Feminist Research,
and the Chicano/Latino Research Center, also provide
venues for collaborative work.

Lower-Division Courses

80A. Culture and Ideology in the Twentieth Century. *
A survey of the principle ideological issues of the twenti-
eth century—attitudes toward sex, race, class, work, vio-

80B. Constructions of the Exotic. *
Analyzes ethnographic and auto-ethnographic repre-
sentations of non-Western peoples. Films, video, ethnogra-
phies, novels, and journalism are considered, paying
attention to specific histories of colonial and postcolonial
contact which influence images of "culture" and "iden-
ty." (General Education Code(s): T4-H umanities and
Arts.) J. Clifford

80C. Science and Politics: Historical Perspectives. *
Drawing from nineteenth- and twentieth-century con-
troversies, exploration of the relations of knowledge and
power in science with special attention to complexities of
race, sex, and class. Majors topics science and war, indus-
trial biology, scientific constructions and human nature,
and the history of radical science movements. (General
Education Code(s): TS-H umanities and Arts or Social
Sciences.) D. H raway

80E. Myth and Religion. F
A study of the nature of religion and myth as well as their
interrelationship; the beginnings and functions of myth,
its major themes in various cultures, its relationship to sac-
rifice and ritual, and its role in selected religions and cul-
tures throughout the world. Offered in alternate academic
years. (General Education Code(s): T4-H umanities and
Arts.) T e Staff

80F. Women of Color: Gender and Sexualities. *
Introduction to critical thinking about race, class, gender,
and sexuality. Exploring questions of identity and be-
lieving in relation to topics such as politics of butch-
 femme in communities of color, this interdisciplinary
course focuses on collaboration and conflict between
women of color with group presentations and professor-
graduate student co-teaching. (General Education Code(s):
TS-H umanities and Arts or Social Sciences, E.) A. D avis, N. Tadiar

80J. Social Movements in the U.S. W
Traces the history of social movements in the late nine-
teenth- and twentieth-century U.S., including populist,
and socialism, Communism, the New Left, civil rights,
feminism. Looks at the relationship between cultures of protest and mainstream popular and political cultures. (General Education Code(s): T5-H humanities and Arts or Social Sciences.) B. Epstein

80K. Travel and Tourism in the Modern World. * Explores diverse forms of contemporary travel, drawing on literary travel writing, ethnography, photography, film, video, journalism, and on sociological and political analyses of tourism. Western and non-Western elite and lower-class, male and female experiences are contrasted. (General Education Code(s): T5-H humanities and Arts or Social Sciences.) J. Clifford

80L. Will the Real Jesus Please Stand Up?. Christianity claims but one Jesus at its foundation; the sources, however, reveal many Jesuses. Is there a “real” Jesus among the memories of the earliest Jesuses, or among the Jesuses-types of Late Antiquity? Or only contradictory choices? (General Education Code(s): T4-Humanities and Arts.) G. Lease

80O. H. Littler, National Socialism, and Religion. A critical evaluation of H. Littler as a religious leader and his National Socialism as both a religious movement and an example of twentieth-century political theology: a study of the relationship between religion and politics. (General Education Code(s): T5-H humanities and Arts or Social Sciences.) G. Lease

80Q. Science as Culture and Practice. Using tools from the analysis of social history, visual and material culture, narrative, and laboratory and field practices, introduces students to modern science, technology, and medicine studies. Examples come especially from twentieth- and twenty-first-century life and human and information sciences. May be repeated for credit. (General Education Code(s): T5-H humanities and Arts or Social Sciences.) D. H. Ararrow

80Y. Asia-Pacific Cultural Studies. * Introduction to cultural studies with a specific focus on the Asia Pacific as an emerging region for analysis. Investigates the viability of the category of the Asia Pacific for thinking about cultural identities and social struggle. (General Education Code(s): T5-H humanities and Arts or Social Sciences, E.) N. Tadiar

Upper-Division Courses

101. Bismarck. * A detailed study of Bismarck (1815-1898): his life, career, legacy, and times, including the development of post-Napoleonic Europe and a unified Germany. Emphasis will be on Bismarck’s writings and the biographies of Gall, Engberg, and Pflanze. Knowledge of German is not required but would prove beneficial. Enrollment restricted to juniors and seniors. Enrollment limited to 25. G. Lease

118. Jewish Social Movements. * Jewish social movements of the late nineteenth and twentieth centuries, in Europe (Eastern and Western) and the U.S.: the confrontation between Hasidism and Haskalah, tensions between socialism and Zionism, between religiosity and secularism, the mutual influences among these tendencies. Enrollment restricted to juniors and seniors. Enrollment limited to 20. (General Education Code(s): E) B. Epstein

123. Culture in Crisis: Weimar Germany. * From the disintegration of nineteenth-century Europe in World War I, Weimar Germany attempted the first systematic and inclusive creation of a twentieth-century culture film, literature, theater, architecture, ideology, and history were changed forever. How and why are the questions. (Also offered as History 113. Students cannot receive credit for both courses.) Enrollment restricted to juniors and seniors. G. Lease

125. Filipino History and Literature: Identity and Struggles. * Study of history and literature of the Philippines from the late nineteenth century to the present, focusing on issues of national and cultural identity and various struggles for empowerment and self-determination among Filipino communities in both the Philippines and the U.S. Enrollment restricted to juniors and seniors. Enrollment limited to 20. (General Education Code(s): E.) N. Tadiar

126. Film Fantasies. A focused study of cinema as a social technology for the production of public and private fantasies: how films contribute to shaping the image a culture has of itself and how film viewing may influence individual fantasies, values, and identities. Enrollment restricted to juniors and seniors. Enrollment limited to 80. T. De Laurentis


130. Contemporary Southeast Asian Cultures and Politics. * Study of selected works of contemporary Indonesian, Filipino, and Thai literature and film in relation to political, social, and economic changes in post-WW II period. Considers questions of nationalism and national culture, alternative modernities, social justice, globalization, and identity. Enrollment restricted to juniors and seniors. Enrollment limited to 25. N. Tadiar

199. Tutorial. F,W,S A program of independent study arranged between an undergraduate student and a faculty member. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

203. Approaches to History of Consciousness. F An introduction to history of consciousness required of all incoming students. The seminar concentrates on theory, methods, and research techniques. Major interpretive approaches derived from cultural and political analysis are discussed in their application to specific problems in the history of consciousness. Enrollment restricted to graduate students. Enrollment limited to 15. T. De Laurentis

204A. Introduction to Cultural Studies. C Classic texts from the British cultural studies tradition. Traces later developments in North America, Latin America, Australia, and elsewhere. Assumes how classical analysis has been complicated by work on race, ethnicity, gender, sexuality, and postcolonialism. Enrollment restricted to graduate students. Enrollment limited to 20. May be repeated for credit. J. Clifford

204B. Introduction to Cultural Studies. * Writing intensive course based on readings in course 204A. Prerequisite(s): course 204A. Enrollment restricted to graduate students. Enrollment limited to 20. J. Clifford

207. Theory of the Text. * An introduction to contemporary theories of textual interpretation: anthropological, linguistic, historical, literary, semiotic, and philosophical. Consideration of different kinds of texts and ways of reading them: from dream reports, folktales, and myths, through musical scores, monuments, rituals, games, and codes, to poems, novels, and political tracts. Enrollment restricted to graduate students. Enrollment limited to 15. M. May be repeated for credit. T. De Laurentis

208A. Radical Critiques of Penology. * Examines recent theories of imprisonment, focusing on the philosophical and criminological literature associated with scholarly and activist movements arguing for prison abolition. In considering the disarticulation of crime and punishment, race, class, and gender as principal analytical categories. Enrollment restricted to graduate students. Enrollment limited to 15. A. Davis

208B. Radical Critiques of Penology. * Writing intensive course based on readings in course 208A. Prerequisite(s): course 208A. Enrollment restricted to graduate students. Enrollment limited to 15. A. Davis

209A. Women of Color: Feminist Theories and Practices. F Examination of feminist consciousness in the indigenous and diasporic cultural histories of women of color. Analysis of “feminist moments” in these histories and their epistemological implications for the construction of feminist theories that take into account intersections of gender, ethnicity, class, and sexual orientation. Discussion of possible paradigmatic shifts in feminist theory. Enrollment restricted to graduate students. Enrollment limited to 15. A. Davis

209B. Women of Color: Feminist Theories and Practices. Writing intensive course based on readings in course 209A. Prerequisite(s): course 209A. Enrollment restricted to graduate students. Enrollment limited to 15. The Staff

210A. Cultural and Historical Studies of Race and Ethnicity. * Explores the historical construction of racial and ethnic categories in the Americas, especially the U.S., in interaction with gender, sexuality, class, and nationality. Intended to introduce current work by U.S. faculty and Bay Area scholars and to stimulate graduate student research projects. The course is organized by intensive reading around key questions, followed by presentations by invited scholars. Emphasizes research resources and methodologies. Enrollment restricted to graduate students. Enrollment limited to 15. The Staff

210B. Cultural and Historical Studies of Race and Ethnicity. * Writing intensive course based on readings in course 210A. Prerequisite(s): course 210A. Enrollment restricted to graduate students. Enrollment limited to 15. The Staff

212. Feminist Theory and the Law. F Interrogation of the relationship between law and its instantiating gendered categories, supported by feminist, queer, Marxist, critical race, and postcolonial theories. Topics include hypostasization of legal categories, the construction of gender, race, class, and sexuality, and the politics of race, class, and gender. May be repeated for credit. J. Clifford
213A. Representation. *
An introduction to contemporary theories including semiotics, psychoanalysis, poststructuralism, and the feminist critique of representation. Emphasis on questions of difference and the construction of the subject in culture. Enrollment restricted to graduate students. Enrollment limited to 15. M. by be repeated for credit. T. de Lauretis

213B. Representation. *
Writing intensive course based on readings in course 213A. Prerequisite(s): course 213A. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. T. de Lauretis

214A. Studies in History, Religion, and Myth. *
Selected events, figures, and ideas from histories of religions: their sources, production, and functions. Emphasis on nineteenth- and twentieth-century theories of religion, the problems of origin and institution, and the relationship between particular histories and their mythologies. Enrollment restricted to graduate standing. Enrollment limited to 15. M. may be repeated for credit. G. Lease

214B. Studies in History, Religion, and Myth. *
Writing intensive course based on readings in course 214A. Prerequisite(s): course 214A. Enrollment restricted to graduate standing. Enrollment limited to 15. M. may be repeated for credit. G. Lease

215A. Critical Theory in the Marxist Tradition. *
An introduction to classic texts of the Frankfurt School, focusing on works by Adorno, Horkheimer, Benjamin, and Marcuse. Explores their uses and critiques of Marxism, emphasizing questions of the relation between philosophy and history, theory and praxis, aesthetics and politics, and identifying issues relevant to contemporary debates around race, class, and gender. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. A. Davis

215B. Critical Theory in the Marxist Tradition. *
Writing intensive course based on readings in course 215A. Prerequisite(s): course 215A. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. A. Davis

217A. Seminar: Topics in Feminist Theory. S
Studies in the theory and history of feminist consciousness; analysis of the main areas of a specifically feminist interest; determination of the theoretical bases for a distinctively feminist perspective on the principal problems of the life and human sciences; examination of relations of class, race, and gender in feminist theory and practice. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. The Staff

217B. Seminar: Topics in Feminist Theory. *
Writing intensive course based on readings in course 217A. Prerequisite(s): course 217A. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. The Staff

218A. Postcolonial Theory. *
Study of selected topics in postcolonial theory, including decolonizing critiques of Western knowledges and epistemes, nationalism, gender and sexuality, cultural representations of neo-colonialism and imperialism, subalternity, history and historical transformation, and global relations of dominations. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

218B. Postcolonial Theory. *
Writing intensive course based on readings in course 218A. Prerequisite(s): course 218A. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

219A. Psychoanalysis and Cultural Criticism. *
Readings in Freudian psychoanalytic theory from Freud and his contemporaries to the present, with emphasis on concepts (such as the unconscious, sexuality, fantasy, narcissism) that have informed recent cultural criticism around questions of social identity, subjectivity, marginality, and power. Enrollment restricted to graduate students. Enrollment limited to 15. T. de Lauretis

219B. Psychoanalysis and Cultural Criticism. *
Writing intensive course based on readings in course 219A. Prerequisite(s): course 219A. Enrollment restricted to graduate students. Enrollment limited to 15. T. de Lauretis

220A. Globalization and Cultural Process. *
Discusses theories of globalization and its cultural effects. How are cultural forms destroyed, imposed, appropriated, hybridized, translated, invented, and reinvented at local, national, regional, and transnational levels? How does cultural identity and ethnicity, and the role of the subject, in a globalized world? Enrollment limited to 20. M. may be repeated for credit. J. Clifford

220B. Globalization and Cultural Process. *
Writing intensive course based on readings in course 220A. Prerequisite(s): course 220A. Enrollment limited to 20. M. may be repeated for credit. J. Clifford

222A. Theories of Late Capitalism, Nationalism, and the Politics of Identity. *
Studies some theoretical writings on late capitalism and postcolonialism. May include work by capitalists such as Foucault, Bourdieu, and his contemporaries to the present. Emphasis on questions of social identity, subjectivity, and power. Enrollment restricted to graduate students. Enrollment limited to 15. G. Lease

222B. Theories of Late Capitalism, Nationalism, and the Politics of Identity. *
Writing intensive course based on readings in course 222A. Prerequisite(s): course 222A. Enrollment restricted to graduate students. Enrollment limited to 15. B. Epstein

223. Recent European Philosophy. *
Seminar on recent developments in European philosophy, with particular attention to German theorists such as Nietzsche, Heidegger, Gadamer, Adorno, or H. A. Becher. May include work by philosophers such as Sartre, Merleau-Ponty, Eco, Foucault, Bourdieu, Levinas, Laclau, or Vattimo. May be repeated for credit. J. Clifford

230A. Racism and Imperialism. *
Study of the role of race and racism in theories and practices of modern imperialism. Investigates intersections among discourses of "race," nationhood, gender, and economic exploitation on a world scale; relations between culture, ideology, and political economy in the context of global capitalism. May be repeated for credit. N. Tadiar

230B. Racism and Imperialism. *
Writing intensive course based on readings in course 230A. Prerequisite: course 230A. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. N. Tadiar

231A. Children of Modernity. *
Study of theories and concepts of children and childhood and their relations to epistemological and social structures of modernity; investigation of relations between notions of the infantile, the primitive, the feminine in conceptualizations of development, difference, sexuality, subjectivity, and power. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

231B. Children of Modernity. *
Writing intensive course based on readings in course 231A. Prerequisite(s): course 231A. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

232A. Third World Feminisms and Globalization. *
Studies third world feminist theories and struggles and their relations to globalization; topics include nationalism, development, transnational practices, identity politics, human rights, especially the ways in which Third World feminism respond and contribute to political, economic, social, and cultural transformations. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

233A. Theories of Modernity and Postmodernity. *
Study of social and cultural theories of modernity and postmodernity; analysis of various conceptualizations of the modern and the postmodern and their relation to production, history, aesthetics, cultural identity, social struggle, and ideology. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

233B. Theories of Modernity and Postmodernity. *
Writing intensive course based on readings in course 233A. Prerequisite(s): course 233A. Enrollment restricted to graduate students. Enrollment limited to 15. N. Tadiar

234A. Social Movements in the Twentieth-Century U.S. W
The history of major social movements in the twentieth-century United States, including populism, labor, socialism and communism, civil rights, the women’s movement, the anti-nuclear movement, various theoretical perspectives on the rise and fall of social movements. Enrollment restricted to graduate students. Enrollment limited to 15. Offered in alternate academic years. M. may be repeated for credit. B. Epstein

234B. Social Movements in the Twentieth-Century U.S. S
Writing intensive course based on readings in course 234A. Prerequisite(s): course 234A. Enrollment restricted to graduate students. Enrollment limited to 15. M. may be repeated for credit. B. Epstein
235A. Theory of Religion. *
The difficulty of defining religion (universal essence vs.
local/individual experience), of specifying its categorical
boundaries, and of generating a theory based on moretra-
ditional disciplines (anthropomorphism, societal, psychic,
transcendent, cognitive/ritual, historical/cultural/politi-
cal). Enrollment restricted to graduate students. Enroll-
ment limited to 15. G. Lease

235B. Theory of Religion. *
Writing intensive course based on readings in course
235A. Prerequisite(s): course 235A. Enrollment restricted
to graduate students. Enrollment limited to 15. G. Lease

240. Basic Principles of University-Level
Pedagogy (1 credit). F
Provides training for graduate students in university-level
pedagogy in general. Under the supervision of the de-
partment chair, coordinated by a graduate student with
substantial experience as a teaching assistant. Enrollment
restricted to graduate students. May be repeated for credit.
J. Clifford

241A. Twentieth-Century Marxism. *
The development of Marxism social theory in the twenti-
eeth century, including Western European, United States,
Latin American and other Third World theorists, feminist
and anarchist challenges to Marxism. Enrollment re-
stricted to graduate students. Enrollment limited to 15.
B. Epstein

241B. Twentieth-Century Marxism. *
Writing intensive course based on readings in course
241A. Prerequisite(s): course 241A. Enrollment restricted
to graduate students. Enrollment limited to 15. B. Epstein

242A. Studies in Fanonism. *
Study of the work and influence of Frantz Fanon from a
range of viewpoints existential, phenomenological, psy-
choanalytic, and political, a variety of genres film, litera-
ture, case history, and critique and a set of institutional
histories clinical, cultural, and intellectual. Enrollment re-
stricted to graduate students. Enrollment limited to 15.
D. Arriott

242B. Studies in Fanonism. *
Writing intensive course based on readings in course
242A. Prerequisite: course 242A. Enrollment restricted to
graduate students. Enrollment limited to 15. D. Arriott

243A. Nationalism, Anti-Semitism, and Jewish
Resistance in World War II. *
Jewish resistance to Nazism during World War II, in East-
ern Europe, and its historical context. Includes the pre-war
rise in nationalism and anti-Semitism in Poland and
Lithuania, Jewish integration in the Soviet Union, and the
consequence for wartime resistance. (Also offered as His-
tory 243A. Students cannot receive credit for both
courses.) Enrollment restricted to seniors and graduate
students. Enrollment limited to 15. B. Epstein

250A. Foundations in Science Studies. S
Critical inquiry into topics in the history, sociology, an-
thropology, and philosophy of science and technology.
Organized around the position that science is its practice,
the seminar explores practices of representation, science
studies and cultural studies, local/global tensions and net-
works, and the science question in feminism and an-
tiracism. Enrollment restricted to graduate students.
Enrollment limited to 15. D. Haraway

250B. Foundations in Science Studies. *
Writing intensive course based on readings in course
250A. Prerequisite(s): course 250A. Enrollment restricted
to graduate students. Enrollment limited to 15. D. Haraway

251. Readings in Science Studies. *
Focus is on recent literature in social, cultural, and his-
torical studies of science, medicine, and technology. This
seminar familiarizes students with current scholarly de-
lates, research networks, national traditions, international
exchanges, conference proceedings, interdisciplinary proj-
ects, and publication sites. Enrollment restricted to grad-
uate students. Enrollment limited to 15. M. May be repeated
for credit. D. Haraway

252. Poststructuralism. *
French poststructuralism, with particular attention to the
main philosophical texts of Jacques Derrida and M. Michel
Foucault. Other representative theorists as well as critics of
poststructuralism are studied as time permits. (Also of-
fered as Philosophy 252. Students cannot receive credit
for both courses.) Enrollment restricted to graduate students.
Enrollment limited to 15. M. May be repeated for credit. D. Ho

253A. Topics in Cultural Analysis. S
Advanced graduate seminar in which students do research
on focused topics. Each quarter centered on single the-
ematic area. Students read works of culture-theory and ex-
ample studies illustrating methodologies, problems, and
current controversies. Prerequisite(s): minimum of sec-
ond-year status in the history of consciousness program;
instructor evaluates student's ability to participate. En-
rollment restricted to graduate students. Prerequisite(s):
minimum of second-year status in the history of con-
sciousness program; instructor evaluates student's ability
to participate. Enrollment restricted to graduate students.
Enrollment limited to 15. J. Clifford

256A. Theories of the Visual. W
Study of psychoanalytic theories of the visual including
the emergence of psychoanalysis and cinema as parallel
discourses and the mobilization of key psychoanalytic con-
cepts—scopophilia, voyeurism, fetishism—in Freudian and
Lacanian understandings of the gaze as cen-
tral to film and photographic theory. Enrollment re-
stricted to graduate students. D. Arriott

256B. Theories of the Visual. S
Writing intensive course based on readings in course
256A. Prerequisite: course 256A. Enrollment restricted
to graduate students. Enrollment limited to 15. D. Arriott

260A. Film and the Visible. F
Study of selected topics in film theory, including the con-
struction of vision and spectatorship; the relations of look,
image, and narrative; the formative effects of classic, ex-
perimental, and independent cinema in contemporary vi-
sual culture; the feminist critique of representation; the
role of cinema in the production of public and private fan-
tasies, cultural memory, and identity. Prerequisite(s): course
260A. Enrollment restricted to graduate students.
Enrollment limited to 15. T. de Larsen

260C. Film and the Visible. *
Writing intensive course based on readings in courses
260A and 260B. Prerequisite(s): course 260A or 260B.
Enrollment restricted to graduate students. Enrollment
limited to 15. T. de Larsen

264. The Idea of Africa. *
Examines the position of Africa in cultural studies and the
simultaneous processes of over- and under-representation
of the continent that mark enunciations of the global and
the local. Themes include defining diaspora, the West as
philosophy, and Africa in the global economy. (Also of-
fered as Women's Studies 264. Students cannot receive
credit for both courses.) Enrollment restricted to graduate
students. Enrollment limited to 15. G. Dent

291. Advising (2 credits). F,W,S
Independent study formalizing the advisee-adviser rela-
tionship. Regular meetings to plan, assess and monitor ac-
demic progress, and to evaluate course work as necessary.
M. May be used to develop general bibliography of back-
ground reading and trajectory of study in preparation for
the qualifying examination. T. Ho

292. Practicum in Composition. *
A practicum in the genre of scholarly writing, for gradu-
ate students working on the composition of their qualify-
ing essay or doctoral dissertation. Enrollment limited to
15. D. Haraway, J. Clifford, T. de Larsen

293. Field Study. F,W,S
Research carried out in field settings, based on a project
approved by the responsible faculty. T. The student must file
a prospectus with the department office before undertak-
ing the research and a final report of activities upon re-
turn. M. May be repeated for credit. T. Ho

294. Teaching-Related Independent Study. F,W,S
Directed graduate research and writing coordinated with
the teaching of undergraduates. Students submit petition
to sponsoring agency. T. Ho

295. Directed Reading. F,W,S

directed reading of a small selection of scholarship
reinforcing the teaching of the seminar. Students submit
petition to sponsoring agency. T. Ho

296. Special Student Seminar. F,W,S
A seminar study group for graduate students focusing each
quarter on various problems in the history of conscious-
ess. A statement and evaluation of the work done in the
course will be provided each quarter by the students who
have participated in the course for the quarter, and re-
viewed by the responsible faculty. M. May be repeated
for credit. T. Ho

297. Directed Study. F,W,S
Under the supervision of a History of Consciousness fac-
ulty member, students finishing their dissertation meet
weekly or bi-weekly to read and discuss selected draft
chapters, design difficulties and composition problems.
M. May be repeated for credit. T. Ho
Humanities

15 Cowell College Commons
(831) 459-2696
http://humwww.ucsc.edu

Faculty and Professional Interests

Professor

JEROME NEU
Philosophy of mind, philosophy of law, psychoanalytic theory, emotions and culture

Students interested in pursuing individual or regular majors or minors through the Division of Humanities may contact a faculty member associated with any of the following departments, committees, programs, majors, and individual majors listed in this catalog: American studies, classical studies, communication and rhetoric, East Asian studies, ethnic studies, German studies, history, historical studies, history of consciousness, Italian studies, Jewish studies, journalism, Language Program, language studies, linguistics, literature, philosophy, religious studies, Russian studies, South and Southeast Asian studies, women's studies, and Writing Program.

Information Systems Management

See Engineering, page 223.

Italian

Language Program

239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Professor

MARGARET BROSE (Literature)
Italian literature, 19th- and 20th-century poetry and poetics, the novel, Romanticism, medieval literature, gender studies, autobiography

Associate Professor

DEANNA SHEMEK (Literature)
Italian literature and cultural history, Renaissance studies, early modern popular culture, narrative (early modern to contemporary), women's studies, literary theory

Lecturer

GIULIA CENZINO
Italian culture and civilization; history of Italian language; Italian linguistics; syntax, and semantics; language pedagogy

MARIA (TONIA) PRENICE
Business Italian, translation, Italian culture and civilization

Programs

Students interested in acquiring proficiency in Italian can enroll in language courses from beginning to advanced levels. In addition, students may select from among the following programs: a major or minor in language studies (page 273), a major in literature with an emphasis in Italian literature (page 292), a major in global economics (page 177), or a major in Italian studies (page 271).

The sequence of lower-division courses 1-6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills. Another sequence of lower-division courses, equivalent to levels 1, 2, and 3, is courses 1A and 1B, offering intensive Italian language instruction. Classes are taught in Italian from the beginning level.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 275, under Language Program.

Study Abroad

The UC Education Abroad Program (EAP) sponsors programs of study for one year in Bologna, Padua, and Trento and semester programs in Milan and Venice. Students applying to the year-long study centers in Italy must have completed through Italian 6 before the period of study begins. Generally, students apply in their sophomore year for a junior year abroad. As an exception, some students apply in their junior year for a senior year abroad; such students must sometimes spend an additional quarter at UCSC in order to satisfy all requirements for the major. Students may also spend a quarter or a semester in Sienna, Italy. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For more information on the program, see UC Education Abroad Program (page 40). For information on credit applied to a major, contact the appropriate department.

Lower-Division Courses

1. Instruction in the Italian Language, F

Aural comprehension, speaking, reading, and laboratory. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Elementary sequence (1-2-3) begins in fall quarter. The Staff

1A. Intensive Elementary Italian, W

Intensive instruction in elementary Italian language emphasizing oral fluency. Taken in conjunction with Italian 1B, the two courses are equivalent to levels 1-2-3. Accelerated pace allows a rapid mastery of grammar and syntax, giving the student a basic knowledge of Italian in many two quarters. Students who have taken Italian 2 may take 1B for credit. The Staff

1B. Intensive Elementary Italian, S

Sequential to course 1A, completes the equivalent instruction offered through Italian 1-2-3. May not be taken by students who have completed Italian 1 or Italian 3. 0 pen to students who have successfully completed either 1A or Italian 2; for students completing course 2, course 3 is preferable. The Staff

2. Instruction in the Italian Language, W

Aural comprehension, speaking, reading, writing, and laboratory. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 1; or placement by examination. The Staff

3. Instruction in the Italian Language, S

Aural comprehension, speaking, reading, writing, and laboratory. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 2; or placement by examination. The Staff

4. Intermediate Italian, F

Short stories, articles, films, and newspapers are used as the basis for studying intermediate-level conversation and composition. Laboratory assignments involve use of the World Wide Web, conversations with native speakers, films and video clips. Students interested in this course who have not taken the prerequisite at UCSC should meet with the instructor, preferably prior to the first class meeting, and take the placement examination. Prerequisite(s): course 1B or 3, or placement by examination. Enrollment limited to 25. (General Education Code(s): H.) The Staff

5. Intermediate Italian, W

Reading of Italian short stories and a play are used as basis for further study and refinement of oral and written skills at the intermediate level. Particular emphasis is placed on oral/written discussion of abstract ideas and topics, and on the study of different language registers/contexts. Laboratory work is regularly assigned. Students interested in this course who have not taken the prerequisite at UCSC should meet with the instructor, preferably prior to the first class meeting and take the placement exam. Prerequisite(s): course 4 or placement by examination. Enrollment limited to 25. (General Education Code(s): H.) The Staff

6. Intermediate-Advanced Italian, S

Reading of first novel in the language and weekly viewing of Italian films serve as basis for oral reports and discussions on various aspects of Italian culture and civilization. Weekly assignments, three essays, and a paper on topics derived from or related to the text. Students interested in this course who have not taken the prerequisite at UCSC should meet with the instructor, preferably prior to the first class meeting, and take the placement examination. Prerequisite(s): course 5 or placement by examination. Enrollment limited to 25. (General Education Code(s): H.) The Staff

94. Group Tutorial, F,W,S

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

99. Tutorial, F,W,S

Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S

Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

106. Italian Culture Through Film, W

Film is used as a medium through which images of Italians and their culture are disseminated, perpetuated, and crystallized. Whether these representations offer historical per-
spectives or stereotypes, they are important documents for the study of Italian culture, society, history, and politics. While analyzing films by and about Italians, we develop an informed opinion on relevant issues in Italian studies. The course is taught in English with an enhancement section in Italian. The enhancement section meets once a week and is designed to give students who are already familiar with the language the opportunity to discuss the films in Italian and to read/view additional material in the language. Students cannot receive credit for this course and Language Program 80D. Prerequisite(s): course 4. May be repeated for credit. The Staff

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

199. Tutorial. F, W, S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. The Staff

** Additional Courses of Interest

Not all courses listed are offered in 2004-05. Check the quarterly Schedule of Classes for this year's offerings. For complete descriptions see listings under History. page 251. Strongly recommended prior to upper-division Italian literature courses: Italian 5 or equivalent.

History

20A, Classical World: Greece
20B, Classical World: Rome
30A-B-C, Modern European History
120A, Late Medieval Italy c. 1200–1400
120B, Renaissance Italy c. 1400–1600

A number of Italian literature courses are offered by the Literature Department, including the following courses: Italian Literature 102, Introduction to Italian Literature, and Pre- and Early Modern Studies 183, Dante’s Divine Comedy.

**Italian Studies**

Department of Literature
Kresge College
(831) 459-4778
http://humw ww.ucsc.edu/Lit/index.html

Core Program Faculty

MARGARET BROSE, Professor of Literature (Cowell)
GIULIA CENTINEO, Lecturer in Italian (Cowell)
TONIA DE CHICCHIO, Lecturer in Italian (Cowell)
CYNTHIA POLECRITTI, Associate Professor of History (Stevenson)
DEANNA SHEMEX, Associate Professor of Literature (Cowell)
CATHERINE SOUSLOFF, Professor of History of Art and Visual Culture (Porter and Cowell)

Affiliated Faculty

CARLA FRECCERO, Professor of Literature and Women’s Studies (Kresge)
MARY-KAY GAMEL, Professor of Literature (Cowell)
VIRGINIA JANSEN, Professor of History of Art and Visual Culture (Cowell)
CHARLES HEDRICK, Professor of History (Cowell)
MARGO HENDRICKS, Associate Professor of Literature (Cowell)
GARY MILLS, Emeritus
TYRUS MILLER, Associate Professor of Literature (Cowell)
ELEONORA PASOTTI, Assistant Professor of Politics
JAMES WILSON, Lecturer in Writing (Cowell)

Program Description
Students interested in an interdisciplinary approach to Italian culture, literature, history, and art history may pursue a minor or major in Italian studies. The guidelines for the completion of the major may be obtained from a member of the core program faculty. There are numerous opportunities for study in Italy through the UC Education Abroad Program (EAP), either for a year (Bologna, Milan, Padova, Trento, Venice) or for an intensive quarter or semester in Siena. The Italian studies program is administered by the Literature Department.

Major Requirements

Each student must complete the lower-division language sequence (Italian 1–6). Students are required to take a total of 10 courses, including a core unit of five courses to be taken at UCSC only: three Italian literature courses, one course in Italian history, and one course in Italian art history. Five courses may be approved elective courses. One course on Dante is required. Up to two of the 10 required courses may be lower division; up to two may be approved elective courses. The sequence of lower-division courses 1–6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills. Instruction takes place mostly in Italian from the second half of the first quarter.

Minor Requirements

Each student must complete the lower-division language sequence (Italian 1–6). Students must complete a five-course core unit of three Italian literature courses, one course in Italian history, and one course in Italian art history. A course on Dante is required for the minor. Three of the five upper-division core courses must be completed at UCSC; three must be taught principally in Italian. A maximum of two courses may be transferred from EAP.

Faculty and Professional Interests

**Associate Professor**

EARL JACKSON JR., Literature


**Lecturer**

SAKAE FUJITA

Foreign language methodology, drama/theater/improvisation use in language learning, language and identity, foreign language literacy, literacy/through literature

CHIYOKO ISHIBASHI

Modern Japanese literature and film

Programs

Students interested in acquiring proficiency in Japanese can enroll in language courses from beginning to advanced levels. In addition, students may select from among the following programs: a minor or major in language studies (page 275), an East Asian studies minor (page 173), or a major in global economics (page 177). The sequence of lower-division courses 1–6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills. Instruction takes place mostly in Japanese from the second half of the first quarter.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 275, under Language Program.

Study Abroad

The UC Education Abroad Program (EAP) has information on study in Japan. There are EAP centers in Yokohama, Tsuru, Kyoto, Tokyo, Sendai, Tsukuba, and Tohoku. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For more information on the program, see UC Education Abroad Program (page 40). For information on credit applied to a major, contact the appropriate department.

**Lower-Division Courses**

1. Elementary Japanese, F

Goal is to learn all the basic grammar, hiragana, katakana, and 100 kanji, and to attain elementary proficiency in speaking. Elementary sequence (1-2-3) begins in fall quarter only. The Staff

2. Elementary Japanese, W

Goal is to learn all the basic grammar, hiragana, katakana, and 100 kanji, and to attain elementary proficiency in speaking. Prerequisite(s): course 1; or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. The Staff

3. Elementary Japanese, S

Goal is to learn all the basic grammar, hiragana, katakana, and 100 kanji, and to attain elementary proficiency in speaking. Prerequisite(s): course 2; or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. The Staff

Japanese

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html
4. Intermediate Japanese, F
Goal is to attain skill in reading Japanese texts, using grammatical and analytical ability gained during courses 1-2-3. Includes compositions and extensive kanji learning. Intermediate sequence (4-5-6) begins in fall quarter. Prerequisite(s): course 3, or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

5. Intermediate Japanese, W
Goal is to attain skill in reading Japanese texts, using grammatical and analytical ability gained during courses 1-2-3. Includes compositions and extensive kanji learning. Prerequisite(s): course 4, or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

6. Intermediate Japanese, S
Goal is to attain skill in reading Japanese texts, using grammatical and analytical ability gained during courses 1-2-3. Includes compositions and extensive kanji learning. Prerequisite(s): course 5, or placement by examination. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. (General Education Code(s): IH.) The Staff

50. Preadvanced Japanese, F
Intensive work in Japanese grammar to strengthen grammatical correctness and excellence of expression. A comprehensive textbook and drill book cover a wide range of styles and topics. Course is prerequisite to upper-division Japanese language courses. Prerequisite(s): course 6. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Enrollment limited to 20. (General Education Code(s): IH.) The Staff

94. Group Tutorial, F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

99F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. The Staff

Jewish Studies

Department of Literature
Literature Department Building
Kroege College
(831) 459-1325
http://humwww.ucsc.edu/jewishstudies/index.html

Program Faculty
Bettina Aptheker, Professor of Women's Studies
Murray Baugarten, Professor of English and Comparative Literature
Raoul Birnbaum, Professor of History of Art and Visual Culture
Margaret Brose, Professor of Literature
Barbara Epstein, Professor of History of Consciousness
Stanley Flatté, Emeritus
Laurel Fox, Professor of Biology
Robert Goff, Associate Professor of Philosophy
Gildas Hamel, Lecturer in French
Peter Kenez, Professor of History
Gary Lease, Professor of History of Consciousness
Marc Mangel, Professor of Engineering (Applied Mathematics and Statistics)
Loisa Nygaard, Associate Professor of Literature
Tammie Rossman-Benjamin, Lecturer in Hebrew
Daniel Selden, Associate Professor of Literature
Paul Scenazy, Professor of Literature and American Studies
Catherine Soussloff, Professor of History of Art and Visual Culture
Bruce Thompson, Lecturer in History

Program Description
The minor in Jewish studies introduces students to the study of modern Jewish cultures and to the range of disciplines that bear upon the field while supporting students' work in their own majors. This introduction to Jewish studies is helpful for students who plan to do graduate work in Jewish studies, whether through regular disciplines or in Jewish studies programs and also for students who plan to attend rabbinical schools or find work with Jewish communities. For others with an interest in Jewish topics but without such plans, a minor in Jewish studies offers intellectual enrichment and a focus within the student's chosen field.

The Jewish studies minor is designed to complement existing majors in the arts, humanities, physical and biological sciences, and social sciences. It is conceived as an interdisciplinary program, and students are urged to plan their program with a faculty adviser. There are significant library resources, including the Baumann Endowment for Classic Jewish Texts, the Neufeld-Levin Holocaust Memorials, and the Brose Fund for Visual Arts and Jewish Culture.

This minor offers students the opportunity to gain knowledge and skills in a variety of contexts in various aspects of Jewish culture—with special reference (though not limited) to modern issues. It will help students prepare to move successfully into graduate programs in a variety of disciplines—especially in the humanities, social sciences, and professional programs; and it will provide students with a grounding in materials fundamental to Western culture and liberal education, of value to majors in all divisions. In emphasizing modern aspects, this minor connects with a range of disciplines and programs on the UC Santa Cruz campus that explore the meanings of modernity; at the same time, this minor will help students to develop analytical tools, strategic versatility, and critical literacy. The Jewish studies minor is administered by the Literature Department.

Requirements for the Minor

• Three lower-division courses may be Hbrew language courses. Hbrew 1-3 are strongly recommended as Literature 80A, Biblical Narratives. Students can petition to have upper-division courses substituted for the lower-division requirements.
• Two courses from the upper-division sequence in literature, Modern Literary Studies 144, Modern Jewish Cultures
• Two additional upper-division courses Students, especially those who plan to continue their studies in graduate school, may wish to gain proficiency in Yiddish, German, or Spanish, depending on their area of interest. Students who participate in a UC Education Abroad Program (EAP) study year in Jerusalem may petition to apply up to three courses from EAP toward the minor. Petition forms are available in the Literature Department Office.

Fall 2004
• Hbrew 1, Instruction in the Hebrew Language
• Hbrew 4, Intermediate Hebrew
• Hbrew 80, Introduction to Biblical Hebrew
• HIS 46, Introduction to Modern Jewish History
• M modern Literary Studies 144, Jewish Writers and the American City

Winter 2005
• History of Art and Visual Culture 190L, Jewish Identity in Visual Representation
• Hbrew 2, Instruction in the Hebrew Language
• Hbrew 5, Intermediate Hbrew
• History of Consciousness 80Q, Social Movements in the U.S.
• History 32, Spain 632-1500
• History 80W, The Holocaust: The Destruction of European Jewry
• History 165, Conflicts of Interests: War, Holocaust and Industry in the Lodz Ghetto
• Literature 80L, The Holocaust: The Destruction of European Jewry
• Modern Literary Studies 144B, Modernity as Jewish Challenge and Catastrophe: Jewish American Experience
• Modern Literary Studies 144I, Jews in Italy: Writing and Whining the Holocaust
• Porter 39, Jewish Personal Narrative on Film

Spring 2005
• Hebrew 3, Introduction to the Hebrew Language
• Hebrew 6, Intermediate Hebrew
• History 137, Modern Jewish Intellectual History
• History 196K, Topics in Medieval History
• German Literature 120, Fear of the Foreign: Xenophobia in German Literature and Culture
• Modern Literary Studies 144E, Hebrew Poetry
• Modern Literary Studies 144F, Israeli Literature
• Pre- and Early Modern Literary Studies 127, Jewish Mystical Texts
• Pre- and Early Modern Literary Studies 201, Studies in Antiquity
• Music 80L, Music of Modern Israel

Sample Student Program
Year 1: Hebrew 1-2-3, Introduction to the Hebrew Language; Literature 80A, Biblical Narratives
Year 2: Hebrew 4-5-6, Intermediate Hebrew; Literature 80L/History 80W, The Holocaust: The Destruction of European Jewry
Year 3: two Modern Literary Studies 144 courses or EAP courses, if EAP, take LTMO 144 courses in second year.
Year 4: upper-division courses in literature and history

Course Requirements
• Writing 64, New Writing Workshop. All students must take this course (or its equivalent) before they are approved for the minor.
• Five upper-division courses in writing. At least three must be from the following: Writing 165, 166 (one or more courses in the series), and 167. The remaining two courses may include any upper-division creative writing course (see Literature, page 294), American Studies 105, Community Studies 144, Environmental Studies 156 (for environmental studies majors), Film and Digital Media 150, and Writing 101 (if not used as a media course), 102, 103, 104, 107, 108, 109, 110A, 120, 161, 163, 169, and 195.
• One course in media criticism (ordinarily Writing 167, but Sociology 116, Community Studies 80L, Writing 70, and 128 are accepted)
• One quarter of internship
• A senior thesis or portfolio

Kresge College
College Office
(831) 459-2071
http://www2.ucsc.edu/kresge

For college description and list of faculty, see page 84.

Lower-Division Courses

12A. Service Learning (3 credits). W
Students will find an independent field placement with the instructor's assistance, work in the placement, meet weekly, read appropriate texts, keep a journal, and write a final reflection on the experience. Enrollment restricted to college members. Enrollment limited to 15. May be repeated for credit. R. Bunch

12B. Service Learning (2 credits). S
Students will begin or continue to work in the independent field placement they started the previous quarter, meet weekly, read appropriate texts, keep a journal, and write a final refection on the experience. Enrollment restricted to college members. Enrollment limited to 15. May be repeated for credit. R. Bunch

20C. The Journal as a Learning Tool (3 credits). *
A seminar style course introducing techniques for using a journal to record, understand, and analyze information to generate and explore ideas, and to enhance attentiveness, thoughtfulness, and enjoyment. U seful for strengthening independent learning strategies as well as academic study skills. Prerequisite(s): Writing 101 or fulfillment of the C requirement. Enrollment restricted to college members. Enrollment limited to 15. The Staff

30D. The Writing Life (2 credits). *
A study of the challenges and rewards of writing career students might pursue professionally (from technology to travel, screenwriting to grant writing, journalism and literary careers). Enrollment restricted to college members. Enrollment limited to 18. F. Fatemi

42. Student-Directed Seminar (no credit). F,W,S
Seminar taught by upper-division Kresge students under Kresge faculty supervision. (See course 192.) Students submit petition to sponsoring agency. The Staff

80. Power and Representation (Kresge Core Course), F
Examination of key moments at middle and end of 20th century. Focuses on Hiroshima and dawn of atomic age; social movements of late 1950s, 1960s, and early 1970s, including civil rights, Vietnam War, women's movement, and gay and lesbian movement. Each instructor has special two-week period to examine related topics that reflect the overall focus of core. The last part of course deals with economic downturn of 1990s. Besides section meetings, several nights all students come together to watch core-related films or listen to lectures. (Previously Cultural Intersections.) Enrollment limited to 24. (General Education Codes: T5-Humanities and Arts or Social Sciences.) The Staff

80B. Teatro Chicano/a. *
Introduction to Teatro Chicano/a with examination of how cultural diversity plays a role in theater, through lectures, films, and workshop exercises, reflects upon the process of Teatro Chicano. Students write their own acts, improvise, and perform in class. Taught in winter quarter as Theater Arts 80M; students cannot receive credit for both classes. Enrollment restricted to college members. Enrollment limited to 25. (General Education Code(s): T4-Humanities and Arts, A, E.) R. Apodaca

80H. Power and Representation (Kresge Honors Core Course). S
Students develop research skills, analyze readings, and write essays regarding late twentieth-century U.S. culture. Prerequisite(s): honors easy applications reviewed by staff. Enrollment restricted to first-year students. Enrollment limited to 24. (General Education Code(s): T5-Humanities and Arts or Social Sciences.) The Staff

80T. Power and Representation (Kresge Core Course for Transfer Students). F
Designed primarily for incoming transfer students. Examination of key moments at middle and end of 20th century. Focuses on Hiroshima and dawn of atomic age; social movements of late 1950s, 1960s, and early 1970s, including civil rights, Vietnam War, women's movement, and gay and lesbian movement. Each instructor has special two-week period to examine related topics that reflect the overall focus of core. The last part of course deals with economic downturn of 1990s. Besides section meetings, several nights all students come together to watch core-related films or listen to lectures. (Previously Cultural Intersections.) Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 24. (General Education Code(s): T5-Humanities and Arts or Social Sciences, W.) The Staff

99. Tutorial, F,W,S
A program of directed study arranged between a fresh-
99F. Independent Study (2 credits). F, W, S
A program of directed study arranged between a student and a Kresge faculty member. Class time is less proportional to credit given. Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

192. Directed Student Teaching, F, W, S
Teaching of a lower-division seminar under Kresge faculty supervision. (See course 42.) Prerequisite(s): upper-division standing in Kresge, a proposal supported by a Kresge faculty member willing to supervise, and college approval. The Staff

193. Field Study, F, W, S
Supervised off-campus study conducted under the immediate and direct guidance of a Kresge faculty supervisor. To be used primarily by upper-division students doing part-time, off-campus study. Prerequisite(s): approval of student's adviser and the college. May be repeated for credit. The Staff

194. Group Tutorial, F, W, S
A program of independent study arranged between a group of students and a Kresge faculty member. Students submit petition to sponsoring agency. The Staff

Senior thesis or project for student doing individual major program. May be repeated twice for credit. Prerequisite(s): permission of sponsoring committee and college approval. The Staff

198. Independent Field Study, F, W, S
Provides for college-sponsored individual study programs off campus, for which a Kresge faculty supervision is not in person (e.g., supervision is by correspondence.) Prerequisite(s): approval of the student's faculty sponsor and college approval. The Staff

199. Tutorial, F, W, S
A program of individual study arranged between an upper-division student and a Kresge faculty member. Students submit petition to sponsoring agency. The Staff

Language Program

239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Chinese

DAVID KEENAN
Chinese language, fiction, and history

JACQUELINE KU
Chinese language pedagogy, modern Chinese drama, drama as pedagogical tool

French

ANGELA ELSLEY
Francophone, especially North American (Louisiana, Quebec, the Caribbean); French diatopology and sociolinguistics

GILDAS HAMEL
Latin, Greek, Hebrew; Bible, history of Judaism and Christianity; French

GRET A HUTCHISON
Foreign language pedagogy, second language acquisition, medieval French literature, and nineteenth-century literature and art

HERVE LE MAISEC
French phonetics and phonology, 20th-century French civilization, the nouveau roman, French opera

DAVID A. ORLANDO
Foreign language pedagogy; second-language acquisition; French proletarian writers of the 1920s and 1930s; French civilization, especially the Renaissance, Revolution, Belle Epoque, and interwar periods

German

WALTER CAMPBELL
Language teaching, 18th- and 19th-century German literature, history of German

JUDITH HARRIS-FRISK
German language and cultural studies; German literature and intellectual history; turn-of-the-century Vienna and Weimar Germany; German issues of national identity and multiculturalism

Greek

KAREN BASSI (Literature)
Greek and Latin literature; Greek drama; Hellenistic poetics; feminist interpretation, literary and cultural theory pre- and early modern studies

MARY-KAY GAMEL (Literature)
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

GILDAS HAMEL
Latin, Greek, Hebrew; Bible, history of Judaism and Christianity; French

CHARLES W. HEDRICK JR. (History)
Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

JOHN P. LYNCH (Literature)
Greek and Latin literature; Plato and Aristotle; Lucrèce, Virgil, and Petrônii ancient education

DANIEL SELDEN (Literature)
Afroasian languages and literatures; Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

Russian

WILLIAM NICKELL
Leo Tolstoy, Russian cultural history, 1920s-1930s Soviet Russia, Russian/Soviet film, Russian language and pedagogy

Spanish and Spanish for Spanish Speakers

BRENDA BARCELÓ
Latin American culture, bilingual studies, Romance languages, Spanish/English and English/Spanish translation, Hispanic linguistics

CARLOS CALIENRO
Latin American culture, history, literature, cinema, music, art, economics, and politics

VERÓNICA FELIU
Latin American literature of 20th century and colonial period, cultural studies, studies in popular culture and performance

MÁRIA VICTORIA GONZÁLEZ-PAGANI
Language teaching methodology; Spanish syntax; computer-assisted foreign language learning, Latin American cultural studies, especially women's contributions

MÁRIA MORAIS
Language learning styles and strategies, culture and technology in language training

MARTA NAVARRO
Latin American literature, Mexican/Chicana culture, Latina/Chicana issues

ARIEL A. PÉREZ
Language acquisition and teaching methodology, computer-assisted language learning, teaching language for proficiency, oral proficiency assessment, Latin American current affairs

F R ANK A. (Paco) RAMíREZ
Second-language acquisition, bilingual education, Siglo de Oro Theater, Peninsular medieval literature, Spanish-language film and theater for linguistic and cultural acquisition

CHIYOKO ISHIBASHI
Modern Japanese literature and film

Latin

KAREN BASSI (Literature)
Greek and Latin literatures, Greek drama; Hellenistic poetics; feminist interpretation, literary and cultural theory pre- and early modern studies

MARY-KAY GAMEL (Literature)
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

GILDAS HAMEL
Latin, Greek, Hebrew; Bible, history of Judaism and Christianity; French

CHARLES W. HEDRICK JR. (History)
Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

JOHN P. LYNCH (Literature)
Greek and Latin literature; Plato and Aristotle; Lucrèce, Virgil, and Petrônii ancient education

DANIEL SELDEN (Literature)
Afroasian languages and literatures; Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

Portuguese

ANA MARIA SEARA
Portuguese language and Luso-Brazilian studies, literature of the Portuguese-speaking world, applied linguistics and second-language acquisition

Spanish and Spanish for Spanish Speakers

BRENDA BARCELÓ
Latin American culture, bilingual studies, Romance languages, Spanish/English and English/Spanish translation, Hispanic linguistics

CARLOS CALIENRO
Latin American culture, history, literature, cinema, music, art, economics, and politics

VERÓNICA FELIU
Latin American literature of 20th century and colonial period, cultural studies, studies in popular culture and performance

MÁRIA VICTORIA GONZÁLEZ-PAGANI
Language teaching methodology; Spanish syntax; computer-assisted foreign language learning, Latin American cultural studies, especially women's contributions

MÁRIA MORAIS
Language learning styles and strategies, culture and technology in language training

MARTA NAVARRO
Latin American literature, Mexican/Chicana culture, Latina/Chicana issues

ARIEL A. PÉREZ
Language acquisition and teaching methodology, computer-assisted language learning, teaching language for proficiency, oral proficiency assessment, Latin American current affairs

F R ANK A. (Paco) RAMíREZ
Second-language acquisition, bilingual education, Siglo de Oro Theater, Peninsular medieval literature, Spanish-language film and theater for linguistic and cultural acquisition
**Language Studies**

**Linguistics Department**
241 Stevenson College  
(831) 459-4988  
http://ling.ucsc.edu

**Faculty and Professional Interests**
See Department of Linguistics and Language Program.

**Program Description**
Language studies is an interdisciplinary major sponsored by the Linguistics Department. It is designed to equip students with a thorough competence in one or more foreign languages and, at the same time, provide students with an understanding of the general nature of human language—its structure and use. It is a demanding program that requires (1) acquisition of demonstrable competence in a language other than English, (2) thorough grounding in linguistics, and (3) completion of a series of cultural context courses related to the language. Currently, majors may choose a concentration in Chinese, French, German, modern Hebrew, Italian, Japanese, Russian, or Spanish. Interested students should contact the Linguistics Department Office early in their college career to obtain essential information about requirements. Students are also encouraged to obtain a current copy of the undergraduate handbook for language studies (from the department office), which contains detailed information about the major.

A junior year abroad through the UC Education Abroad Program (EAP) in a country appropriate to the major language is recommended. A senior year abroad is approved only when all of the language proficiency requirements have been satisfied and when it is clear that any remaining courses can be satisfactorily completed abroad. Courses taken abroad may be used to satisfy major requirements only if approved by the language studies director or a designated adviser.

**Course Requirements**
To graduate, all language studies majors must satisfy course requirements in language study, linguistics, and cultural context. They must also fulfill the senior exit requirement.

**Language Study Requirement.** Majors in Chinese and Japanese must achieve a level equivalent to nine quarters of language study. Majors in French, German, modern Hebrew, Italian, Russian, and Spanish must achieve a level equivalent to six quarters in the language of concentration and take the equivalent of 12, 2, and 3 in a second language. Note that language courses 4, 5, or 6 fulfill one of the introduction to humanities (IH) general education requirements.

**Linguistics requirement.** Seven courses as follows:
- **20**, Introduction to Linguistics
- **101**, Phonology I
- **52**, Syntax I; or **55**, Syntactic Structures
- **53**, Semantics I
- **140**, Language Change (history)

**Course in language structure from the Linguistics 180-series which is relevant to the major language.** See the undergraduate handbook for language studies for further information;
- one elective course in linguistic study. This may be any of courses 80C, 80D, or 80V; any upper-division course in linguistics; or an approved course in linguistics study from another department. Consult the list of preapproved electives in the undergraduate handbook for language studies.

**Cultural context requirement.** Five courses in the cultural context of the major language are required and may be selected from a variety of disciplines including literature, history, politics, and art. The undergraduate handbook for language studies details the available and required context courses for each major concentration. One of these courses may be used to satisfy the senior exit requirement by doing a senior thesis or project. The proposal for a senior thesis or project must be submitted for approval to the designated adviser at least two quarters prior to the quarter of graduation.

**Senior exit requirement.** The senior exit requirement consists of a take-home exam on general linguistics and the structure of the major language. Alternatively, students doing especially strong course work in the major may propose to satisfy the senior exit requirement by doing a senior thesis or project. The proposal for a senior thesis or project must be submitted for approval to the designated adviser at least two quarters prior to the quarter of graduation.

**The senior thesis is an original investigation of the major language in some relevant way, such as the linguistic structure or history of the language or its historical context.**
literary, cultural, sociological, ethnographic, or political context.

A senior project consists of either a linguistic research project or a translation project. Linguistic research projects might analyze some aspect of the phonology or syntax of the major language, analyze and compare dialects, or study new word formations found in the current press, among other possibilities.

In general, doing a translation project requires some training in translation theory. This might be acquired through Education Abroad Program study or, if possible, through independent study. A translation project requires a translation of a selected work in the major language and, in the case of French, German, Italian, and Spanish, also an introduction written in the language of the translated text. The translation course is in addition to the other requirements of the major.

Language Studies Major Planners

The following are two recommended academic plans for language studies majors. Plan One is for students who are planning to study abroad for a year. Plan Two is for students who are not planning to study abroad. In addition, students will have general education requirements to fulfill. Students are strongly advised to contact the Linguistics Department Office for assistance with individualized academic planning.

<table>
<thead>
<tr>
<th>Plan One</th>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st (fall)</td>
<td>Ling (1st qtr)</td>
<td>Lang (2nd qtr)</td>
<td>Lang (3rd qtr)</td>
<td></td>
</tr>
<tr>
<td>2nd (fall)</td>
<td>Ling 101</td>
<td>Ling 52 or 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd (fall)</td>
<td>Education Abroad Year (three upperdiv language studies)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th (fall)</td>
<td>Ling elective course</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plan Two</th>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st (fall)</td>
<td>Ling (1st qtr)</td>
<td>Lang (2nd qtr)</td>
<td>Lang (3rd qtr)</td>
<td></td>
</tr>
<tr>
<td>2nd (fall)</td>
<td>Ling 101</td>
<td>Ling 52 or 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd (fall)</td>
<td>context course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th (fall)</td>
<td>Ling elective course</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Requirements for the Minor

The minor requires completion of two years (six quarters) of language study (or demonstration of an equivalent level of ability), three contact courses, and five courses in linguistics (20, 55 or 52, 101, 140), and an appropriate course from the 180 language structure series.

Latin

Language Program

239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Professor

MARY KAY GAMEL, PROFESSOR (Classics and Comparative Literature)
Performance studies, ancient M. etrurian music, performance, Greek and Latin literature, film, feminist approaches to literature and performance

CHARLES W. HEDRICK JR., (History)
Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

JOHN P. LYNNCH (Literature)
Greek and Latin literature, Plato and Aristotle, Lucretius, Virgil, and Patrocinio, ancient education

Associate Professor

KAREN BASSI (Literature)
Greek and Latin literature, Greek drama, Hellenistic poetics, feminist interpretation, literary and cultural theory, pre- and early modern studies

DANIEL SELDEN (Literature)
Afrasian languages and literature, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

Lecturer

GILDAS HAMEL
Latin, Greek, Hebrew; Bible; history of Judaism and Christianity; French

Program Description

The Language Program offers instruction in elementary Latin. It consists of a two-course sequence that begins in the fall quarter only. Students interested in Latin literature should see the course listings under Literature, page 294. Those interested in classical studies should see the program description on page 133.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 274, under Language Program.

Lower-Division Courses

1. Elementary Latin, F

Instruction in Latin grammar, together with readings in various authors, designed to prepare for the study of classical literature. The sequence begins in the fall quarter only. The Staff

2. Elementary Latin, W

Instruction in Latin grammar, together with readings in various authors, designed to prepare for the study of classical literature. Prerequisite(s): course 1. The Staff

Latin American and Latino Studies

Casa Latina, lower level, Merrill College
(831) 459-4284
http://www.lals.ucsc.edu

Faculty and Professional Interests

Core Faculty

GABRIELA ARENDONDO, Assistant Professor in Latin American and Latino Studies
U. S. social and cultural history; Chicana/o history; critical race and ethnicity theories; immigration history; Latinas/os in the U. S.; Chicana feminisms; "borderlands" studies, particularly interactions with gender, race, and regional variation.

JOHN G. BORREGO, Professor of Latin American and Latino Studies
Global political economy, national development, urban and regional planning, community organizing, social change, ethnic minorities, Mexico and the Southwest

GUILLERMO DELGADO, Lecturer in Latin American and Latino Studies
Latin America; comparative indigenous; indigenous property rights, religion, magic, and ritual; ecologies and communities; Quechua/Aymara linguistics; mining alternative/economic journalism; anthropology in the developing world; internal/external urbanization; social movements; culture and power

JONATHAN FOX, Professor of Latin American and Latino Studies
Latin American and Latinx politics, including issues of democratization, poverty, the environment, social movements, and public interest groups

ROSA LINDA FREGOSO, Professor, Latin American and Latino Studies
Cultural studies, transnational feminist theories, Chicana/o and Latinx/a cinema

WALTER L. GOLDFRANK, Professor of Latin American and Latino Studies and Sociology
Social change, historical sociology, world systems, modern Mexico, Chile, social movements and revolution, development theories, policies and outcomes

SCOTT JONES, Lecturer in Latin American and Latino Studies
Comparative Latin American politics, contemporary Central America, Latin American immigration and Latino communities in the U.S., Central American binational organizing, U.S.-Latin American cross-border issues, U.S. foreign policy in Latin America, the Left in Latin America, comparative peace processes in Central America and worldwide, contemporary Caribbean politics, political economy of development and underdevelopment

MANUEL PASTOR JR., Professor of Latin American and Latino Studies
Urban poverty and regional development, Latinos in the urban U.S., macroeconomic stabilization in Latin America; distribution, democracy, and growth in the developing world; Cuban economic reform; Mexican economic reform
G. CENZHELL, Professor of Latin American and Latino Studies
The relationship between women's work and domestic labor, poverty, family sexuality and social networks, feminist studies, ethnographic research methods, and transnational migration of Mexican/Chicano workers and U.S. capital.

Participating Faculty
SONIA E. ALVAREZ, Professor of Politics
Latin American politics, the politics of gender, comparative political development, feminist theory, social movements, democratization, contemporary democratic theory, civil society.

JULIANNE BURTON-CARVAJAL, Professor of Literature
Twentieth- and 21st-century Latin(o) American visual media, particularly film; metrahuma as a transnational form; gender and authorship; history, culture, and representations of California, particularly the Central Coast.

PEDRO G. CASTILLO, Associate Professor of History
Chicana/o history and culture; American social and urban history; race, class, and gender.

CAROLYN DEAN, Professor of History and American Culture
Cultural histories of the Native Americans and colonial Latin America.

MARIA ELENA DIAZ, Associate Professor of History
Colonial Caribbean and Latin America; social and cultural history; ethnohistory; slavery; race, and gender.

NORMA KLAHN, Professor of Literature
Latin American literary and cultural studies (specialization: Mexican); Chicano/Latin/o literature and culture from a cross-border perspective; popular culture and the novel; politics and political fiction, history, nation, and narrative, cultural and feminist theories.

ALMA R. MARTINEZ, Assistant Professor of Theater Arts
Acting Chicana/o theater, contemporary Mexican and Latin American popular/political theater, theater of American cultures, critical theory, directing.

LOURDES MARTINEZ-ECHAZABAL, Associate Professor of Latin American Literature
Latin American and Caribbean literatures; Afro-Latin American literatures; cultures, and societies (focal/national narrativization); Brazilian literature; literature of Cuba, and the Cuban diaspora; critical race theory.

OLGA NAJERA-RAMIREZ, Professor of Anthropology
Folklore, theory, ritual, festival, dance; Greater Mexican culture; history and folklore, transnationalism; identity, expatriate culture, ethnomusicology, bilingual communication; gender, history, and culture of Latin America, the U.S., and Mexico.

PAUL ORTIZ, Assistant Professor of Community Studies
African American history, U.S. social and political history, social documentary, oral history, subaltern studies and theories of resistance; U.S. South, Latino studies, social movements, working-class history.

JUAN POBLETE, Associate Professor of Spanish Literature
Latin(o) American literatures: transnational/global cultures (literature, radio, film); Latin(o) American cultural studies; 19th-century studies; the history of reading practices.

CATHERINE RAMEZ, Assistant Professor of American Studies
Chicana and U.S. Latino culture, literature, and history; gender studies and feminist theory; visual, culture and style; politics/cultural studies; popular and urban youth cultures; speculative fiction; Afronauturam; and Chicano futurism; science, technology, race, and gender; theories and methods of American studies.

ROBERT A. SANCHEZ-RODRIGUEZ, Associate Professor of Environmental Studies
Urban ecology, environment and development in Latin America, urban and regional development, human dimensions of global environmental change, border studies.

JOHN M. SCHENKEL, Professor of Music
Ethnomusicology, music theory; South American traditional and contemporary music; Quechua music-culture: music and ritual; organology; Stravinsky, Founder-Director, UCSC Latin American Ensembles.

HELEN SHAPIRO, Associate Professor of Sociology
Economic political economy; Latin American economic history and development (with an emphasis Brazil); Industrial policy, the auto industry, trade and transnational corporations.

CARTER WILSON, Emeritus

Affiliated Faculty
JORGE ALARDO FONTE, Professor of Spanish Literature
Spanish mysticism; theory and historical development of imagery in the Middle Ages to the baroque period; Renaissance and baroque Iberian literature; Italian ideas in the Spanish Renaissance; Cervantes.

GREGORY S. GILBERT, Associate Professor of Environmental Studies
Disease ecology, conservation biology; tropical forest ecology; microbial ecology.

STEPHEN R. GLEESON, Alfred E. H. Miller Professor of Archeology (Environmental Studies)
Agroecology, sustainable agriculture; natural history; tropical land use and development; ecology and management of California vegetation.

MARIA VICTORIA GONZALEZ-PAGANI, Lecturer in Spanish Language
Language teaching methodology; Spanish syntax; computing-based foreign language learning; Latin American cultural studies, especially women's contributions.

DAVID E. GOODMAN, Professor of Environmental Studies
Political economy of international environmental issues, global agri-food systems, technology, North-South relations and sustainable development; Brazilian economy and society.

KIRSTEN SILVA GRIESEZ, Associate Professor of Literature
Comparative Americas studies, Chicano/Latin/o literature and culture; 19th-century U.S. literature, poetry and translation, genre theory.

M. LIBERTH HAAS, Associate Professor of History
U.S.-Mexico borders; Chicanos and Native American history; visual culture in the colonial Americas; the U.S. West and California; historical memory; theory, and historical methodology.

AIDA HURTADO, Professor of Psychology
Social identity; feminist theory; social psychology; education, political consciousness; survey methodology.

KENNETH KLETSER, Professor of Economics
International economics; economic theory; economic development.

DANIEL T. LINGER, Professor of Anthropology
Self and identity, politics, cultural theory, cities, violence, transnational experience; Brazil, Japan.

PAUL M. LUBECK, Professor of Sociology
Political sociology; political economy of development; globalization, labor and work, logic of methodology, religion and social movements; Islamic society and identities; information and networks.

LUCINDA PEASE-ALVAREZ, Associate Professor of Education
Language and literacy development, language-minority education, bilingualism, informal learning.

MICHAEL ROTKIN, Lecturer in Community Studies
Marxist theory, capitalist system, community organizing, electoral politics, media, government programs, community power structure, institutional analysis, and affirmative action.

DAVID G. SWEET, Emeritus

KIP TELLEZ, Associate Professor of Education
Preparation of teachers for linguistic and cultural diversity; second language learning; studies of the school curriculum, educational assessment.

LARRY TRUJILLO, Lecturer in Community Studies
Chicana/o studies; ethnic studies; grassroots community organizations, prison-industrial complex, student development, Chicano music.

KAREN TEI YAMASHITA, Associate Professor of Literature (Creative Writing)
History and anthropology of Japanese immigration to Brazil; Asian American literature, modern fiction, playwriting.

Program Description
The Latin American and Latino Studies (LALS) Department prepares students for bilingual and bicultural participation in a rapidly changing world. Both Latin America and U.S. Latino communities are being transformed by globalization; at the same time, deep historical legacies continue to be very present. The Latin American and Latino Studies Department integrates the study of Chicana and Latino communities in the U.S. with analysis of the histories, politics, cultures, and societies of Latin America and the Caribbean.

LALS courses deal with changing political, social, economic, and cultural realities, including immigration and transnational communities, gender, race, and ethnic identities; social movements; diverse forms of cultural expression; ongoing political and economic restructuring in Latin America; and the challenges of political and economic empowerment for Latino communities in the U.S. To understand these processes, we draw from interdisciplinary perspectives, including the social sciences, the humanities, and the arts.

In addition to academic knowledge, LALS also provides opportunities for students to acquire practical, real-world skills through program-related internships and field-study experiences, students can acquire useful, pre-professional skills in any of the following key areas: community development/advocacy, public policy, education, journalism, media, performance, and research/writing, among others.

Latin American and Latino Studies courses span a number of disciplines and are augmented by courses taught by participating faculty in various departments. The Latin American and Latino Studies Department compiles a quarterly list of course offerings from across campus that count toward the major.

Graduates of the LALS major have made careers in a wide variety of fields, including teaching, community organizing, community and government service, journalism and the media, environmental science, global economics, health care, legal services, library science, music, publishing, and research. Many have gone on to pursue advanced degrees in the U.S. or abroad in anthropology, bilingual education, communicationsology, economics, ecology, geography, history, law, literature, public health, and sociology—to name a few.
Major Requirements

Three lower-division courses are required for the major:

• Latin American and Latino Studies 1, Introduction to Latin American and Latino Studies

• and two lower-division electives (select from courses listed below):
  
  Latin American and Latino Studies
  80A, Peoples and Cultures of Latin America
  80B, Social Movements in Latin America
  80C, Power and Resistance in the Americas
  80D, Political Social Change in Mexico
  80F, Latinisms in the U.S.: A Comparative Perspective
  80H, Comparative Latin American Histories
  80N, Drug Wars in the Americas
  80Q, Musica Latina
  80X, Central American Culture and Society
  Community Studies 80A, Chicanos and Social Change
  History
  34A, Introduction to the History of the Americas
  Colonial Period
  34B, Introduction to Latin American History: National Period
  Spanish Literature 60, Introduction to Literary Genre
  Music
  4A and 4B, Latin American Ensembles (three quarters fulfill one lower-division elective)
  80F, Music in Latin American Culture Regional Traditions

Other courses numbered 1–80 on Latin American and/or Latino subjects may be substituted with approval in advance from the Latin American and Latino Studies Department.

Courses with similar content taken at other institutions may be substituted with approval from the Latin American and Latino Studies Department upon declaration of major:

Without exception, Latin American and Latino Studies 1 must be taken at UCSC.

In addition, all majors must complete nine upper-division courses, including core courses, two of which are mandatory (no substitutions):

• Latin American and Latino Studies 100A
• 100B, Cultural and Social Change
• 100X, American and Latino Studies Department upon declaration of major.

Without exception, Latin American and Latino Studies 1 must be taken at UCSC.

In addition, all majors must complete nine upper-division courses, including core courses, two of which are mandatory (no substitutions): Latin American and Latino Studies

• 100A, Politics and Society: Concepts and Methods
• 100B, Culture and Society: Transcultural

The remaining seven electives must meet the following criteria:

• three must be within a specific cluster that is related to Latin American/Latino studies from within a single field (e.g., anthropology, Brazilian studies, cultural studies, economics, education, environmental studies, film and digital media, history, history of art and visual culture, literature, politics, sociology). These may or may not be Latin American and Latino studies courses.

• at least one must concentrate on pre-twentieth-century topics

• at least one must center on Chicano/a/Latino/a issues

• at least two must be taught in Spanish or Portuguese, one by an LALS associated faculty

Language Requirements

All Latin American and Latino studies majors are expected to learn to speak, read, and write Spanish or Portuguese and to make use of these skills on a regular basis in their academic work.

Majors must take at least two upper-division courses taught in Spanish or Portuguese. At least one of these courses must be taught by core or participating LALS faculty. Before participating in study abroad programs or upper-division course work in Spanish or Portuguese, students must demonstrate proficiency in the language equivalent to completion of Spanish 6 or 56 or Spanish for Speakers 63. Students who have achieved fluency in Spanish or Portuguese through life experience may request exemption from this requirement.

Field-Study and Internship Opportunities

All majors are strongly encouraged to undertake either a field study in Latin America, the Caribbean, the Latino community in the U.S., or formal academic study abroad through the Education Abroad Program (EAP); see page 40 for more information. These paths are the best ways to improve your language skills, explore the nature and direction of your own specific academic and career interests in relation to Latin American and Latino studies, and deepen cross-cultural understanding and relationships based upon personal experience.

Field studies are independent, community-based study projects for academic credit, done under faculty sponsorship and arranged on an individual basis. Local opportunities for internships and field study in Latin American communities on California’s Central Coast are numerous. Credit for up to three upper-division courses may be applied toward the major from field study and study abroad combined. Field study may count for two upper-division courses. Please contact the Latin American and Latino Studies Department for further information regarding the field-study process, course credit, and a listing of local field-study programs.

Study Abroad

Students may apply to study at foreign universities through EAP. EAP offers opportunities for students to study at universities in Mexico City and Monterrey, Mexico; San José, Costa Rica; Santiago, Chile; Rio de Janeiro, Brazil; and Maldrid, Madrid, Cordoba, Alcalá de Henares, Granada, and Barcelona in Spain. Sophomores, juniors, and seniors with two years of university-level Spanish may apply. In addition, through the EAP Field Research Program (FRP) in Mexico, during fall and spring quarters, students take classes in Mexico City and undertake a two-month research project while gaining first-hand experience of life in Mexico. The FRP offers six sites for regional research: Guadalajara, Merida, Monterrey, Morelia, Oaxaca, and Guadalajara. Sophomores, juniors, and seniors may apply. Students may also take an intensive Spanish language program in Morelia, Mexico, during the summer; in Concepción, Chile, during the fall; or in Cordoba, Spain, during the fall or spring. Freshmen, sophomores, juniors, and seniors may apply. Application deadlines are generally several months to one year in advance of the program, so come to the office early to plan your study abroad program. All credit for EAP classes transfers back to your UCSC transcript. Financial aid applies to all but summer programs and includes airfare and living costs.

Senior Comprehensive Requirement

Every major must complete a senior exit requirement in order to graduate. The preparation and completion of this requirement is structured into the senior year. There are five options to choose from:

• good to excellent performance in a Latin American and Latino Studies senior seminar (194 series), including a final research paper (20–30 pages), completed by the first or second quarter of the senior year;

• an extended research paper, 20–30 pages in length. This paper often builds on related course work and requires approval from the relevant faculty advisor before the end of the winter quarter of the senior year. Students may take a 2- or 5-unit independent study to complete this paper;

• a senior thesis is generally between 40–60 pages and is the result of one or two quarters of sustained independent research under the supervision of the faculty advisor;

• a senior project can be either a creative project or a community-action project. Creative projects include web site design, video, performance, slide show, photo exhibit, or other media work. A short written analysis of the student’s experience in conducting the project is required. Community-action projects often involve sustained research and/or activity conducted in a community organization or public interest group, usually stemming from an internship. A short written analysis of the connection between the student’s activity and research and the project itself is required;

• the Student-Directed Seminar option is available to unusually qualified students only. It requires three quarters of preparation directed by a faculty advisor and approval by the Academic Senate Committee on Educational Policy. This option can be taken only by petition with the approval of the faculty advisor. Petition forms are available at the Latin American and Latino Studies Office.

Latin American and Latino Studies

Major Planners

The following are two recommended academic plans for undertaking basic preparation for the Latin American and Latino studies major. Plan One is a guideline for students who are committed to the major early in their academic career. Plan Two is for transfer students.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Span 1 (fsh)</td>
<td>Span 2</td>
<td>Span 3</td>
</tr>
<tr>
<td></td>
<td>or Spss 61</td>
<td>or Spss 62</td>
<td>or Spss 63</td>
</tr>
<tr>
<td></td>
<td>Lab 100A</td>
<td>Lab 80-series</td>
<td>Lab 100B</td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Span 4 (p)</td>
<td>Span 5</td>
<td>Span 6 or 56</td>
</tr>
<tr>
<td></td>
<td>or Spss 62</td>
<td>or Spss 63</td>
<td>or Spss 63</td>
</tr>
<tr>
<td></td>
<td>Lab 100A</td>
<td>Lab 80-series</td>
<td>Lab 100B</td>
</tr>
<tr>
<td></td>
<td>Lab upperv</td>
<td>Lab upperv</td>
<td>Lab upperv</td>
</tr>
<tr>
<td></td>
<td>Lab 195C</td>
<td>Lab upperv</td>
<td>Lab upperv</td>
</tr>
</tbody>
</table>
Combined Majors

The combined major option, requiring fewer courses than a double major, is established with the global economics, politics, and sociology majors.

Latin American and Latino Studies/Global Economics

For the combined major in Latin American and Latino studies/global economics, students complete a total of seven lower-division course requirements for both the Latin American and Latino studies and global economics majors. Students are assigned a faculty advisor from each discipline. Upper-division course requirements include Economics 100A, 100B, and 113; Latin American and Latino Studies 100A and 100B; and five additional elective courses, two from economics and three from Latin American and Latino studies. Two of the upper-division courses must be taught in Spanish (or Portuguese) and two to four (at least one quarter) must be courses of academic work, internship, or field study abroad in a Spanish- or Portuguese-speaking country. The comprehensive requirement is met by the completion of a senior thesis on a topic suitable to both global economics and Latin American and Latino studies, supervised by a faculty member from either department and read and approved by the student's advisor from both departments.

Latin American and Latino Studies/Politics

For the combined major in Latin American and Latino studies/politics, students complete three lower-division course requirements. One of the lower-division courses must be Latin American and Latino Studies 1 (no substitutions). For transfer students, a petition may be made to substitute the lower-division courses (one Latin American and Latino Studies elective, one course from Politics 1-79) with appropriate coursework from another institution. The 10 upper-division courses include four core course requirements (Latin American and Latino Studies 100A and 100B, Politics 100 and 140C), two courses from any Politics Department sequence (comparative, American, international, and theory), and four upper-division electives. To complete the senior comprehensive requirement, students may take either a Politics 190 or Latin American and Latino Studies 194 seminar.

Latin American and Latino Studies/Sociology

Students are required to take a total of 14 courses and satisfy a comprehensive requirement. There are four lower-division course requirements, each from the sociology, Latin American, and Latino studies majors. One of the lower-division LALS classes must be Latin American and Latino Studies 1 (no substitutions); transfer students may petition to replace the other lower-division class with an appropriate course from another institution. Students are assigned a faculty advisor from each discipline. Upper-division requirements include six core courses Latin American and Latino Studies 100A, 100B; Sociology 103A, 103B, 105A, and 105B; and four additional elective courses from Sociology and two from Latin American and Latino Studies. At least one of the Latin American and Latino Studies upper-division courses must be taught in Spanish or Portuguese, and at least one course in the sociology/Latin American and Latino studies combined major must be on Chicano/Latino issues. Up to three relevant courses taken through study abroad programs or from which credits are transferable to UCSC may be credited toward the major when the content is deemed appropriate by the faculty advisors of both sociology and Latin American and Latino studies. Students can satisfy the comprehensive requirement in one of three ways: (1) writing a senior thesis, (2) passing an appropriate Latin American and Latino Studies Senior Seminar (194 series), or (3) completing the sociology course option of two additional sociology upper-division cluster III courses. If the thesis option is selected, it should be planned in consultation with an advisor from each department, completed under the supervision of a faculty member from either department, and read and approved by both advisors; one advisor is sufficient if this faculty member belongs to both departments.

Minor Requirements

The minor in Latin American and Latino studies consists of seven courses, including two lower-division courses (Latin American and Latino Studies 1 and one other lower-division course) and five upper-division courses (including either Latin American and Latino Studies 100A or 100B and any other four upper-division courses that count toward the major). Knowledge of Spanish or Portuguese is recommended, but not required for the minor.

Graduate Studies

The Department of Latin American and Latino Studies offers a doctoral program in Latin American and Latino studies for Ph.D. students in anthropology, environmental studies, history, history of consciousness, literature, psychology, and sociology (additional departments pending approval). This concentration in Latin American and Latino Studies provides graduate students with opportunities for interdisciplinary study with faculty from across the campus. Completion of the program will be listed on the graduate degree as a comprehensive examination. The request must originate in the department granting the degree. Students in other departments wishing to pursue a comprehensive examination in Latin American and Latino Studies should consult with the chair of their respective Ph.D. program and Latin American and Latino Studies. A list, updated annually, of regularly offered approved graduate courses is available in the Latin American and Latino Studies Department office.

Requirements for the Notation

Committee Composition. The student must have a designated graduate advisor from among the Latin American and Latino studies core, participating, or affiliated faculty. This advisor will be in addition to the graduate advisor from the student's home department. The Latin American and Latino Studies advisor must serve on the student's qualifying examination committee and on the student's dissertation committee.

Writing. The student must produce a significant piece of writing in the area of Latin American and Latino studies. This writing may take the form of a substantial seminar paper, master's essay, or doctoral dissertation chapter.

Course requirements. The student must take five graduate courses in Latin American and Latino Studies, including the required LALS 200. The courses can be selected from among the graduate offerings of any UCSC department, as long as they are taught by core, participating, or affiliated Latin American and Latino Studies faculty.

Teaching. The student must serve as a teaching assistant in at least one Latin American and Latino Studies course or teach a Latin American and Latino Studies course independently in the regular curriculum or in Summer Session.

Courses. Graduate course work in Latin American and Latino studies is available both in the Latin American and Latino Studies Department and in other UCSC departments. Graduate courses to date in the Latin American and Latino Studies Department include:

- 200, Bridging Latin American and Latino Studies
- 210, Latin American Literature and Practice
- 212, Latin American Ethnographic Practice
- 297, Independent Studies
- 299, Directed Reading

Lower-Division Courses

1. Introduction to Latin American and Latino Studies, F,W,S

Basic interdisciplinary introduction required of all majors and minors. Presents basic elements of Latin American culture, society, economy, politics, and Latino communities in the U.S. Special attention is paid to issues of race, gender, and class, to the changing situation of the Americas within the world economy, and to the efforts of Latin America's peoples and Latinos in the U.S. to take control of their own destinies. (General Education Code(s): IS, E.) The Staff

42. Student-Directed Seminar, Seminar taught by upper-division student under faculty supervision. Requires three quarters of supervised preparation. (See course 192) The Staff

80A. Peoples and Cultures of Latin America. *

Anthropological in approach, concentrates on how Latin Americans image is constructed and studied today. Topics include geography, nationalities, social classes, ethnicities, gender, ecologies, regions, cultural areas, folklore, revolutions, and urban societies. (General Education Code(s): T3-Social Sciences, E.) G. B. Diggeloth

80B. Social Movements in Latin America. *

Examines contemporary social movements in Latin America. What is the nature of the popular response to different forms of social exclusion and to authoritarian political systems? Explores a variety of popular movements, their successes and setbacks, including rural and urban uprisings, native nations and their descendants, women, African descendants, labor, environmental and grassroots movements. Enrollment limited to 25. (General Education Code(s): T3-Social Sciences, E.) J. E. The Staff

80C. Power and Resistance in the Americas: Cross-Border Social Movements. *

Focuses on politics of power and resistance regarding major cross-border issues facing Latin Americans and Latinos in the twenty-first century. Emphasizes migration and migrant organizing; neoliberal "free trade" and implications for labor; organizing by women's, indigenous, and ecological movements; and for democracy and human rights. Many specific cases drawn from binational Central American experiences. (General Education Code(s): T3-Social Sciences, E.) S. Jonas

80D. Political Change in Mexico, S

Reviews broad trends in contemporary Mexican politics against the backdrop of long-term historical, social, and economic change throughout the twentieth century, analyzing how power is both wielded from above and created from below. The course covers national politics, grassroots movements for social change and democratization, envi-
environmental challenges, guerrilla movements, the media, and the politics of immigration and North American integration. (General Education Code(s): T3-Social Sciences, E.) J. Burton-Carvajal

**Upper-Division Courses**

100A. Politics and Society: Concepts and Methods. S
Focuses on social science issues through the interdisciplinary analysis of power relations. Compares diverse analytical strategies, assesses contending explanations, and builds practical research skills in the field of Latin American and Latino Studies. Topics change yearly, but can include environmental justice, access to education, political participation, gender, and migration. Prerequisite(s): course 1 is recommended. (General Education Code(s): E.) J. Fox

100B. Culture and Society: Culture in a Global Context. W
Focuses on transnational, regional, and local features of Latino/a and Latin American cultural production and artistic expression: how culture is shaped by historical, social, and political forces and how cultural and artistic practices shape the social world; and how culture is produced in an interconnected and globalized economy. (Formerly Culture and Society: Transculturation.) Prerequisite(s): course 1 or History 34, satisfaction of the Subject A and Composition requirements. Enrollment restricted to LALS majors and combined majors with global economics and politics minors may enroll using a permission code. (General Education Code(s): W.) E. J. R. Fregoso

101. Using Media. W
Hands-on survey of print, broadcast, audiovisual, and electronic media. Students complete and present a dozen different media production assignments as part of permanent portfolio. Assignments have Latino/Latin American focus. Peer critique of media projects. Prerequisite(s): concurrent enrollment in course 101L. (General Education Code(s): E.) J. Burton-Carvajal

101L. Using Media: Video Laboratory (2 credits).
Trains students in the fundamentals of video preparation, production and post-production through Social Sciences Media Laboratory. Prerequisite(s): concurrent enrollment in course 101L. J. Burton-Carvajal

110A. Mexico. *
The art and architecture of selected pre-Hispanic cultures from the Gulf coast, central, western, and southern Mexico including the Olmec, Zapotec, Toltec, Mixtec, Mexica (Aztec), and others. (Also offered as History of Art and Visual Culture 110A. Students cannot receive credit for both courses.) Offered in alternate academic years. (General Education Code(s): A.) J. Burton-Carvajal

110B. The Andes. *
The art of selected pre-Hispanic cultures of Colombia, Ecuador, Peru, and Bolivia including the Nazca, Moche, Chimú, and Inca. (Also offered as History of Art and Visual Culture 110B. Students cannot receive credit for both courses.) (General Education Code(s): A.) J. Burton-Carvajal

111. The U.S.-Mexican Border Region. *
Global and national forces have transformed the 2,000 mile United States/Mexico border region into a site for world market factories. Analyzes how this transformation has affected workers and communities and systematically reviews subjective responses. (General Education Code(s): E.) J. Borrego

112. Silicon Valley: The Contradictions. *
Explores the Silicon Valley’s role within global capitalism; its political, economic, social, cultural and spatial structures; and how they interact with the surrounding region. Students analyze the regional economy and its impact on daily life. Explores contradictions, development vs. underdevelopment, and strategies for social change. Enrollment priority to Latin American and Latino studies majors. Enrollment limited to 25. (General Education Code(s): E.) J. Borrego

120. Magic and Religion. S
Comprehensive seminar on the concept of the sacred, dealing with the complexities of magic and religious themes in the Americas seen from an anthropological perspective. Topics include both Christian as well as non-Christian religious practices. Based on recent anthropological literature, as well as new developments concerning rituals related to the sacred (spiritualism, voodoo, santeria, magical curing, spirit possession, glossolalia, earth feeding, rituals of recuperity). (General Education Code(s): E.) G. Delgado

121. Early California Cultures. *
Intensive weekly sessions contextualize, view and analyze a dozen classical fictional films from Latin America (1960s-1990s). (General Education Code(s): E.) J. Burton-Carvajal

123A. Cinema and Social Change: Feature Films. *
Intensive weekly sessions contextualize, view and analyze a dozen classical fictional films from Latin America (1960s-1990s). (General Education Code(s): E.) J. Burton-Carvajal

123B. Cinema and Social Change: Documentary Transformations. *
Surveys the range of documentary practices designed as catalysts for and interventions in processes of social change from the 1950s to the present, with particular emphasis on sociopolitical and political filmmaking. (General Education Code(s): E.) J. Burton-Carvajal

125. Latinos in the Media. *
Introduces portrayals of Latinos in the U.S. media including magazines, film, and television. Covers the most recent social psychological research on media representations and implications for identity. (Also offered as Psychology 158. Students cannot receive credit for both courses.) Prerequisite(s): Psychology 3 or course 1. (General Education Code(s): E.) A. H. Urtado

126A. Global Capitalism and Community Restructuring. *
Examines how Watsonville (U.S.) and Irapuato (Mexico) are being restructured by national development, North American economic integration (NAFTA), and global capitalism. Explores the relentless penetration of market imperatives, their impact on the communities, and community response; costs/benefits of being abandoned by or being attractive to global capital; and how people are surviving—scrambling to find jobs, keeping families together, and engaging in binational strategies for survival. Prerequisite(s): permission of instructor; concurrent enrollment in laboratory course 126B. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): IS, E.) J. Borrego

126B. Voices From the Watsonville Community.
Weekly Wednesday evening seminar in Watsonville allows students to interact with local workers, organizers, immigration and citizenship N GO’s, affordable housing nonprofits, entrepreneurs, large commercial developers, county planners, city managers, PVUSD educators, health activists, politicians, commercial and organic farmers, food processing owners/plant managers, and environmentalists, in order to develop a deeper understanding of the past, present, and future of the community and the region. Class will present findings and interact with panel of community members on a Saturday morning during first weekend of spring quarter. Prerequisite(s):
concurrent enrollment in course 126A. Enrollment restricted to sophomores and juniors. Enrollment limited to 25. (General Education Code(s): 1S, E.) J. Borrego

127. Mexico and the Movies. * Surveys a century of film production in Mexico, concentrating on major works by leading directors and emphasizing the two most popular forms—comedy and melodrama—in the context of constructions of national identity from 1931, the beginning of the sound era, to the present. Knowledge of Spanish highly recommended. (General Education Code(s): E.J.) Burton-Carvalhal

128. Latino Media in the U.S. W Overview of Latino mass media outlets in the U.S. and their role in the face of increased concentration of mainstream media ownership. Focus on development of strategies and writing skills to enable grassroots and community organizations to access print media. Bilingual approach. (Formerly Journalism and the Latino Community.) (Also offered as Writing 128. Students cannot receive credit for both courses.) The Staff

129. Women Filmmakers: Latin American and Latino * Focuses on the work of a dozen major Latin American and Latino filmmakers from Argentina, Brazil, Venezuela, Mexico, and the U.S., including Maria Luisa Bermejo, Maria Nava, and Matilde Landeta, Lourdes Portillo, concentrating on films of the last two decades. (General Education Code(s): E.J.) Burton-Carvalhal

129F. Mexican Folkloric Dance (2 credits). * Provides instruction in the aesthetic, cultural, and historical dimensions of Mexican folkloric dance tradition. Each year a specific repertoire of dances from various regions of greater Mexico will be taught in preparation for public performances both on and off campus. May be repeated for credit. The Staff

140. Rural Mexico in Crisis. * Focuses on political, social, and economic changes in rural Mexico from the 1910 revolution to the Zapatista rebellion. Emphasizes the interaction between the state, markets, and rural civil society, covering agricultural policy, agrarian reform and counter-reform, grassroots development efforts, local politics, and migration. (General Education Code(s): E.J.) Fox


143. Race and Ethnicity. F Race and ethnicity have been—and continue to be—powerful forces shaping the American experience. This course examines a range of conceptual approaches and mono- graphic studies grounded in the history of the U.S. The readings provide various criteria for studying and understanding these phenomena. The course problematizes “race” by asking what the readings tell us about “race-making” and the reproduction of racial ideologies in specific historical contexts. Similarly, “ethnicity” is treated as a historically specific social construct. (General Education Code(s): E.J.G. Arredondo

143J. Global Political Economy. * Analyzes the global, social, economic, and political forces that shape transnational, national, and regional societal formations and consequently the entire environment for social change. Examines the evolution of revolutionary struggle and its origins within and impact upon the evolving capitalist system. J. Borrego

144. Chicanas/Mexican American Women in the U.S. W Explores current historical and theoretical writings on the lived experiences of Chicanas and Mexican American women in American history. Themes include domination/resistance; politics/representations; contestation; social reproduction; identity and difference. (General Education Code(s): E.J.G. Arredondo

145. Grassroots Social Change in Latin America * Focuses on the analysis of collective action by underrepresented groups in Latin America. Concepts and issues include political participation and impact, gender, ethnicity and race, class, the environment, religion, non-governmental organizations, and social capital. Prerequisite(s): any two Latin American and Latino studies courses or permission of instructor; open to graduate students. Enrollment limited to 25. (General Education Code(s): E.J.) The Staff

146. Urban Crisis in Latin America. * Multidisciplinary course on the cities of Latin America. The cities of Latin America are examined both as a reflection of the broad social and economic conditions that prevail and also as unique and distinctive (re)presentations of the countries and societies within which they are found. (Formerly Global Studies 147.) (Also offered as Global Studies 147. Students cannot receive credit for both courses.) (General Education Code(s): E.J.) Fox

147. Land and Peasants in Latin America. * Explores current trends of peasant movements in Latin America. Compares them with past mobilizations and emphasizes the importance of participation in the peasant. Concepts are developed through specific country cases, theory, and methods. Land issues, peasant women's experiences, rural society and the future of the Latin American peasantry are discussed. Knowledge of Spanish recommended. Offered in alternate years. (General Education Code(s): E.J.G. D'Agosto

148. Workers in Latin America. * Current issues related to the experience of the Latin American and Latino working classes. Covers organized labor, resistance/literature, struggles for wages and political power, gender and labor, and labor autonomy. Offered in alternate years. (General Education Code(s): E.J.) G. D'Agosto

150. Women and Children in Latin America. * Examines different forces that affect the hopes, dreams, and promise of Latin American children. Focuses on the relationship between women and children as distinct social groups, and the different political, social, economic, religious, and cultural dimensions of society. (General Education Code(s): E.J.) The Staff

151A. The Native in Colonial Spanish America. * Indigenous contributions to colonial Spanish American visual culture including architecture, manuscripts, sculpture, painting, textiles, featherwork, and metalurgy. Focus on colonial Mexico, the Andes, and California. (Also offered as History of Art & Visual Culture 151A. Students cannot receive credit for both courses.) Enrollment limited to 35. (General Education Code(s): A.E.) The Staff

160. North American Integration: Post-NAFTA. * Analyzes the multi-dimensional process of integration in North America via NAFTA. Covers issues of trade and investment flows between Canada, the U.S., and Mexico, including important legislative, scientific, technological, cultural, and political components, as well as social dislocations and political challenges associated with NAFTA. (General Education Code(s): E.J.) Borrego

162. U.S. Policy in Latin America. * Studies U.S. policies toward Latin America (primarily since WWII), covering such topics as Cold War policy and interventions, the U.S. response to the Cuban Revolution, the Alliance for Progress, counterinsurgency as the response to revolutionary movements, the crisis in U.S. hegemony, NAFTA, and issues of U.S. policy for the post-cold war era and the twenty-first century. S. Jonas

165. Political Economy of Crisis and Transition in Latin America. * Examines the political economy of how crises are generated and addressed in various Latin American countries. Explores such issues as democratization and economic performance in the region, trade liberalization and political sustainability in Mexico, and the transformation of socialist Cuba. Intensive and fairly seminar; students are expected to participate actively in discussions and produce policy-relevant analyses and "solutions" to current problems. (General Education Code(s): E.) M. Pastor

166. Latino Families in Transition. * Explores the complex nature of Latino families in the U.S., which like other American families are undergoing profound changes. Placing families within a historical context of post-60s social upheaval, such as feminism, migration, "reconstructed" or multiple-earner households, examine how families members adapt, resist, and/or construct alternative visions and practices of family life. Prerequisite(s): course 166. (General Education Code(s): E.) Zavala

166L. Latino Families in Transition Lab (2 credits). W Lab is associated with course 166. Students are instructed in the aesthetic and technical production of a short digital slide show that incorporates narration, music, sound effects, and still images. Prerequisite(s): course 166. (General Education Code(s): E.J.) Zavala

167. Amazonian Societies and the Environment. * An examination of contemporary Amazonian societies and the environment from a historical perspective. Goes beyond the understanding of the impact of modern technology on the environment to focus on the Amazon as a long-term human construct. Enrollment limited to 25. Offered in alternate years. (General Education Code(s): E.J.) The Staff

168. Economic History of Latin America. * Sheds light on Latin America's contemporary social and economic developments by providing an appreciation of their historical roots. Focusing on the period from independence until WWII, evaluates competing explanations for Latin America's relatively poor economic performance and divergent policy implications. Prerequisite(s): course 1. (General Education Code(s): E.J.H. Shapiro

Analyzes the economic, political, and social aspects of the industrialization process in Latin America. Evaluates import substitution policies, the changing roles of the state and foreign and domestic capital, and the impact of recent trade liberalization. Compares Latin America's development with that of the East Asian newly-industrialized countries (NICs) and looks at the implications of globalization. (General Education Code(s): E) H. Shapiro

170. Latin American Indigenous Struggles. F

Focuses on the way Indians of Latin America have interacted voluntarily and involuntarily with nonindigenous cultures. Examines their perspectives, thoughts, frustrations, and successes. Touches on land issues and examines the way current indigenous cultures of Latin America face and adapt to social change. Focuses on the Andes, lowland Amazon, and Mesoamerica. (General Education Code(s): E) G. Delgado

173. Latin American Immigration to the U.S. F

An interdisciplinary examination of Latin American immigration to the U.S. Topics include history of U.S. as an immigrant nation, economic and political context for migration, immigration process/experience, U.S. immigration/refugee policies, anti-immigrant backlash today, issues facing Latin immigrant communities, and the U.S.-bi-national communities. (General Education Code(s): E) S. Jonas

175. Migration, Gender, and Health. *

Through an interdisciplinary, cross-border approach, examines complex nature of Latin health in relation to migration and how women and men experience health problems differently. Examines how health problems are created by economic and social conditions migrants experience and how outreach agencies can design culturally sensitive programs. Some knowledge of Spanish is recommended. Prerequisite(s): course 100A. Some knowledge of Spanish is recommended. (General Education Code(s): E) P. Zavella

176. Transnational Feminism in Cinema. S

Explores the project of women of color in feminist film theories, film, and video. Examines the politics of representation in film and video by women of color, with special attention to topics of transnationalism, collectivity, sexuality, racialized gender and class formations, and social transformation. Applies concepts developed in film studies and feminist film theory to the study of women of color and cinema. Enrollment limited to 25. (General Education Code(s): E) J. R. Fregoso

177. Latinas in U.S. Cinema. *

Traces representations of Latinas in Hollywood cinema. Focuses on cinematic forms of representation (silent films to contemporary features). Beginning with U.S. expansion into the Southwest during the early era of film, addresses how Latinas sexualities and racialized gender are imagined, invented, explored, and regulated in popular culture forms such as films, television, and cultural expression. Prerequisite(s): course assignments and meet with instructors to discuss the teaching process. May not be counted toward major requirements. (The Staff)

179D. Mayan Society, Literature, and Thought. *

Intensive investigation of major aspects of the ethnography and literature of Mayan people since the Spanish In-Volume 1973, and to the current configuration. Taught in English. (General Education Code(s): E) L. Anaya

180. Borders: Real and Imagined. S

Focuses on the transformative processes of migration and immigration between Mexico, Puerto Rico, the U.S., and Canada. Examines how the construction and representation of borders and borderlands is used to understand the roles of race, gender, and social and political discrimination. (General Education Code(s): E) G. Wilson

190. Internship. F, W, S

Internships with campus or community organizations sponsored and evaluated by a Latin American and Latino studies faculty member. Students write a analytical paper or produce another major work agreed upon by student, faculty supervisor, and internship sponsor; sponsor must also provide review of experience. Students submit petition to sponsoring agency. (The Staff)

190F. Internship (2 credits). F, W, S

Internships with campus or community organizations sponsored and evaluated by a faculty member from Latin American and Latino studies. Students write a short (8-page) descriptive paper or produce another work agreed upon by student and faculty supervisor. Students submit petition to sponsoring agency. (The Staff)


Advanced students serve as facilitators for small discussion groups or aid in reading of papers related to Latin American Studies courses. Students are expected to read all course assignments and meet with instructors to discuss the teaching process. May not be counted toward major requirements. (The Staff)

192. Directed Student Teaching. F, W, S

Teaching under faculty supervision of a lower-division course in Latin American and Latino studies, normally done by majors in the final quarter of study as the senior project. (See course 42.) Students submit petition to sponsoring agency. (The Staff)

193. Local Field Study. F, W, S

Supervised off-campus study in local Spanish-speaking community. Students submit petition to sponsoring agency. (The Staff)

194B. Colombia: Sociedad y política. *

A view of contemporary Colombian politics and society in historical and institutional context, with an interdisciplinary approach to the causes and consequences of political violence. Special focus on agrarian and ethnic conflict. Taught in Spanish. Will be offered winter or spring quarter. Prerequisite(s): competence in Spanish. Enrollment limited to 25. (The Staff)

194C. Trabajo y empresa en América Latina. *

Taught in Spanish. An introduction to the conflict between the economic interests of the working class and the conflicting strategies of the several modes of "development." Analyzes the methods of resistance of popular movements in their confrontation with entrepreneurial and transnational capital. Prerequisite(s): course 1 or History 35. Enrollment limited to 20. (General Education Code(s): E) G. Delgado

194D. Hemispheric Dialogues: Bridging Latin American and Latina/o Studies. *

The rapid acceleration of North-South flows of people, resources, and ideas in the Americas has triggered a rethinking of both Latin/o studies and Latin American studies approaches. By bringing empirical materials and conceptual frameworks from Latin American studies to bear on Latin/o studies and vice-versa, this advanced research seminar explores the interlocking social, cultural, economic, and political processes that connect Latin America and U.S.-Latina/o communities. Prerequisite(s): course 100A or 100B. Enrollment restricted to juniors and seniors. Enrollment limited to 20. (General Education Code(s): E) The Staff

194E. International Migration: Case Studies. S

Seminar designed for students who already have basic understanding of migration and who want to pursue a topic in greater depth. Gives an understanding of various methodological approaches to study of migration, taken from different disciplinary fields. May be used to meet Latin American and Latino studies exit requirement, but is open to all. Prerequisite(s): course 173 or permission of instructor. Enrollment limited to 20. (General Education Code(s): E) J. Jonas

194G. Chile: Social and Political Change. W

Examines the social characteristics of the Chilean political system from the election of Salvador Allende in 1970 to the present. Particular emphasis is given to understanding the different forces, both internal and external, that broke the Chilean tradition of democratic rule in 1973, and to the current situation. Taught in English. Enrollment limited to 20. (General Education Code(s): E) J. W. Goldman

194J. Movimientos sociales contemporaneos. W

Taught in Spanish. Students receive an opportunity to critically analyze various national and international impacts of Latin American social movements. Reviews pertinent social scientific literature and examines conclusions reached, produced, by authors. Prerequisite(s): Spanish for Spanish Speakers 62. Enrollment limited to 25. (General Education Code(s): E) J. W. Goldman

194K. Drogas en la historia y la cultura de las Americas. S

Taught in Spanish. Studies the devastating effects drugs have on the Americas and the subcultures they (re)produce. Features critical readings on the impact of drugs in the Americas. Studies the origins of substances (tobacco, coca, marijuana), and looks at how they have been used through time before concentrating on the present. Enrollment limited to 25. Offered in alternate academic years. (General Education Code(s): E) G. Delgado
194L. Etncidad, medio ambiente y desarrollo. * 
Interdisciplinary analysis of the interaction between eth- 
nicity, tropical forests, and development policy in Latin 
America. Historical, anthropological, and sociological per- 
spectives on natural resource rights and use, with a focus 
on Afro-Latin American and indigenous peoples. Taught in 
Spanish. Will be offered winter or spring quarter. Prere- 
quisite(s): competence in Spanish. Enrollment limited to 
25. The Staff

194M. Twentieth-Century Revolutions. * 
Treatment of twentieth-century Latin American revolu-
tions from Zapata to the Zapatistas. Focuses on the causes 
and consequences of revolutions rather than on their nar-
native histories. (Also offered as Sociology 162. Students 
cannot receive credit for both courses.) Enrollment lim-
ited to 25. (General Education Code(s): E.) W. Goldfrank

194N. Las izquierdas en América Latina: ayer, hoy y mañana. F 
Taught in Spanish. Focuses on legacies of Latin America's popular 
and revolutionary movements since the 1960s, current transforma-
tions, and twenty-first-century prospects. Major emphasis on 
temporary evaluations of past movements and new per-
spectives. Also features a section on cross-border strategies, 
movements, and alliances for social justice. Enrollment lim-
ited to 25. (General Education Code(s): E, J. S. Jonas

194P. Tale of Two Cities, W 
A comparative study of the social, economic, cultural, po-
itical, and geographical development of Los Angeles and 
México City in the twentieth century. Emphasis on the di-
verse peoples, changing physical environment and various 
images/interpretations of these two world cities. (Also of-
fered as History 194H. Students cannot receive credit for 
both courses.) Prerequisite(s): two upper-division history 
courses and satisfaction of the Subject A and Composition 
requirements. Enrollment restricted to junior and senior 
Latin American and Latino studies and history majors. En-
rollment limited to 20. (General Education Code(s): W, E.) P. Castillo

194W. Talleres de poesía. * 
Develops creative writing skills through reading, discus-
sion, and a progression of hands-on group poetry writing 
sessions. Taught in Spanish. (General Education Code(s): A.) T. ThelStaff

195A. Seminar in Research Methods and 
Writing, W 
Provides training in essential research skills, including 
topic definition, components of library/bibliographic 
and literature reviews, interview techniques, fieldwork; 
development of writing, revising, and editing skills; collective 
discussion of projects. Strongly recommended for students 
working on senior thesis, project, or expanded paper. Pre-
quisite(s): satisfaction of the Subject A and Composition 
requirements. Strongly recommended for students work-
ing on senior thesis, project, or expanded paper. (General 
Education Code(s): W, E.) T. ThelStaff

195B. Senior Project, F,W,S 
Senior thesis writing under direction of major adviser. Stu-
dents submit petition to sponsoring agency. T. ThelStaff

195C. Senior Project, F,W,S 
Senior thesis writing under direction of major adviser. Stu-
dents submit petition to sponsoring agency. T. ThelStaff

196. Field Study Seminar. * 
Emphasizes ethnographic strategies of fieldwork. Primar-
ily oriented to students interested in understanding the 
daily life of societies and cultures. Provides students both 
to conduct fieldwork, and to process their fieldwork ex-
perience. Covers complexities related to the experience 
of "stepping out of" one's own culture. Enrollment limited to 
25. J. Borrego

198. Non-Local Field Study, F,W,S 
Off-campus study in Latin America, the Caribbean, or 
non-Latin Spanish-speaking community in the U.S. Nature 
of proposed study/project to be discussed with sponsoring 
instructor(s) before undertaking field study; credit toward 
major (maximum of two courses) conferred upon comple-
tion of all stipulated requirements. Students submit peti-
tion to sponsoring agency. May be repeated for credit. T. ThelStaff

199. Tutorial, F,W,S 
Supervised directed reading; weekly or biweekly meetings 
with instructor. Final paper or examination required. Stu-
dents submit petition to sponsoring agency. T. ThelStaff

199F. Tutorial (2 credits), F,W,S 
Supervised research and writing of an expanded paper, 
completed in conjunction with requisite writing for an 
upper-division course taken for credit in the major. Stu-
dents submit petition to sponsoring agency. T. ThelStaff

Graduate Courses

200. Bridging Latin American and Latino 
Studies, F 
Explores social, cultural, economic, and political changes 
that connect Latin America and U.S. Latino/a communi-
ties. The objective of this interdisciplinary team-taught 
course is to bridge previously distinct research approaches 
of Latin American and Latino studies to better understand 
processes that link peoples and ideas across borders as well 
as help students to conceptually and methodologically 
identify and design new objects of study and revisit tradi-
tional approaches. Enrollment restricted to graduate stu-
dents. T. ThelStaff

210. Latina Feminisms: Theory and Practice. * 
Through an interdisciplinary approach, explores Latina 
feminist social theory and scholarly practice—especially in 
representation and interpretation of Latina experiences. 
Examining key texts at different historical junctures, 
charts how Latinas of varied ethnic, class, sexual, or racial-
ized social locations have constructed oppositional and/or 
power relations create a context for the creation of specific 
Latino cultural expressions and processes than on unrav-
elling the structures of oppression. Enrollment restricted 
to graduate students. P. Zavella

212. Latina/o Ethnographic Practice, * 
Interrogates the social construction of Latino cultures in 
their varied regional, national-ethnic, and gendered con-
texts. Assumes that culture is a dynamic process con-
structed within a context of hierarchal relations of group 
power, in which Latino groups have been structurally sub-
ordinated and socially oppressed. Focuses more on how 
power relations create a context for the creation of specific 
Latino cultural expressions and processes than on unrav-
elling the structures of oppression. Enrollment restricted 
to graduate students. Enrollment limited to 25. P. Zavella

297. Independent Study, F,W,S 
Students submit a reading course proposal to a depart-
ment faculty member who supervises independent study 
in the field. Faculty and student jointly agree upon read-
ing list. Students expected to meet regularly with faculty 
to discuss readings. This independent study must focus on 
a subject not covered by current UCSC graduate curricu-
num. Students submit petition to sponsoring agency. En-
rollment restricted to graduate students. May be repeated 
for credit. T. ThelStaff

Additional Courses of Interest

Anthropology 130B, Brazil 
Community Studies 80A, Chicano and Social Change 
Environmental Studies 130A, Agroecology and 
Sustainable Agriculture

Film 163, Mexican on the Border 
History 34A, Introduction to the History of the Americas 
Colonial Period

History 34B, Introduction to Latin American History: 
National Period

History 145, Chicano/Chicana History 
History 149, History of the Southwest: Colonial Period to 
1920

History 170, Women in Latin America 
History 177, History of Modern Cuba 
History of Art and Visual Culture 190B, The Virgin of 
Guadalupe Images and Symbolism in Spain, 
México, and the U.S.

Music 4A and 4B, Latin American Ensemble "Voces" 
and "Taki Nan" 
Music 80P, Music in Latin American Culture: Regional 
Traditions

Politics 100, Core Seminar in Politics 
Politics 140C, Latin American Politics 
Politics 150, Democratization, Citizenship, and Human 
Rights in South America

Politics 190T, Feminism, Transnational Cultural 
Politics and Gender Policy 
Politics 190V, Problems in Latin American Politics 
Spanish Literature 134G, Popular Culture in Latin 
American Narrative

A complete list of approved courses for Latin American 
and Latino Studies majors and minors is available at the 
Latin American and Latino Studies Office, 101 Casa 
Latina, Merrill College.

Latin Literature

Students wishing to pursue a course of study in Latin lit-
erature should consult the concentration in national/transnational literatures under Literature, page 292.

Legal Studies

271 Merrill College 
(831) 459-2056 
legalsud@ucsc.edu 
http://zzyy.ucsc.edu/Poli/legal.html

Faculty and Professional Interests

Dane Archer, Professor of Sociology 
Violence, war and peace, cross-national and cross-cultural 
research, verbal and nonverbal communication, crime and law
Donald Brenneis, Professor of Anthropology
Linguistic anthropology, folklore, legal anthropology, ethnomusicology, overseas Indians, South Asia, disputing and dispute management, legal language, bureaucratic institutions

Gina Dent, Assistant Professor of Women's Studies and History of Consciousness
African studies, popular culture and social problems, feminist legal theory, postcolonial and critical area studies

Paul Fyfe, Associate Professor of Politics
Director of Legal Studies
American politics, law, race, and civil rights, parties and elections, organizations and collective action, political history

Hiroshi Fukurai, Associate Professor of Sociology
Law and society, jurisprudence of law, political theory of checks and balances, racial identity and inequality, law and politics in Japan and East Asia, advanced quantitative statistical methods

Ronald E. Grieson, Professor of Economics
Microeconomics, urban economics, public finance, energy economics, industrial organization, regulation, antitrust, and real estate

Triolo Nath Pandey, Professor of Anthropology
Native peoples of North America, cultures of India, political anthropology, anthropological theories and comparisons

Daniel M. Press, Professor of Environmental Studies
U.S. environmental politics and policy, social capital and democratic theory, industrial ecology, land and species conservation, regionalism

Craig Reinaran, Professor of Sociology
Political sociology, law, crime, and social justice, drug and society

Michael E. Urban, Professor of Politics
Russian politics, postcommunist transitions, U.S.-Russian relations, political language and ideology, revolution

Daniel J. Wirks, Professor of Politics
American politics, including international political institutions (Congress) and the President, public policy (military and foreign policy), and political history

Donald A. Wittman, Professor of Economics
Economic theory, politics, law

John Dizeses, Emeritus

Walter L. Goldfrank, Professor of Sociology
Social change, historical sociology, world systems, modern Mexico, Chile, social movements and revolution, development theories, policies and outcomes

Craig W. Haney, Professor of Psychology
Applications of social psychological principles to legal settings, assessment of the psychological effects of living and working in institutional environments, social contextual origins of violence, development of alternative legal and institutional forms

Robert L. Meister, Professor of Politics
Political and moral philosophy, law and social theory, Marxist theory, institutional analysis, antidiscrimination law

Gary B. Miles, Emeritus

Program Description
Legal studies is an interdisciplinary program, offered under the auspices of the Politics Department, that is designed for students who wish to use the methods and perspectives of various academic disciplines to study legal issues and to use the conceptual framework of the law to illuminate empirical and theoretical concerns in the various disciplines. For example, a student might use approaches from psychology and philosophy to study the legal problem of punishment or draw on doctrinal categories from public and private law to study the changing historical role of market and nonmarket relations within ongoing institutions.

Legal studies is intended to appeal to students who wish to take a concentration of courses on the law from a variety of disciplinary and methodological perspectives. The major is not intended as a substitute or preparation for any part of a law school curriculum but rather as a full field of study within the liberal arts curriculum. As such, it is a good preparation for a variety of future activities. Students graduating in legal studies are particularly well qualified to pursue graduate work on legal topics in humanities and social science disciplines or to attend professional school in fields such as public policy, business administration, social work, and law.

The legal studies program offers a minor as well as the major.

Requirements for the Major
As a part of the declaration of major process, students choose a coherent program of study and have it approved by the legal studies academic adviser. An outline of the elements of such a program follows.

Legal Studies 10. All legal studies majors are required to take course 10, Introduction to Legal Process.

Philosophy 9, 22, or 24. All legal studies majors are required to take one course chosen from Philosophy 9, 22, or 24. (See the Philosophy section in this catalog for course descriptions.)

Although these courses are not prerequisites for most upper-division courses, the faculty strongly recommend that students complete these lower-division requirements early in their program of study.

Core courses
Students are required to take six core courses, three in each of two of the five concentration areas below.

Theory
Legal Studies
105A Ancient Political Thought
105B Ancient Political Thought
105C Ancient Political Thought
107 Political Morality of Surviviorship and Recovery
110 Law and Social Issues
144 Social and Political Philosophy
146 Philosophy of Law
151 Identity, Sacrifice, and Law
157 Sovereignty and Law

Public Law and Institutions
Legal Studies
111 Problems in Constitutional Law
120A Congress, President, and the Court in American Politics
125 Civil Liberties in the Age of Terrorism
131 Water, Wildlife and Natural Resources Law
132 California Water Law and Policy
134 Property rights and Natural Resources Law
136 Federal Indian Law and Tribal Sovereignty
137 International Environmental Law and Policy
139 War Crimes
149 Environmental Law and Policy
152 Courts and Litigation
155 Topics in American Legal History
156 Administrative Jurisprudence
174 International Law

Politics
112 Women and the Law

Law and Society
Legal Studies
118 Political Anthropology
120A Congress, President, and the Court in American Politics
120B Society and Democracy in American Political Development
127 Black Politics and Federal Social Policy
133 Law of Democracy
142 Anthropology of Law
147A Psychology and Law
147B Psychology and Law
150 Children and the Law
154 The Legal Profession
169 Economic Analysis of the Law
172 The Sociology of Law
173 Law, Crime, and Social Justice
180 Power, Politics, and Protest

Law and Culture
Legal Studies
107 Political Morality of Survivorship and Recovery
118 Political Anthropology
120B Society and Democracy in American Political Development
133 Law and Literature
142 Anthropology of Law
155 Topics in American Legal History
180 Power, Politics, and Protest

Law and Political Economy
Legal Studies
120C State and Capitalism in American Political Development
128 Poverty and Public Policy
129 Political Economy of Policy Reform
160 Industrial Organization
162 Legal Environment of Business
169 Economic Analysis of the Law
183 Women in the Economy

Electives
Two additional courses are to be selected from the list of courses above or from the following:

Legal Studies
185 Field Study
186 Group Tutorial
195A-B-C Senior Thesis
199 Tutorial

Students interested in working on original research under the supervision of a faculty member may write a senior thesis. Before beginning work on the thesis, students are required to obtain the approval of a faculty sponsor.

Legal Studies 196. Students satisfy the senior comprehensive requirement by taking, in their senior year, either course 196, Senior Capstone, or one seminar from a designated list; or an equivalent seminar approved in advance by the legal studies academic advisor. (The list of designated seminars is available in the Legal Studies Program Office.) The capstone course is designed to provide an interdisciplinary integration of themes related to the study of law and includes a substantial writing requirement. Students who have not already completed or been guaranteed admission into a seminar by the beginning of the quarter in which the capstone course is offered will be required to take the capstone course.
Requirements for the Minor
To complete a minor in legal studies, a student must take Legal Studies 10 and any four upper-division legal studies core courses.

Lower-Division Courses

10. Introduction to Legal Process. F
Selected topics, such as discrimination, privacy, and pollution, are traced through different areas of public and private law, and through different levels of the legal system. Emphasizes the interaction between criteria for legal decisions and choices available to legal actors including ordinary citizens. (General Education Code(s): 1.S.) The Staff

Upper-Division Courses

105A. Ancient Political Thought. W
Ancient political ideas in context of tension between democracy and empire, emergence of the psyche, and shift from oral to written culture. Emphasis on Athens, with Jewish, Roman, and Christian interventions. Includes Sophocles, Thucydides, Socrates, Plato, Aristotle, Stoics, the Bible, and Augustine. (Formerly Classical Political Theory.). (Also offered as Politics 105A. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. D. Mathiowetz

105B. Early Modern Political Thought. F
A study of the republican and liberal traditions of political thought and politics. Authors studied include M. achivel, Hobbes, Locke, and Rousseau. Examination of issues such as political corruption, community, authority, "scientific" politics, property, equality, and justice. (Formerly offered as Modern Political Theory.). (Also offered as Politics 105B. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. V. Seth

105C. Modern Political Thought. S
Studies in nineteenth- and early twentieth-century theory, centering on the themes of capitalism, labor, alienation, culture, freedom, and morality. Authors studied include J. Mill, Marx, Nietzsche, Foucault, Hegel, and Weber. (Formerly Recent and Contemporary Political Theory.). (Also offered as Politics 105C. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. M. Thomas

107. After Evil: Political Morality of Survivability and Recovery. *
What are the continuing relationships between victims, perpetrators, and beneficiaries of a past that is recognized as evil? Focus on contrast between the competing moral logics of struggle and reconciliation, and various rationales for allowing beneficiaries to keep their gains in order to bring closure to the past. Topics include post-slavery U.S., post-apartheid South Africa, post-genocide Rwanda, post-Holocaust Germany/Israel, post-authoritarian Latin America, and post-Soviet Eastern Europe. Theoretical perspectives drawn from law, philosophy, theology, and psychoanalysis. (Also offered as Politics 107. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority enrollment only. The Staff

110. Law and Social Issues. *
Examines the current problems in politics and law. Readings are drawn from legal and political philosophy, social science, and judicial opinions. (Also offered as Politics 110. Students cannot receive credit for both courses.) The Staff

111. Problems in Constitutional Law. S
A study of selected problems in constitutional law through the use of various common law models (e.g., from contracts, torts, property, etc.) for understanding the structure of claims to legal rights. Focuses on shifting boundaries between public and private law doctrine in constitutional cases. (Also offered as Politics 111. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority enrollment only. The Staff

113. Gay Rights and the Law. *
Examines relevant court cases as well as local, state, and federal laws that define boundaries for legal recognition of sexual orientation and personal sexuality. Examines legal assumptions behind current and historical cases defining personal sexuality and sexual orientation and considers the social and political implications in each era that drove the courts and legislatures to make such decisions. The Staff

118. Political Anthropology. F
The ideas, in selected non-Western societies, about the nature of power, order, social cohesion, and the political organization of these societies. (Also offered as Anthropology 138. Students cannot receive credit for both courses.) Offered in alternate academic years T. Pandey

120A. Congress, President, and the Court in American Politics. F
Study of political development, behavior, performance, and significance of central governmental institutions of the U.S. While focus is on historical development of Congress and the presidency and relationship between the two branches, attention is also given to the judiciary branch and bureaucracy. (Also offered as Politics 120A. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. Satisfies American History and Institutions Requirement. D. Wirth

120B. Society and Democracy in American Political Development. W
Examines role of social forces (e.g., race, class and gender) in development of the American democratic processes and in the changing relationship between citizen and state. Course materials address ideas, social tensions, and economic pressures bearing on social movements, interest groups, and political parties. (Also offered as Politics 120B. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. Satisfies American History and Institutions Requirement. M. Brown

120C. State and Capitalism in American Political Development. S
Examines expansion of the American state, its relation to the development of capitalism, and changing contours of policy intervention in economy and society. Includes regulation of capitalism, origins and growth of welfare state, and implications of state intervention for economic and political inequalities in America. (Also offered as Politics 120C. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. Satisfies American History and Institutions Requirement. E. Bertram

125. Civil Liberties in the Age of Terrorism. F
Explores impact of antiterrorism policies passed since September 11 on civil liberties, including issues relating to detainees, freedom of information requests, warranting authority, watch lists, profiling, and creation of a domestic intelligence agency. The Staff

Examination of changes in the political and economic status of black Americans in the twentieth century; particular focus on the role of national policies since 1933 and the significance of racism in twentieth-century U.S. political development. (Also offered as Politics 127. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority enrollment only. (General Education Code(s): E.) M. Brown

128. Poverty and Public Policy, W
Studies the causes, consequences, and governmental response to urban poverty in the U.S. Topics include how public policy, the macroeconomy, race, gender, discrimination, marriage, fertility, child support, and crime affect and are affected by urban poverty. Emphasizes class discussion and research. (Also offered as Economics 128. Students cannot receive credit for both courses.) Prerequisite(s): satisfaction of Subject A and Composition requirements; Economics 100A and 113 or consent of instructor. Enrollment restricted to economics, business management economics, global economics, legal studies, or economics combined majors. Enrollment limited to 35. (General Education Code(s): W, E.) R. Fairlie, L. Kletzer

131. Water, Wildlife, and Natural Resources Law, F
Introduction to U.S. water, wildlife, and natural resources law; policy; and management practices. Enrollment restricted to sophomores, juniors, and senior legal studies majors during the priority period. R. Langridge

132. California Water Law and Policy, W
Explores the rich history and fundamental legal concepts surrounding water in California. Students identify, evaluate, and debate some critical water policy questions faced by Californians today and in the future. R. Langridge

133. Law of Democracy, W
Democracy's defining features is the ability of the populace to choose its leaders. Explores how the law shapes and limits our ability to choose our elected leaders, and, in turn, how the law is shaped by political forces. Enrollment restricted to legal studies majors. The Staff

134. Property Rights and Natural Resources Law, W
Seminar explores laws and policies defining property rights to natural resources. Evaluates different property rights regimes including private, common, and state. Using case studies, examines indigenous property rights, fisheries, and Fifth Amendment "taking." Enrollment restricted to legal studies majors. R. Langridge

Federal Indian law refers to the body of law dealing with the status of Indian tribes, their inherent powers of self-government, their special relationship to the federal government, and the actual or potential conflicts of governmental power. Explores future of Indian law in the twenty-first century. Addresses tribal reassertion of aboriginal sovereignty over culture and land in the context of increasing world recognition of indigenous rights. Enrollment restricted to legal studies majors during priority period. (General Education Code(s): E.) T. Staff
137. International Environmental Law and Policy. * 
International environmental law (IEL) endeavors to control pollution and depletion of natural resources within a framework of sustainable development and is formally a branch of public international law—a body of law created by nation states for nation states, to govern problems between nation states. Examines landmark developments of IEL since 1972 within a historical continuum to better understand their strengths and weaknesses. Enrollment restricted to legal studies majors during priority period. The Staff

138. Law and Literature. * 
Variety of texts including novels, short stories, and essays as a source for reflection about the nature of law and legal practice. Readings include such writers as Herman Melville, Harper Lee, Richard Wright, Arthur Miller, Nadine Gordimer, and James Alan McPherson, among others. Enrollment restricted to legal studies majors during priority period. P. Orner

139. War Crimes. * 
Explores complex international human rights/humanitarian law issues surrounding genocide and other mass violence, beginning with the Nuremberg trials following World War II up to recent atrocities in Rwanda, Bosnia, and elsewhere. Covers basic legal framework of human rights law, examines specific situations on a case by case basis, and discusses what options the international community, the nations themselves, and individuals have in the wake of such catastrophes. Enrollment restricted to legal studies majors during priority period. P. Orner

142. Anthropology of Law. S 
An ethnographically informed consideration of law, dispute management, and social control in a range of societies including the contemporary U.S. Topics include conflict management processes, theories of justice, legal discourse, and relations among local, national, and transnational legal systems. (Also offered as Anthropology 142. Students cannot receive credit for both courses.) Enrollment restricted to anthropology and legal studies majors. D. Brennes

144. Social and Political Philosophy. * 
A study of selected classical and contemporary writings dealing with topics such as the nature and legitimacy of the liberal state, the limits of political obligation, and theories of distributive justice and rights. (Also offered as Philosophy 144. Students cannot receive credit for both courses.) Prerequisite(s): one course in philosophy. Offered in alternate academic years. D. Guevara

146. Philosophy of Law, W 
Examination of selected problems in jurisprudence: “legal reasoning” and social policy, rules and individual cases, the mental element in the law, punishment and responsibility, causation and fault, liberty and paternalism, etc. (Also offered as Philosophy 146. Students cannot receive credit for both courses.) J. Neu

147A. Psychology and Law. * 
Current and future relationships between law and psychology, paying special attention to gaps between legal fiction and psychological realities in the legal system. Topics include an introduction to social science and law, the nature of legal and criminal responsibility, the relationship between the social and legal concepts of discrimination, and the nature of legal punishment. (Also offered as Psychology 147A. Students cannot receive credit for both courses.) Psychology 3 and 40 are recommended prior to taking this course. Enrollment restricted to psychology, pre-law, legal studies, legal studies/political, legal studies/philosophy, and legal studies/economics majors. C. Haney

147B. Psychology and Law. * 
Continuing discussion of current and future relationships between law and psychology and to contrasting psychological realities with legal fictions. Special attention is given to the criminal justice system including the psychology of policing and interrogation, plea bargaining, jury selection and decision making, eyewitness identification, and the psychology of imprisonment. (Also offered as Psychology 147B. Students cannot receive credit for both courses.) Prerequisite(s): course 147A. C. Haney

149. Environmental Law and Policy. S 
Surveys a wide range of topics in environmental law, including population control, state and federal jurisdiction, land and resources control, public land management, pollution control, and private rights and remedies. Students read a large number of judicial cases and other legal documents. (Also offered as Environmental Studies 149. Students cannot receive credit for both courses.) Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment restricted to juniors and seniors. Enrollment limited to 60. (General Education Codes: W.) D. Kida

150. Children and the Law. S 
Explores the legal rights of children. Topics may include juvenile justice, gang offenses, free speech and internet censorship, religious rights, child custody and support, adoption, foster care, abuse and sexual harassment, special needs, public benefits, and medical care. Enrollment restricted to legal studies majors during priority period. The Staff

151. Identity, Sacrifice, and Law. * 
Explores ways various practices of “sacrifice” that involve relinquishment, destruction, and/or tributes contribute to the construction and reconstruction of individual and collective identity. Enrollment restricted to legal studies majors during priority period. T. Staff

152. Courts and Litigation. * 
A study of the role of courts in society and the use of litigation to address and redress social problems. Focuses on recent developments in American litigation, but comparative materials may be considered. Enrollment restricted to legal studies majors during priority period. T. Staff

153. Efficiency and Justice in Legal Rules. * 
After considering the meaning of efficiency and justice as criteria for evaluation, their interaction is examined in the context of specific legal rules. Applications range widely including issues in torts, criminal law, taxation, property and due process. Enrollment restricted to legal studies majors during priority period. T. Staff

154. The Legal Profession. * 
Lawyers stand between the legal system and those who are affected by it. Examines this relationship descriptively and normatively, and from the point of view of sociological theory. Concentrates on the U.S. profession, with some comparative material. Enrollment restricted to legal studies majors during priority period. T. Staff

155. Topics in American Legal History: Making of American Constitutionalism. * 
Explores some aspects of early American constitutional thought, particularly immediately preceding the American Revolution situating colonial constitutional thought within some of the larger themes and controversies of the seventeenth-century English constitutionalism, then considering some aspects of American constitutional thought in the founding period against the background of the colonial experience. Prerequisite(s): permission of instructor; selection based on the ability to do very advanced work. Enrollment restricted to legal studies majors during priority period. Enrollment limited to 20. The Staff

155A. Topics in American Legal History: The Prisoner’s Voice. * 
Explores a variety of texts, including novels, short stories, and poems by prisoners, as well as court cases involving prison literature, as sources for reflection about the place of the prisoner and the prison itself in modern American society. Henry David Thoreau’s “Civil Disobedience” forcefully suggests the best way in which to view one’s society is to look at it from behind prison bars. Enrollment restricted to legal studies majors during priority period. Enrollment limited to 20. The Staff

156. Administrative Jurisprudence. * 
The rise of the regulatory state brings with it a host of questions regarding the exercise of state power and separation of powers. Takes up some of these questions; in particular, questions about administrative agencies and their relationship to the judiciary, the legislature and private individuals and groups. Enrollment restricted to legal studies majors during priority period. T. Staff

157. Sovereignty and Law. * 
Beginning with an overview of property law, the place of property in modern society is examined. Includes a survey of property institutions and their role as seen from the perspectives of social philosophy, economics, and social structure. Enrollment restricted to legal studies majors during priority period. T. Staff

160. Industrial Organization, W 
The structure and conduct of American industry with strong emphasis on the role of government, regulation, anti-trust, etc. The evolution of present-day industrial structure. The problems of overall concentration of industry and of monopoly power of firms. Pricing, output decisions, profits, and waste. Approaches include case study, theory, and statistics. (Formerly course 160.) (Also offered as Economics 160A. Students cannot receive credit for both courses.) Prerequisite(s): Economics 100A. The Staff

162. Legal Environment of Business, F 
A study of law and the legal process, emphasizing the nature and function of law within the U.S. federal system. Attention is given to the legal problems pertaining to contracts and related topics, business associations, and the impact of law on business enterprise. (Also offered as Economics 162. Students cannot receive credit for both courses.) Prerequisite(s): Economics 100A. R. Bosso

169. Economic Analysis of the Law, W 
The application of the theories and methods of neoclassical economics to the central institutions of the legal system, including the common law doctrines of negligence, contract, and property; bankruptcy and corporate law; and civil, criminal, and administrative procedure. (Also offered as Economics 169. Students cannot receive credit for both courses.) Prerequisite(s): Economics 100A or permission of instructor. D. Witman
172. The Sociology of Law. *
Explores the social forces that shape legal outcomes and the way law, in turn, influences social life. Traces the history and political economy of American law; the relation between law and social change; how this relation is shaped by capitalism and democracy; and how class, race, and gender are expressed in welfare and regulatory law. (Also offered as Sociology 122. Students cannot receive credit for both courses.) H. Fukurai

173. Law, Crime, and Social Justice. S
Blends the latest research in criminology with that from social stratification, inequality, and social welfare policy with the objective of exploring the relationship between levels of general social justice and specific patterns of crime and punishment. The focus is primarily on the U.S. although many other industrialized democracies are compared. An introductory course in sociology is recommended as preparation. (Also offered as Sociology 123. Students cannot receive credit for both courses.) The Staff

174. International Law. W
Origins and development of international law: international law is examined both as a reflection of the present world order and as a basis for transformation. Topics include jurisdiction and sovereignty, treaties, use of force, commercial law, and human rights (also offered as Politics 173. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority enrollment period. The Staff

180. Power, Politics, and Protest. *
Examines the many ways in which organized groups engage in political protest against those whom they understand to dominate them. Course first establishes the framework for the discussion of power, politics and protest and then examines a variety of forms taken by political protest worldwide. T. Pandey

183. Women in the Economy. *
Study of gender roles in economic life, past and present. Topics include occupational structure, human capital acquisition, income distribution, poverty, and wage differentials. The role of government in addressing economic gender differentials is examined. (Also offered as Economics 183. Students cannot receive credit for both courses.) Prerequisite(s): satisfaction of Subject A and Composition requirements. Enroll ment restricted to senior legal studies majors. (General Education Codes: W.) The Staff

199. Tutorial, F,W,S
A student normally approaches a faculty member and proposes a course 199 on a subject he or she has chosen. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits), F,W,S
A student normally approaches a faculty member and proposes a course 199 on a subject he or she has chosen. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Additional Courses of Interest
Check the Schedule of Classes for 2003-04 course offerings and the Legal Studies synoptic schedule available outside of M Gerrill.

Linguistics
239 & 241 Stevenson College
(831) 459-2905
(831) 459-4988
http://ling.ucsc.edu

Faculty and Professional Interests

Professor
JUDITH AISSEN
Syntax, Mayan languages
SANDRA CHUNG
Syntax, semantics, Austronesian languages
DONKA FARKAS
Semantics, morphology, syntax, Romance languages, Hungarian
JORGE HANKAMER
Syntax, semantics, morphology, computational linguistics, Turkish

JUNKO ITO
Phonology, morphology, Scandinavian languages, Japanese
WILLIAM A. LADUSAW
Semantics, syntax, pragmatics
JAMES MCCLOSKEY
Syntax, semantics, sociolinguistics, Irish
R. ARMIN MEISTER
Phonology, prosodic morphology, German, Japanese
JAYE PADGETT
Phonology, phonetics, Russian, Slavic
GEORGE K. PULLUM
Syntax, English grammar, mathematical and computational linguistics, philosophy of linguistics
WILLIAM F. SHIPLEY, Emeritus

Program Description
Among the humanities, linguistics is an unusually exact and structured discipline. As the study of human language, it has connections to many other fields in the humanities (philosophy, literature), the social sciences (psychology, anthropology, sociology), and the natural sciences (neurobiology, acoustics, computer science). The central areas of linguistics proper investigate the knowledge that speakers of a language acquire about its structure. Syntax is concerned with the rules used to combine words into larger units of phrases and sentences. Semantics studies the meanings of linguistic units and how they are combined to form the meanings of sentences. Phonetics deals with the sounds of languages. Phonology investigates the ways in which these speech sounds pattern in the sound systems of particular languages. Morphology studies the way in which words are put together out of prefixes, roots and suffixes. All faculty in the nationally recognized Linguistics Department have primary research and teaching interests in one or more of these areas. Other perspectives on language study represented include sociolinguistics, psycholinguistics, the study of poetic language, and the study of language change.

The programs offered by the Linguistics Department are designed to acquaint students with the central aspects of linguistic structure and the methodologies and perspectives of the field. The department offers two undergraduate majors, linguistics and language studies, and a graduate program in theoretical linguistics. The linguistics major leads to a B.A. degree in linguistics; the language studies major leads to a B.A. degree in language studies (see Language Studies, page 275). The graduate program leads to the M.A. and Ph.D. degrees in linguistics.

Requirements for the Major
All students are required to complete the following 12 courses in linguistics and related disciplines.

Three lower-division courses: Introduction to Linguistics, introductory syntax, and introductory semantics.

Five upper-division courses: introductory phonology, intermediate phonology, intermediate syntax, intermediate semantics, and language change.

Four additional upper-division elective courses in linguistics or related disciplines. Course 80C, 80D, or 80V may be substituted for one of these upper-division courses.

Students may petition the department to have elective courses offered through other institutions or other UC programs applied toward the major requirements. Such
Courses

Courses numbered 80 are lower-division topical courses. They treat the phenomenon of language from a variety of perspectives:

- **80C**: An exploration of ways in which language structure and use reflect societal distinctions and cultural practice.
- **80D**: A critical examination of the view of human language underpinning the research program initiated by Noam Chomsky and of its implications for theories of the human mind and brain.
- **80G**: An introduction to computing, the Internet, and the World Wide Web through the language of the Unix operating system.
- **80V**: A systematic study of the elements of English.

These courses have no prerequisites and are intended to serve both as general education courses and as introductions to the concepts of linguistics through their relation to another area of general interest.

Concentrations within the Major

The major provides a strong background in the central subdisciplines of linguistics. Students who wish to pursue linguistic theory further are encouraged to take other upper-division linguistics courses and seek permission to enroll in the graduate sequences in phonology, syntax, or semantics.

Students may wish to take elective courses in other subdisciplines of linguistics. Psycholinguistics focuses on the psychological mechanisms of language. Computational linguistics focuses on computational approaches to linguistic analysis and the linguistic analysis of computer languages. Applied linguistics focuses on bilingualism, second-language acquisition, and translation.

Students who wish to pursue these subdisciplines should consult the Department of Linguistics for lists of elective courses in these areas. It is also possible to focus on the grammar of one or more languages by taking the structure course in linguistics (180 series) and related courses in other disciplines. Linguistics majors with a language focus are also encouraged to consider academic study at foreign universities through the UCSC Education Abroad Program. Students preparing for careers in teaching should contact the Education Department Office, 212 Crown College, (831) 459-2031, for information on the requirements for a California teaching credential.

Requirements for the Minor

To graduate with a minor in linguistics, students must complete eight linguistics courses. There is no comprehensive requirement for the minor.

- Three lower-division courses: Introduction to Linguistics, syntax, and semantics.
- Five upper-division courses: phonology and four upper-division electives.

Graduate Program

The graduate program in linguistics at UCSC is a small, focused five-year program in linguistic theory leading to the degree of doctor of philosophy. The research interests of faculty and students draw on the framework of generative grammar, with a primary focus on theoretical syntax, semantics, and phonology. Research and course strengths also include the structure of various languages, morphological processes, natural language processing, and the philosophy of linguistics. The department admits approximately five new students to the doctoral program each year; more enter to receive a master’s degree associated with the doctoral program. The master’s degree can be completed in one or two years, depending on previous background in linguistics.

While committed to training in theoretical depth, the program makes possible an unusual breadth of theoretical understanding. Research in syntax focuses on ways in which generative theory and language-particular analysis inform one another. Faculty expertise covers a range of current theories: principles and parameters theory, other versions of the extended standard theory, phrase structure grammar, optimality syntax, relational grammar, and a range of particular languages (Turkish, Tzotzil, Irish, and Chamorro). Work in phonology covers most aspects of current phonological theory. It ranges from prosodic morphology and metrical theory to feature theory, lexical phonology, and optimality theory, encompassing the interface with other parts of grammar (morphology, syntax, and phonetics). Research in semantics applies formal, model-theoretic techniques to illuminate the interface between syntactic structure and interpretation and the role of semantic competence in the pragmatics of utterance interpretation.

Undergraduate Preparation

Applications are invited from students who have completed an undergraduate linguistics major or who have demonstrated excellence in some related discipline (psychology, mathematics, computer science, anthropology) and have the equivalent of a minor in linguistics. A student applying for admission to this program should, in any case, have a good foundation in at least one of the central fields of linguistic structure (phonology, morphology, syntax, semantics). Students entering the program with a deficiency in one or more areas will make up the deficiency by taking appropriate undergraduate courses at UCSC during the first year of graduate study.

Requirements for the M.A.

Courses. A minimum of 45 credits of graduate-level work. This must include the core courses in phonology, syntax, and semantics. Electives are chosen from upper-division or graduate courses offered by linguistics and related disciplines, in addition to independent study with linguistics faculty.

Languages. Reading competence in one foreign language, to be demonstrated by examination.

Research paper. Submission of a research paper in a core area of theoretical linguistics and approval of a committee of two faculty.
Requirements for the Ph.D.

Courses: A minimum of 60 credits of graduate-level work. This includes foundation sequences in phonology, syntax, and semantics, and a course in mathematical foundations.

Languages: Reading competence in one foreign language, to be demonstrated by examination. Qualifying papers and examination. By the end of the third year, two research papers, one in phonology/semantics and one in syntax/semantics, are to be presented as part of the requirements for admission to candidacy. At this time, the prospective candidate is examined by the faculty on topics related to the student's major area of research.

Dissertation: The final requirement for the Ph.D. degree is the presentation of a dissertation representing a significant contribution in some central area of linguistic research.

Application and Admission

To apply, please consult our web site:
http://ling.ucsd.edu/graduate/index.html

Lower-Division Courses

20. Introduction to Linguistics. F,W,S

An introduction to the major areas, problems, and techniques of modern linguistics. (General Education Code(s): IH.) The Staff

51. Phonetics.

Practical training in hearing and recording sounds in a wide range of phonetic systems. Demonstrations and practice in phonetic analysis and description. Study in the techniques of using an informant. (General Education Code(s): IH.) The Staff

52. Syntax I. F,W

An introduction to transformational syntax and syntactic investigation, developed through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code(s): IH, W.) J. Hankamer, J. McCloskey

53. Semantics I. W

Introduction to the logical foundations of natural language semantics. Logical and semantic relations, simple set theory, logical representations (propositional and predicate calculus), modal and tense logics, and their interpretations. A basic literacy course in the language of logical representation. (General Education Code(s): IH.) D. Farkas

55. Syntactic Structures. S

Provides a basic introduction to the methods and results of transformational generative grammar. It simultaneously provides an overview of the major syntactic constructions of English. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code(s): IH, W.) J. S. Chung

80B. Modern English Grammar.

Elementary introduction to modern standard English grammar, both formal and informal, both written and spoken. Stress the importance of linguistic evidence in understanding grammatical correctness; offers a demystification and critique of older traditional grammar in the light of recent research. (General Education Code(s): T4-H humanities and Arts.) G. Pullum

80C. Language, Society, and Culture.

The study of language from a sociological perspective. Multilingualism, language change and variation, pidginns and creoles, the origin and diversification of dialects. Will be offered 2003-04. (General Education Code(s): T5-Humanities and Arts or Social Sciences.)

80D. Language and Mind: Chomsky's Program.

A critical overview of the research program initiated by Noam Chomsky and its implications for theories of the human mind and brain. (Also offered as Philosophy 80L. Students cannot receive credit for both courses.) (General Education Code(s): T5-Humanities and Arts or Social Sciences.) The Staff

80G. Introduction to Unix. W

Introduction to computing, the Internet, and the World Wide Web through the language of the Unix operating system. Oriented to the beginner, the course presupposes no previous acquaintance with any particular sort of computer. Covers the basic concepts of text editing and formatting, writing Web pages in basic HTML and promoting a rigorous understanding of Unix commands and shell scripts. Views communication with a computer as a matter of learning a few simple, though powerful languages. (Also offered as Computer Science 80C. Students cannot receive credit for both courses.) (General Education Code(s): T2-Natural Sciences.) G. Pullum

80V. Structure of the English Vocabulary.

A systematic study of the elements of English words; besides the practical goal of vocabulary consolidation and expansion, explores the historical origin and development of word elements, as well as their sound, meaning, and function in the contemporary language. Offered in alternate academic years. (General Education Code(s): T4-Humanities and Arts.) The Staff


Students submit petition to sponsoring agency. T. The Staff

Upper-Division Courses

101. Phonology I. F

Introduction to morphology and phonological theory and analysis. Problems in phonetic, phonemic, and morphophonemic variation, phonological rules and rule systems. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 20 or 51. (General Education Code(s): W.) J. Padgett

102. Phonology II. W

Introduction to nonlinear phonology. Topics include issues in autosegmental and metrical theory, syllable structure, stress, tone, and harmony processes. Prerequisite(s): course 101. T. The Staff

105. Morphology.

Study of the principles of word formation. Derivation, inflection, and compounding. Cross-linguistic study of morphological processes, morphological investigation and analysis. Prerequisite(s): course 20. Offered in alternate academic years. T. The Staff

108. Poetry and Language.

An introduction to the linguistic aspects of poetry, e.g., rhyme, meter, and larger-scale organization of poetic form. The emphasis is on English poetry, complemented by brief sketches of other poetic traditions. Students taking this course should have some basic knowledge of language structure (e.g., provided by course 20). Offered in alternate academic years. T. The Staff

113. Syntax II. W

Further aspects of English syntax; universal and language-particular constraints on syntactic structures and rules. Further developments and extensions of transformational theory. Prerequisite(s): satisfaction of the Subject A and Composition requirements, course 52. (General Education Code(s): W.) J. Alsen

116. Semantics II. S

Major issues in natural language semantics: nature of lexical entries, thematic relations, propositional representation or "logical form"; relation between semantic interpretation and syntactic representations, quantification and scope relations, reference and presupposition, coreference and anaphoric relations. Prerequisite(s): course 53, and either course 52 or 55. T. The Staff

117. Pragmatics.

Covers topics central in the study of pragmatics, the interpretation of language use. Topics include conversational implicature, speech acts and discourse understanding, and social deixis. Offered in alternate academic years. T. The Staff

120. Structure of English. F

A survey of the grammatical structure of English and the terminological grammar of speech. Covers the phonological, morphological, and syntactic structure of English and contrasts it with other languages. Prerequisite(s): course 20, 52, or 55. T. The Staff

123. Philosophy of Language. S

Current theories of the nature and preconditions of language, the nature of meaning, and the nature of truth. (Also offered as Philosophy 123. Students cannot receive credit for both courses.) (General Education Code(s): T4-Humanities and Arts or Social Sciences.)

140. Language Change. S

Methods and problems in the study of change in linguistic systems. Reconstruction of proto-languages, the comparative method. Theories of change and implications for the theory of grammar. Prerequisite(s): course 20. R. Mester

160. Language Engineering.

Addresses a particular problem in language engineering, chosen for its practical and theoretical interest and its tractability. The entire course focuses on a team project to design a solution to the problem. T. The Staff

181. Structure of Romance Languages. W

Examines the phonological and syntactic structures of Romance languages. Some knowledge of either Italian, French, or Spanish is also required. Prerequisite(s): courses 52 or 55 and 20. T. The Staff

186. Structure of German.

Phonological, morphological, and syntactic aspects of the structure of the German language. Prerequisite(s): course 20. T. The Staff

187. Structure of Japanese. W

The phonology, morphology, and syntax of Japanese. Prerequisite(s): course 20. Offered in alternate academic years. J. Ito

190. Senior Research. S

Provides opportunity and guidance in developing independent and group research projects in linguistics and language studies. J. Ito

193. Field Study. F,W,S

Students submit petition to sponsoring agency. T. The Staff
221. Syntax A. F
Introduction to syntactic theory. Phrase structure, categorization; lexical entries; passive, infinitival constructions. Enrollment restricted to graduate standing or consent of instructor. J. Aissen

222. Syntax B. W
Continuation of Syntax A. The syntax of unbounded dependencies, including constituent questions, relative clauses, clefts, topicalization. Constraints on extraction; unbounded versus successive cyclic movement; the licensing of gaps. Prerequisite(s): course 221. Enrollment restricted to graduate standing or consent of instructor. The Staff

223. Syntax C. S
Continuation of Syntax B. The syntax of anaphora. Topics vary from year to year, and may include the following: conference in antecedent-pronoun relations; reflexives and reciprocals; disjoint reference; bound-variable anaphora; elliptics; semantic and pragmatic constraints on anaphora. Prerequisite(s): course 222. Enrollment restricted to graduate standing or consent of instructor. The Staff

226. Proseminar in Syntax. S
In-depth investigation of some topic in syntactic theory. Topics vary from year to year, covering literature and current research in grammatical structure from varying theoretical perspectives. Prerequisite(s): course 222. Enrollment restricted to graduate standing or consent of instructor. J. Hanks

231. Semantics A. F
Introduction to linguistic semantics. Nature of lexical entries; thematic relations; representation of logical form; relation between semantic interpretation and syntactic representation, quantification and scope relations, reference and presupposition. Enrollment restricted to graduate standing or consent of instructor. D. Farkas

232. Semantics B. W
Model-theoretic semantics for natural language. Truth-conditional, compositional semantics. Various logical ontologies and their application to natural language categories. Dynamic interpretation of discourse and anaphoric relations. Treatment of illocutionary force. Prerequisite(s): course 231. Enrollment restricted to graduate standing or consent of instructor. The Staff

239. Semantics Seminar. F
Advanced topics in semantics drawn from the current research interests of the instructor. Prerequisite(s): course 232. Enrollment restricted to graduate standing or consent of instructor. M ay be repeated for credit. W. Ladusaw

240. The Pedagogy of Linguistics (1 credit).
W, S
Provides training for graduate students in university-level pedagogy in general and in the pedagogy of linguistics specifically. Under the supervision of a faculty member, coordinated by a graduate student with substantial experience as a teaching assistant. M ay be repeated for credit. The Staff

A survey of the basic mathematical notions fundamental to the understanding of work in theoretical syntax, semantics, and phonology. Topics covered include basic set theory, formal logic, boolean algebra, graph theory, and formal language theory. Enrollment restricted to graduate standing or consent of instructor. G. Pullum

290. Research Seminar. W
A research seminar for undergraduate and graduate students to develop the skills of the profession. Critical reading, reviewing, teaching, presentation, and writing. Students submit petition to sponsoring agency. Enrollment restricted to graduate standing or consent of instructor. Enrollment limited to 10. R. Mester

295. Directed Reading. F, W, S
Directed reading which does not involve a term paper. Enrollment restricted to graduate standing or consent of instructor. The Staff

296. Linguistics Colloquium (2 credits). F, W, S
Independent graduate-level activities and assignments relating to development of familiarity with professional activities in academic linguistics organizing and attending colloquia and conferences, both on- and off-campus; participation in discussions at such events; and prepare commentaries on academic papers and other papers. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. D. Farkas

297. Independent Study. F, W, S
Enrollment restricted to graduate standing or consent of instructor. The Staff

The Staff

Literature

Kresge College
(831) 459-4778
http://humwww.ucsc.edu/Lit/index.html

Faculty and Professional Interests

Professor

JORGE ALADRO FONT
Spanish mysticism, theory and historical developments of imagery in the Middle Ages to the baroque period, Renaissance and baroque Hispanic literature; Italian ideas in the Spanish Renaissance; Cervantes

GEORGE T. AMIS, Emeritus

MURRAY BAUMGARTEN
Dickens Victorian literature and culture, the Bible, translation, modern Jewish writing, the Holocaust

HARRY BERGER JR., Emeritus

GABRIEL BERNH, Emeritus

MARGARET R. BROSE
Italian literature, 19th- and 20th-century poetry and poetics, the novel, Romanticism, medieval literature, gender studies, autobiography

JULIANNE BURTON-CARVALHO
Twentieth- and 21st-century Latin@ American visual media, particularly film; melodrama as a transnational form; gender and authorship; history cultures, and representations of California, particularly the central coast
Robert M. Durling, Emeritus
John M. Ellis, Emeritus
Carla Freccero
Renaissance studies, French and Italian language and literature, early modern European history and literature, postcolonial theory and literature, contemporary feminist theory and politics, queer theory, pre- and early modern studies, contemporary fiction by women of color in the U.S., identity politics and cultural formations

Pascale Gaitet
Nineteenth- and 20th-century French literature, sociolinguistics, political history, Celine, Genet

Mary Kay Gamel
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

Susan Gillman
Nineteenth-century American literature and culture; theories of culture, race, and gender; world literature and cultural studies

Wlad Godzich
Theory of literature, emergent literature, globalization and culture, European integration

James B. Hall, Emeritus
John O. Jordan
Dickensian Victorian literature and culture, the English novel, literature of South America, narrative theory

Norma Klahn
Latin American literary and cultural studies (specialization: Mesoamerica, Chicano/a, Latino/a literature and culture from a cross-border perspective, popular culture and the novel, poetic and political fiction and history of nation and nation-building, cultural and feminist theories

H. M. Leicestcr Jr.
Psychoanalysis, poststructuralism, gender theories, theory of cultural change, cultural studies and popular culture; opera, film, American country music

John P. Lynch
Greek and Latin literature, Plato and Aristotle, Lucretius, Virgil, and Petronius, ancient education

Nathaniel E. Mackey
Twentieth-century American literature, Afro-American literature, creative writing

Helene Moglen
The English novel, feminist, cultural, and psychoanalytic theory

Madeline Moore, Emerita
Marla Morello-Frosch, Emerita

Priscilla W. Shaw, Emerita

Paul N. Skrenaz
Contemporary U.S. fiction, popular culture (especially detective fiction), practical criticism and reviews, oral history, the teaching of literature, American writers abroad, journalism

Greta Soblin, Emerita
S. Page Stegner, Emeritus

Richard Terdiman
Nineteenth- and 20th-century French and European literature, literary history, and cultural theory, contemporary critical theory, cultural globalization

Thomas A. Vogler, Emeritus
Michael J. Warren, Emeritus

Rob Wilson
Transnational and postcolonial literatures, especially as located in Asia/Pacific empires as posed against American empire of globalization; cultural politics of America; the sublime, Longinus to Hirschman; mongrel politics of experimental writing, especially poetry

Associate Professor
Karen Bassi
Greek and Latin literature, Greek drama, Hellenistic poetry, feminist interpretation, literary and cultural theory, pre- and early modern studies

Louis Chude-Siked
Modern and contemporary African American literature, Caribbean and West African literatures, post-colonial literature and theory, modernism, black diaspora, cultural studies, popular culture

Christopher Connery
World literature and cultural studies, globalization and geographical thought, the 1960s, Marxism, pre-modern and modern Chinese cultural studies, cultural revolution

Jody Greene
Seventeenth- and 18th-century British and French literature and culture, pre- and early modern studies, early modern colonialism, gay and lesbian cultural studies, gender studies, history of authorship, history of the book

Kirsten Silva Gruesz
Comparative Americas studies, Chicano/a literature, and cultures, 19th-century U.S. literature, poetry and translation, gene theory

Margo Hendrickx
Early modern English literature and culture; theories and discourses of race, gender, drama, and theory; women playwrights pre- and early modern studies

Earl Jackson Jr.

Sharon Kinosita
Intercultural relations in 12th- and 13th-century literature, Mediterranean studies, globalization, postcolonial theory, world literature and cultural studies

Lourdes Martinez-Echazabal
Latin American and Caribbean literatures, Afro-Latin American literatures, cultures, and societies: foundational narratives, Brazilian literature, literatures of Cuba and the Cuban diaspora, critical race theory

Tyris Miller
Modernist avant-garde, and postmodern literature; the interrelations of the arts in the 20th century; aesthetic, cinematic and film theory, the Frankfurt School; philosophy and social theory; contemporary poetry and language arts

Loisa Nygaard
Eighteenth- and 19th-century German literature, German romanticism, European and American romantic fiction, Goethe

Micah E. Perkins
Reading and writing contemporary fiction, memoir, historical fiction; gender, literature, and culture; alternative communities

Juan Poblete
Latin/o American literatures, transnational/global cultures, literature, radio, film; Latin/o American cultural studies, 19th-century studies, the history of reading practices

Daniel Selden
Afroasiatic languages and literatures, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

Dena SHEMEK
Italian literature and cultural history, Renaissance studies, early modern popular culture, narrative (early modern to contemporary), women's studies, literary theory

Karen Tei Yamashita
History and anthropology of Japanese immigration to Brazil, Asian American literature, modern fiction, playwriting

Assistant Professor
Vilashini Cooppan
Postcolonial studies, comparative and world literature, literatures of slavery and diaspora, globalization studies, cultural theory of race and ethnicity

Lecturer
George P. Hitchcock, Emeritus

Professor
Michael H. Cowan (American Studies)
American cultural theory and history, history of American studies, symbolic expression in American life, cultural studies, American literary studies, studies in the institutional history of cultural study

Teresade Lauretis (History of Consciousness)
Semiotics, psychoanalysis, feminism, film theory, literary theory, and queer studies

Charles W. Hedrick Jr. (History)
Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

Akasha Hull, Emerita

Gary B. Miles, Emeritus

Forrest G. Robinson (American Studies)
American literature and culture, the American novel (Twain, Melville, Faulkner), regional literature, California studies, popular culture, and American cultural theory

David Swanger (Education and Creative Writing)
Aesthetic education, educational philosophy, creative writing, poetry, politics, literary theory

Lecturer
Charles Atkinson (Creative Writing/Poetry)
Director, Learning Assistance Program in Writing, creative writing, poetry

Roswell Stafford (Writing)
Journalism, media criticism, fiction, poetry, service learning, educational partnerships, community studies

Program Description
The study of literature at UC Santa Cruz is organized as an interdisciplinary field coordinated through a single Department of Literature, rather than through separate departments of English, French, Spanish, and so forth. This structure fosters innovative and comparative approaches to literature among both faculty and students. Courses in the major encompass traditional literary history and interpretation as well as cross-cultural inquiry and current theoretical debates. The literature major does permit focused work in national literary traditions. Students may concentrate in English-language literature, in French, German, or
Letter Grade Requirement

Letter grades are required for 75 percent of courses applied toward the literature majors, including the Senior Seminar, which must be taken for a letter grade.

Literature Major Options

Students wishing to major in literature may choose either the standard literature major or the intensive literature major. The intensive literature major is recommended particularly for students who plan to continue their studies in graduate school. The requirements for the intensive major include the study of literature in two languages, proficiency in a second language, and understanding of any literature and of language arts in general. Graduate programs in literature and other humanities disciplines generally require competence in another language besides English.

The Standard Literature Major

The standard literature major requires 12 upper-division courses. Of these, at least two must focus on Western literature or literature in a global perspective. Students are encouraged to take courses across chronological periods and national boundaries.

Lower-Division Courses

Lower-division courses are designed as introductions to critical reading and writing. Students should complete their lower-division course work before entering upper-division work.

Three lower-division courses are required:

- Literature 1, Literary Interpretation: close reading and analysis of literary texts
- one Literature 61-series course: categories, methodologies, and problems of literary study
- one Literature 80-series course: topical, thematic, and comparative study of literary texts

National/Transnational Literatures

These concentrations examine literature within the frameworks of particular languages or national and regional traditions. For all concentrations, except national/transnational literatures, texts may be read either in the original or in translation. National/transnational concentrations require that text be read in the original language.

- English-Language Literatures
  The study of American and British literatures, as well as literatures of other English-speaking peoples around the world.
- French literature
  The study of French and Francophone literatures, languages, and cultural practices of France, Africa, and the Caribbean.
- German literature
  The study of the literature, language, and cultural practices of German-speaking areas of central Europe including Germany, Austria, and Switzerland.
- Greek and Latin literatures
  The study of the literature, languages, and cultural practices of ancient Greece and Rome. Students may choose to concentrate in Greek or Latin.
- Italian literature
  The study of Italian literature, language, and cultural practices from the Middle Ages to the present.
- Spanish/Latin American/Latino literatures
  The study of literatures, languages, and cultural practices of Spain, Latin America, and Latino populations in the United States.

Creative Writing

The Department of Literature offers a sequence of workshops in creative writing, from beginning through advanced levels, in both poetry and fiction. Other activities available to interested students include participation in the production of literary journals on campus, attendance at readings by visiting writers, and use of a creative writing reading room.

Admission to this concentration is selective. Interested students are required to take one lower-division workshop at U.C. Santa Cruz before applying to the creative writing concentration.

Students accepted into the concentration must complete three advanced writing workshops and a senior project (e.g., a group of stories, a significant portion of a novel, a collection of poems). To apply for admission to the creative writing concentration, students should submit a completed application form (available in the Literature Department Office). The department will consider a thoughtful selection from their work (8-10 pages of poetry or 10-20 pages of fiction, comprising at least two stories). Once accepted into the concentration, students are required to declare (or redclare) the major in literature. At that time, students should meet with their advisor to discuss plans for a senior project.

Pre- and Early Modern Studies

The interdisciplinary study of literatures and cultures from antiquity through the early eighteenth century, especially in Europe. This concentration includes the study of popular culture and everyday life as well as readings in masterpieces of classical, medieval, early modern (Renaissance), and neo-classical literature.
Modern Literary Studies
The study of literature of the eighteenth, nineteenth, twentieth, and twenty-first centuries. This concentration examines ways in which modernity in general and literary modernism and postmodernism in particular emerge and develop in different countries and cultures.

World Literature and Cultural Studies
The study of literature and cultural production both within a global context and within specific histories and economies. Courses move beyond the literary text to include nonverbal forms of representation such as social movements and everyday life practices.

Comprehensive Requirement
Seniors may select one of the following options to satisfy the campus exit requirement:

- Senior seminar. The senior seminar may be counted as one of the required upper-division courses. The senior seminar need not be in the students' area of concentration. Several senior seminars are offered each quarter, extensive writing is required in all seminars.

- Senior thesis. A student who wishes to propose a senior thesis (30-40 pages) must apply to a Literature Department faculty sponsor at least two quarters before the projected date of graduation. The application must include a proposed subject, a brief outline, a bibliography, and a sample of previous written work. Only those students who have received written permission from a faculty supervisor may complete a thesis to satisfy the senior exit requirement. A student whose application has been approved may receive course credit toward the major for one independent study (course 195) in a literature concentration.

For students in the creative writing concentration, a creative writing project under the supervision of a faculty member in the Literature Department is required. Students must successfully complete Literature 101 before taking any comprehensive requirement.

General Information
Creative writing courses. Any qualified student may take creative writing courses for credit toward graduation. Only students accepted into the creative writing concentration, however, may use Literature/Creative Writing 180, 183, 191, 194, and 195 to satisfy major requirements.

Declaring the major. Students declare a major in literature by completing and submitting a Proposed Study Plan and Declaration of Major/Minor petition. All students considering a literature major should consult with staff and/or faculty advisers as early as possible and declare the major before the end of their sophomore year. Transfer students are urged to declare the major in the first quarter at UCSC. Students must complete Literature 1 or its equivalent prior to declaring the major.

Double major. A student studying literature as part of a double major must fulfill all of the requirements for any concentration in the literature major in addition to all of the requirements in the other major field. No course may be counted toward both majors.

The literature minor. The minor in literature comprises eight courses:

- three lower-division required courses (including Literature 1 or its equivalent; see major requirements above);
ies, and/or American studies. Applications and requirements for obtaining these notations are available at the respective program and department offices.

The Master's Program
A separate master of arts degree program in literature is intended for students whose aim is to deepen and expand their literary/critical training and to proceed to a Ph.D. program at another institution. Priority for admission is given to students interested in underrepresented areas of study within the Literature Department's offerings, such as the non-English language literatures and, more broadly, critical theory.

The M.A. program requires students to complete the equivalent of nine seminars of graduate-level study in literature, including a written capstone requirement, the master's thesis. Requirements may not be completed in less than one year; the maximum time to obtain a degree is two years.

The common requirements are as follows:
- a one-quarter pro-seminar, Literature 200, to be taken in the first year;
- seven courses leading to the definition of an area of concentration. Up to two courses may be from the offerings of other departments, and one may be an independent study course;

The Literature Department does not normally provide financial support to students pursuing the M.A. degree; some teaching assistantships do become available. Admission to the M.A. program does not constitute admission to the Ph.D. program, and students may not automatically transfer into the Ph.D. program from the M.A. program; they must reapply. Further information and application materials are available from the Division of Graduate Studies. http://graddiv.ucsc.edu

Literature

1. Literary Interpretation, F,W,S

Close reading and analysis of literary texts, including representative examples of several different genres and periods. An introduction to practical criticism required of all literature majors; should be completed prior to upper-division work in literature. Prerequisite: satisfaction of the Subject A and Composition requirements. (General Education Code(s): IH, W) S.Gillman, J. Poblete V. Cooper

42. Student-Directed Seminar, F,W,S

Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

61. Introduction to Literary Genres, F

61B. Introduction to Detective Fictions. * A critical overview of detective fiction (and selected films) from Arthur Conan Doyle to contemporary and postmodern reappropriations. Lectures provide historical background and introduction to genre theory, psychoanalysis, and cultural critique. (Formerly Literature 640D.) (General Education Code(s): IH, J) E. Jackson

61D. Introduction to Reading Drama. * Introduction to the Western theatrical tradition through the study of dramatic form in social context. (General Education Code(s): IH, J.) K. Bashe

61E. Introduction to Ethnic Literature, W

An introduction to the study of ethnic literatures, addressing issues of voice, political agency, and the construction of subjectivity across racial, ethnic, and cultural boundaries in the U.S. (General Education Code(s): IH, E) L. D'etar

61F. Introduction to Reading Fiction. S

Close reading of short stories and some novels with the aim of developing critical methods for the analysis and interpretation of prose fiction. Topics include character, plot, narrative structure, and the poetics of prose. (General Education Code(s): IH, J.) T. Walsh

61M. Approaches to Classical Myth, F

Introduction to Greek myths, including selected ancient texts and visual artifacts, historical and cultural context of their creation and reception, modern theoretical approaches such as structuralism and psychoanalysis, and analysis of famous works in various media. Also offered as History 21. Students cannot receive credit for both courses. (General Education Code(s): IH, J.) M. Gamel

80. Topics in Literature.

801. Topics in American Popular Culture, F

History of one or more popular cultural genres in written, visual, and/or musical forms and their relation to ongoing public debates. Topics: popular music and popular history. (General Education Code(s): T4-Humanities and Arts.) L. Chude Sokoh

80L. The Holocaust: The Destruction of European Jewry, W

Focus is on the destruction of the Jews of Europe by Nazi Germany. Issues are historically grounded and include works of literature, social sciences, philosophy, and film. Also offered as History 80W. Students cannot receive credit for both courses. (General Education Code(s): T4-Humanities and Arts.) E. P. Kenes, M. Baumgarten

80M. Romantic Fiction. *

A study of novels, short stories, and fairy tales by authors from America, England, France, and Germany. Readings include works by Poe, Hawthorne, Mary Shelley, Goethe, Hoffman, Rousseau, and M. de S. (General Education Code(s): T4-Humanities and Arts.) L. Nygaard

80Z. Introduction to Shakespeare, S

Study of representative plays. No previous experience with Shakespeare is assumed. (General Education Code(s): T4-Humanities and Arts.) W. Jones

99. Tutorial, F,W,S

The Staff

99F. Tutorial (2 credits), F,W,S

Students submit petition to sponsoring agency. The Staff

101. Theory and Interpretation, F,W,S

Contemporary approaches to literary and cultural theory, with emphasis on how theoretical perspectives advance and broaden the reading of literary texts. Introduction to important new theoretical developments and their antecedents. Literature majors should complete this course as early as possible. Topics for 2004–05: (F) textuality and embodiment; (W) authorship; (S) twentieth-century literary theory from Russian formalism through postcolonial criticism. Prerequisite: satisfaction of the Subject A and Composition requirements. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 200. May be repeated for credit. (General Education Code(s): W, J.) H. Leitercer, J., J. Greene, D. Selden

199F. Tutorial (2 credits), F,W,S

Students submit petition to sponsoring agency. The Staff

Creative Writing

10. Introduction to Creative Writing, F,W,S

Introduction to the crafts and techniques of poetry, fiction, and creative non-fiction, identifying and exploring traditional and non-traditional literary forms and genres while working on individual creative writing projects. Two lectures/author readings and two workshop sections per week. Enrollment restricted to first-year students, sophomores, and juniors. May be repeated for credit. (General Education Code(s): A) F: M. Perks, (W: K.) Yamashita

52. Intermediate Fiction Writing, F,W,S

An intermediate-level course in fiction designed for prospective creative writing majors. Prerequisite: submission of writing at first class meeting. May be repeated for credit. (General Education Code(s): A) F: The Staff, (W: C) Atkinson

53. Intermediate Poetry Writing, F,W,S

An intermediate-level course in poetry designed for prospective creative writing majors. Prerequisite: submission of writing at first class meeting. May be repeated for credit. (General Education Code(s): A) F: The Staff, (W: C) Atkinson

91. Methodologies in Creative Writing Instruction. *

Training, curricular development, material presentation, and planning for students who will participate in course 193. Creative Writing in the Schools. A course in which UCSC students teach creative writing workshops in local schools during the spring quarter. Admission by permission of instructor: contact instructor (atkinson@ucsc.edu) during fall quarter. May be repeated for credit. C. Atkinson

99F. Tutorial (2 credits), F,W,S

Students submit petition to sponsoring agency. The Staff

170. Methods and Materials. S

Focuses each year on a particular process or subject used in the production of a literary text. Course is intended to work as a bridge between invention and scholarship. Topic: (S) the serial poem. Satisfies the Creative Writing Literature concentration. Enrollment restricted to creative writing literature majors. May be repeated for credit. (General Education Code(s): A) S. M. Ackley

180. Advanced Writing: Fiction, F,W

Intensive work in writing fiction. Satisfies the Creative Writing Literature concentration. Enrollment restricted to creative writing literature majors or permission of instructor. May be repeated for credit. (General Education Code(s): A) F: M. Perks, K. Yamashita

183. Advanced Writing: Poetry, F,W,S

Intensive work in writing poetry. Satisfies the Creative Writing Literature concentration. Enrollment restricted to creative writing literature majors or permission of instructor. May be repeated for credit. (General Education Code(s): A) (F) D. Swanger, (WS) C. Atkinson

191. Methodologies in Creative Writing Instruction. *

Training, curricular development, material presentation, and planning for students who will participate in course 193, Creative Writing in the Schools. A course in which UCSC students teach creative writing workshops in local
schools during the spring quarter. Satisfies the Creative Writing Literature concentration. Admission by permission of instructor. C. Atkinson

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) T The Staff

193. Creative Writing in the Schools. *
Introduction to the teaching of creative writing. Designed to enhance students' communication skills and to give them new perspectives on their own and others' writing. Involves practical experience in leading creative writing workshops in area high schools. Prerequisite(s): students are carefully selected by instructors based on academic ability, writing skills, and ability to work with a diverse student population. Enrollment restricted to creative writing majors. May be repeated for credit. C. Atkinson

194. Creative Project Seminar.
Seminar for students beginning work on their creative writing senior project. Led by a faculty member, the seminar helps each student to complete the project. Attention is given to focusing of creative topics, review of work in progress, work rhythms, and revision. T The Staff

194A. Poetry, S
Satisfies the Creative Writing Literature concentration. Prerequisite(s): Literature 101. Enrollment restricted to senior creative writing literature majors. D. Swanger

194B. Fiction, S
Satisfies the Creative Writing Literature concentration. Prerequisite(s): Literature 101. Enrollment restricted to senior creative writing literature majors. K. Yamashita

195. Senior Essay, F,W,S
Prerequisite(s): Literature 101. Students submit petition to sponsoring agency. T The Staff

197. Independent Field Study, F,W,S
Students submit petition to sponsoring agency. M may be repeated for credit. T The Staff

198. Group Tutorial, F,W,S
Students submit petition to sponsoring agency. M may be repeated for credit. T The Staff

199. Tutorial, F,W,S
M may be repeated for credit. T The Staff

199F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. T The Staff

Literature 295

English-Language Literatures

102. Canons.
102A. The Traditional British Canon, Part I, W
The constitution of the "canon" of English literature from Chaucer to Cowper. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentration, also satisfies the Poetry and Pre- and Early Modern distribution requirements. (Formerly British Literature 104A, Reading the Traditional Canon, Part I.) W. Jones

102B. The Traditional British Canon, Part II, S
Explores poetry and prose from 1800 to 1950 through extensive reading in the Romantics, Victorians, and Moderns. Prerequisite(s): students are carefully selected by instructors based on academic ability, writing skills, and ability to work with a diverse student population. Enrollment restricted to creative writing majors. May be repeated for credit. C. Atkinson

102C. The Traditional U.S. Canon: Beginnings to 1900, *
Major works from the colonial and early national periods to 1900, with attention to their social and cultural context. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 100A, Colonial to Mid-19th Century) T The Staff

102D. The Traditional U.S. Canon, 1900 to the Present, F
Major works from 1900 to the present, with attention to their social and cultural context. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 103D, Mid-Twentieth Century) P. Skazany

103. Periods and Movements.
103A. British Literature and Culture: 1660–1740, *
Literature and society, 1660–1740. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern Studies distribution requirement. (Formerly British Literature 112A, Literature and Culture 1660–1740) T The Staff

103D. English Renaissance Literature, *
Sampling of early modern English prose, verse, and drama. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirements. (Formerly British Literature 103D) M. Hendricks

103E. Introduction to Romanticism, *
A survey of major romantic themes and authors between 1780 and 1820. Explores relationships to pre-romantic and postromantic authors. The main goal is to achieve familiarity with a wide range of individual poems in the general context of romanticism. Satisfies the British, English, and Modern Literature concentrations; also satisfies the Poetry distribution requirement. (Formerly British Literature 115.) H. Leester, Jr.

103J. Contemporary American Literature, W
A selective examination of major writing since WWII, with attention to both literary issues and historical context. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 103C) M. May be repeated for credit. L. Chude-Sokei

110B. The Eighteenth-Century English Novel, F
The eighteenth-century novel from Defoe to Austen. Satisfies the British, English, and Pre- and Early Modern Literature concentrations, also satisfies the Pre- and Early Modern distribution requirement. (Formerly British Literature 109A.) J. Greene

110H. American Autobiography, F
Close examination of autobiographical works by major American writers. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 103D) M. Caballero-Robb

120. Poetry.
120A. Lyric Poetry of the Seventeenth Century, S
Readings in the works of Donne, Jonson, Herbert, Herrick, Marvell, and others. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations, also satisfies the Poetry and Pre- and Early Modern distribution requirements. (Formerly British Literature 105.) W. Jones

120C. Nineteenth-Century American Poetry, S
The major figures and important movements from Poe to Emerson through Whitman and Dickinson. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Poetry distribution requirement. (Formerly American Literature 104A) K. Guees

120E. Modern British Poetry, *
A survey of selected British poets from the late nineteenth century through the present. Satisfies the British, English, and Modern Literature concentrations; also satisfies the Poetry distribution requirement. (Formerly British Literature 115.) T. Miller

120G. Open Field Poetry and Poetics, W
The theory and practice of a number of recent American poets associated with ideas of open form: Amiri Baraka, Robert Creeley, Edward Dorn, Robert Duncan, Robert Kelly, Denise Levertov, Charles Olson, Gary Snyder, and others. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Poetry distribution requirement. (Formerly American Literature 104E) N. M. Mackey

140. Visual Media/Popular Culture.
140B. Violence in Contemporary American Film, S
A survey of recent American feature films in which graphic depiction of physical violence is an important element. Primary emphasis on analysis of formal, textual, and generic elements; some attention is paid to psychological, sociopolitical, and ideological contexts and implications of representing violence. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 105B) M. Gamal

150. Ethnic Writing.
150A. Afro-American Literature, *
Examination of major Afro-American writing of the past 150 years, with attention to the historical, cultural, and general literary context out of which it emerged and upon which it commented. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 102A. Introduction to Afro-American Literature) (General Education Code(s): E.) N. M. Mackey
150B. Chicanx Literature. *  
An intensive examination of contemporary Chicanx autobiography, narrative, poetry, and film. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 102B.) (General Education Code(s): E.) K. Gruesz

155. Regional Writing.  
155B. Regions in American Literature. S  
Examines development of regional writing in the U.S. Topic: Hawai`i. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 140I.) May be repeated for credit. R. Wilson

155D. Studies in South African Literature. W  
A survey of writing from South Africa since 1948, focusing on social and political themes. Authors include Paton, Gordimer, M. phahile, Fugard, N. debele, Head, Brutus, Coetzee, and others. Satisfies the English and M odern and World Literature concentrations; also satisfies the Global distribution requirement. (Formerly Other English Literature 107.) (General Education Code(s): E.J.) Jordan

160. Transnational Writing.  
160A. American Writers Abroad. *  
A study of the importance of the European experience to American writers; emphasis on the 1920s expatriates, especially Gertrude Stein, F. Scott Fitzgerald, and Ernest Hemingway. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 109B.) T. Muller

160E. Caribbean Literature. *  
A study of major writing from the English-speaking Caribbean, with attention to the historical and cultural context out of which it arises and to which it responds. Authors include Edward Kamau Brathwaite, Wilson Harris, George Lamming, Paule Marshall, V. S. Naipaul, Victor Reid, Jean Rhys, and Derek Walcott. Satisfies the English and Modern and World Literature concentrations; also satisfies the Global distribution requirement. (Formerly Other English Literature 105.) (General Education Code(s): E.) M. adkay

170. Individual Authors.  
170A. Geoffrey Chaucer. *  
Close study of Chaucer’s poetry, with some attention to relevant cultural, philosophical, and historical issues in the context of the late medieval period. Particular emphasis on The Canterbury Tales. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Poetry and Pre- and Early Modern distribution requirements. (Formerly British Literature 130A, Introduction to Chaucer.) H. Lecester, Jr.

170C. William Shakespeare. F  
Intensive study of a few plays. Primarily for students already acquainted with Shakespeare. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. (Formerly British Literature 130L, Shakespeare.) May be repeated for credit. W. Jones

170F. Charles Dickens. *  
Study of representative work by Charles Dickens. Satisfies the British, English, and M odern Literary Studies concentrations. (Formerly British Literature 130G.) May be repeated for credit. M. Baumgarten

170M. William Faulkner. *  
A survey of Faulkner’s early fiction; focus on development of theme and technique. Also considers Faulkner as a Southern historian, stressing the relationship between personal and regional experience in time. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 120D. Faulkner.) P. Skenezay

170O. Ernest Hemingway and F. Scott Fitzgerald. *  
A study of the works of Hemingway and Fitzgerald in relation to each other, their times, and the authors’ personal relationship. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 120T.) P. Skenezay

180. Topics.  
180B. The Gothic Imagination in Fiction, Film, and Theory. *  
Explores how the Gothic imagination constructs nightmare visions of bourgeois society, revealing cultural anxieties about the family, sexuality, religion, science, the self, and gender; socioeconomic, and racial identity. Readings include essays by Freud and Lacan and such fiction as The Monk, Frankenstein, Dracula, and Beloved. Films change each year, but may include Allen and Scorsese. Satisfies the American and Modern Literature concentrations. (Formerly Modern Literature Studies 121L.) May be repeated for credit. H. Moglen

180D. Twain, Slavery, and the Literary Imagination. *  
Using Mark Twain’s later writings and other literary/analytic materials, explores responses to popular and legal discourse on “blood,” race, sex, segregation of race, and imperialism. Satisfies the American, English, and Modern Literature concentrations. (Formerly American Literature 180C.) S. Gillman

180H. Women’s Literature. *  
Works by women from the eighteenth century to the present, with special attention to the relationship of literature to history, psychology, and aesthetics. Satisfies the English and Modern Literature concentrations. (Formerly British Literature 140F.) T. Muller

190. Senior Seminars.  
190A. Individual Authors. W  
Intensive examination of works by individual authors. Topic for winter 2005: William Faulkner. Satisfies the English Literature concentration; also satisfies the Senior Seminar distribution requirement. (Previously Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. P. Skenezay

190B. Studies in Early Modern British Literature. *  
Study of selected authors or issues in early modern British literature. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. (Formerly British Literature 195.) (General Education Code(s): E.) T. Miller

190F. Studies in Contemporary U.S. Literature. *  
Intensive examination of issues in U.S. fiction since World War II. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Senior Seminar distribution requirement. (Formerly American Literature 190C.) Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. P. Skenezay

190G. Black Pulp Fiction. 
Investigates the ways black writers in the twentieth century have exploited and transformed genre fiction. Authors include George Schuyler, O' Dwyer Butler, Samuel Delany, St. John Perse, and Walter Richard. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Senior Seminar distribution requirement. (Formerly American Literature 190D.) Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. (General Education Code(s): E.) The Staff

190H. Picturing California: Memoir and Image. F  
Examines California as depicted in word and image by representatives of a broad range of national/cultural traditions. Includes European explorers; Spanish, Mexican, Californio, Yankee, and Chinese settlers; and photograpic pioneers. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Senior Seminar distribution requirement. (Formerly American Literature 190J.) Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. (General Education Code(s): E.) Burston-Carvajal

192. Directed Student Teaching, F, W, S  
Teaching of a lower division seminar under faculty supervision. Students submit petition to sponsoring agency. The Staff

195. Senior Essay, F, W, S  
Students submit petition to sponsoring agency. Prerequisite(s): Literature 101. (Formerly Other English Literatures 195.) T. Miller

197. Independent Field Study, F, W, S  
Student’s supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., correspondence), or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. (Formerly Other English Literatures 197.) The Staff

198. Group Tutorial, F, W, S  
Students submit petition to sponsoring agency. (Formerly Other English Literatures 198.) T. Miller

199. Tutorial, F, W, S  
Students submit petition to sponsoring agency. (Formerly Other English Literatures 199.) T. Miller

199F. Tutorial (2 credits). F, W, S  
Students submit petition to sponsoring agency. (Formerly Other English Literatures 199F.) T. Miller

French Literature  
131. The Middle Ages. W  
Study of twelfth- and thirteenth-century texts, with attention to problems of history and social change. In modern classroom settings with selected readings in Old or French or Provençal. Topic: feudalism and courtly culture. Satisfies the French and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. Taught in conjunction with course 230. May be repeated for credit. S. Kinozita

134. French Literature Outside France. F  
A study of texts written in French-speaking cultures: Belgium, Canada, Africa, the Caribbean. Satisfies the French,
Modern, and World Literature concentrations also satisfies the Global distribution requirement. Taught in conjunction with course 234. May be repeated for credit. (General Education Code(s): E.)

136. Introduction to Modernity. S
Study of nineteenth- and twentieth-century literary innovation and/or representations of sociological events. Topic: the novel. Satisfies the French and Modern Literature concentrations. May be repeated for credit. T. Terdiman

152. Texts and Contexts. W
Examines implications of social and political change in terms of literary theory and practice. Places equal emphasis on literary and other kinds of cultural texts: historical, political, and cinematic. Topic: Colette and Duras. Satisfies the French and Modern Literature concentrations. May be repeated for credit. P. Gaitel

Prerequisite(s): Literature 101. Students submit petition to sponsoring agency. The Staff

197. Independent Field Study. F,W,S
Student's supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence), or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. The Staff

May be repeated for credit. The Staff

199. Tutorial. F,W,S
The Staff

199F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

German Literature

102. Introduction to German Literature. F
Wide reading of works representing the major authors, periods, and genres of German literature. Satisfies the German and Modern Literature concentrations. T. Honnef

120. Fear of the Foreign: Xenophobia in German Literature and Culture. S
Considers recent violence against immigrants and asylum seekers in Germany, and moves on to examine images of people perceived as "foreign" or alien in German literature and culture from early times to the present. Satisfies the German and Modern Literature concentrations. L. Nygaard

150. German Romanticism. *
A study of the emergence and development of German Romanticism. Central concerns are the Romantics’ attitude toward the role of the imagination in literature and their attempts to revitalize myth and folklore in their works. Authors read include Tieck, N. Arnold, Hoffmann, Eichendorff, and H. D. S. Satisfies the German and Modern Literature concentrations. L. Nygaard

159. German Comedy, W
A study of a series of comic works by authors writing in German. In addition to discussing the texts in depth, we also look at theories of humor and laughter developed by thinkers such as Freud, Schopenhauer, and Bergson. Satisfies the German and Modern Literature concentrations. Prerequisite(s): German 5 or equivalent. Offered in alternate academic years. L. Nygaard

164. Modern German Fiction. *
Selected readings from the novel and novella in twentieth-century German literature. Satisfies the German and Modern Literature concentrations. T. Honnef

167. Modern German Literature and Film. *
Discusses a range of modern and contemporary German texts, including poetry, drama, and film. Discussions include the location of modernism, postmodernism, and the avant-garde. Problematics: the question of classic realism, oppositional writing, popular culture, autonomous art and ideology, "oppositional" and "affirmative" aesthetics. Possible authors: H. Andre, Christa Wolf, Bernhard, Mann, Kluge, Kafka, Brecht, D. Obir, Rilke, van H. Odens, Benn, Herzog, Faasbinder, Wenders. Satisfies the German and Modern Literature concentrations. May be repeated for credit. T. Honnef

Prerequisite: Literature 101. The Staff

197. Independent Field Study. F,W,S
Student's supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence), or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. The Staff

199. Group Tutorial. F,W,S
May be repeated for credit. The Staff

199F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

Greek Literature

100. Introduction to Greek Literature. S
Topic: Plato’s Apology of Socrates. Satisfies the Greek and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. May be repeated for credit. C. Hadrick

102. Greek Poetry, W
Topic: Homer. Satisfies the Greek and Pre- and Early Modern Studies Literature concentrations; also satisfies the Poetry and Pre- and Early Modern distribution requirements. May be repeated for credit. T. Walsh

104. Prose Authors, F
Topic: Lucian. Satisfies the Greek and Pre- and Early Modern Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. May be repeated for credit. R. Branham

193. Field Study. F,W,S
Provides an individual program of study sponsored by a faculty member and carried on off campus. May be taken concurrently or consecutively for up to three courses of credit. Designed for upper-division students, with proposal supported by a faculty member willing to supervise and approval of the chair of the Literature Department. Students submit petition to sponsoring agency. The Staff

Prerequisite(s): Literature 101. The Staff

197. Independent Field Study. F,W,S
Student’s supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence), or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. The Staff

Latin Literature

100. Introduction to Latin Literature. S
Topic: Widow of Ephesus. Satisfies the Latin and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirements. May be repeated for credit. J. Lynch

102. Roman Poetry, F,W
Topic: (F) Virgil’s Aeneid; (W) Ovid’s Metamorphoses. Satisfies the Latin and Pre- and Early Modern Studies Literature concentrations; also satisfies the Poetry and Pre- and Early Modern distribution requirements. May be repeated for credit. J. Lynch, M. Gamel
103. Prose Authors. S
Topic: Petronius. Satisfies the Latin and Pre- and Early Modern Studies Literature concentration; also satisfies the Pre- and Early Modern Literature distribution requirement. M ay be repeated for credit. J. Lynch

104. Special Topics in Latin Literature. *
Satisfies the Latin and Pre- and Early Modern Literature concentrations; also satisfies the Pre- and Early Modern Literature distribution requirements. M ay be repeated for credit. M. G and

193. Field Study. F.W,S
Provides for an individual program of study sponsored by a faculty member and carried on off campus. May be taken concurrently or consecutively for up to three courses of credit. D esigned for upper-division students, with proposal supported by a faculty member willing to supervise, and approval of the chair of the Literature Department. Students submit petition to sponsoring agency. The Staff

195. Senior Thesis. F.W,S,Prerequisite(s): Literature 101, The Staff

197. Independent Field Study. F.W,S
Student's supervision is conducted by a regularly ap-pointed officer of instruction by means other than usual supervision in person (e.g., correspondence), or student is doing all or most of the course work off campus. Stu-dents submit petition to sponsoring agency. The Staff

198. Group Tutorial. F.W,S,May be repeated for credit. T he Staff

199. Tutorial. F.W,S,The Staff

Modern Literary Studies

103. Constructions of the Modern. *
Definitions of the “modern” (after 1750) are developed within historically and culturally specific contexts. Satisfies the Modern Literature concentration. R. Terdiman

124. The European Novel.
124A. Eighteenth Century to Modernism. S
Major works of European fiction in their social, cultural, and intellectual contexts. Examines the nine-teenth- and twentieth-century novels. Works are read in translation. Satisfies the Modern Literature concentra-tion. R. Terdiman

125. Modern Cinema.
125D. Cinema and Social Change in Latin America. *
Surveys selected Latin American and Latino feature and documentary films from 1950 to the present. Topics include gender, sexuality, race and (trans)natio nal identity, revolution, repression and resistance, migra-tion, exile, and return. Satisfies the Modern and World Literature concentrations; also satisfies the Global dis tribution requirement. (General Education Code(s): E.) J. Burton-Carvajal

125L. Films on the Border. F
Surveys a range of cinematic representations of the U.S.-Mexican border region from Hollywood, independent, Chicano/Latino, Mexican, and local sources. Studies the border in both concrete and symbolic registers. Satisfies the Modern and World Literature concen-trations; also satisfies the Global distribution require-ment. (General Education Code(s): E.) J. Burton-Carvajal

125N. The Horror Film. *
Shifting definitions of horror in the movies from the late silent period to the present through close analysis of representative films and critical texts: genre con-struction, history of modes of production, and shifts in discourse of horror. Satisfies the Modern Literature concentration. H. L. Carvajal, jr.

135. Women Modernists. *
Readings of innovative fiction, poetry, and essays by women writers from 1900-1950. We will discuss issues of gender and sexuality as they affect literary theme and form, female literary collaboration and lesbian salons, and the critical framing of women’s writings by feminism and modernism. Satisfies the Modern Literature concentration. T. M. Iller

144. Modern Jewish Cultures.
Modernity transformed Jewish culture we will explore the ways in which changed social, political, and economic conditions produced new gender roles; professional, per-sonal, communal, and cultural experiences; and generated powerful fictions, autobiographies, films and poems. Among the writers we will read are Isaac Bashevis Singer, Rebecca Goldstein, Saul Bellow, M artin Buber, H anna Arendt, and S. Y. Agnon.

144A. Jewish Diaspora, Ethnicity, and Urban Life. *
Focuses on modern Jewish diaspora, ethnicity, and urban life. Satisfies the Modern Literature concentra tion. (General Education Code(s): E.) B. Thompson

144B. Modernity as Jewish Challenge and Catastrophe: The American Experience. W
Examines modernity as Jewish challenge and katastro-phe and focuses on the American experience. Satisfies the American, English, and Modern Literature concentrations. (General Education Code(s): E.) B. Thompson

144C. Literature and the Holocaust. *
Reading and analysis of fiction and poetry focusing on Holocaust literature as a problem in critical theory, cul-tural studies, and literary history. Though most of the works are read in translation, some knowledge of Euro-pean languages is helpful. Satisfies the Modern Litera-ture concentration. M ay be repeated for credit. T he Staff

144D. Jewish Writers and the American City. F
An examination of some major Jewish writers and their responses to the American city. Major writers: Henry Roth, Saul Bellow, Bernard Malamud, J. Kaplan, Philip Roth. A look at Yiddish and other minority writers, and including sociological and historical ma-terials on the American city. Satisfies the American, English, and Modern Literature concentrations. (General Education Code(s): E.) M. Baumgarten

144E. Hebrew Poetry. S
Explores cultural and literary issues central to our con-temporary world. Texts and discussion focus on Jewish and Israeli literary traditions. Satisfies the Modern Literature concentration; also satisfies the Poetry distribution requirement. M ay be repeated for credit. M. Baumgarten

144F. Israeli Literature. S
An introduction to Hebrew literature since the 1940s and to Israeli culture and history of this period. Topic for spring 2005: prose fiction. M. Ron

144G. Global Jewish Writing: Diasporas Compared. *
Comparative analysis of modern Jewish writers from Western and Non-Western diasporas (Canada, Italy, Iraq, Tunisia). Topics and contexts include Jewish identity, religion, ethnicity, anti-Semitism, relations to Zionism, migration, colonialism and post-colonialism, intergenerational relations, and gender roles. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code(s): E.) T he Staff

144J. Jews in Italy: Writing and Witnessing the Holocaust. W
Examines major Jewish writers in Italy focusing on Ju-daim between world wars and under Fascism; the Re-sistance; urban and/or ghetto cultures of Rome, Turin, Ferrara; Venice; gender roles; and developement of new literary genres. Films, poetry, cultural documents. Satisfies the Modern Literature concentration. M. Brose

145. Special Topics in Modern Literature.

155A. Nineteenth-Century Russian Fiction in Translation. *
Masterpieces of poetry and prose from the Golden Age of Russian literature, from Pushkin to Chekhov. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. W. Nickell

155B. Soviet Literature. F
Survey of twentieth-century Soviet literature, from the revolution to the death of Stalin. Readings include modernist and avant-garde texts of the 1920s and so-cialist realism. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (Formerly Russian Literature Since the Revolution.) W. Nickell

155F. Women in Russian Literature. *
Survey of women’s writing and representations of women in Russian and Slavic literature from the me-dieval folk tale through the contemporary period. Topics include Baba Yaga tales, woman as subject in nineteenth-century literature, Soviet memoir literature, and evolution of the persona of the female author. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. W. Nickell

160K. Great French Novels. S
Provides an introduction to important French novels of the nineteenth and twentieth centuries. All works are read in English. Satisfies the Modern Literature concentration. P. Gallet

167. German Authors in Translation.
167G. Goethe’s Faust. W
An intensive study of Goethe’s Faust, Parts I and II. All works are read in English. Satisfies the Modern Literature concentration; also satisfies the Poetry distribution requirement. L. Magyar
168. German Literature in Translation.

168C. Modern German Fiction. *
Selected readings from the novel and novella in twentieth-century German literature, including M. Mann, Kafka, Rilke, Hesse, Frisch, Gräff, Böll, and Wolf. All works are read in English. Satisfies the Modern Literature concentration. T. Hommel

180. Latin American Literature in Translation.

180F. Latin American Women Writers. F
Explores literary production by women in relation to social movements and historical events. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E; L M. Martinez-Chazabal

190. Senior Seminar.

Seminar offered to literature majors as a way to satisfy the senior exit requirement. Offered at different times by different instructors, focuses on topics of interest in modern literary studies. All students are required to complete an essay of significant length as part of the seminar course work. Prerequisite: Literature 101. May be repeated for credit.

190B. Modern Italian Novel. *
Survey of several of the most important Italian novels of the twentieth century. Mostly concerned with the novels of the post-war period (Pavese, Morante, Ginsburg, Calvino), also deals separately with novels of the country (Verga et al.) and of the city (D’Annunzio, Svevo, et al.). Satisfies the Modern Literature concentration. D. Shemek

197A. Reading Egyptian Hieroglyphs, Part 1.

Introduction to Egyptian hieroglyphs as a graphic, conceptual, and communicative system. Covers the basic elements of classical Egyptian grammar, drawing primarily on inscriptions from extant Egyptian monuments. Students read one prose and one poetical text from the Middle Kingdom. Satisfies the Pre- and Early Modern Studies and World Literature concentrations; also satisfies the Global and Pre- and Early Modern distribution requirements. Prerequisite(s): Greek Literature 3 or 100 or Latin Literature 3 or 100 or Literature 80A or permission of instructor. May be repeated for credit. J. Lynch

197F. Tutorial (2 credits), F, W, S
Students submit petition to sponsoring agency. T. Staff

199. Tutorial. F, W, S
May be repeated for credit. T. Staff

199F. Tutorial (2 credits). F, W, S
T. Staff

199. Senior Essay. F, W, S
Satisfies the Senior Seminar distribution requirement. Enrollmen restricted to senior literature majors. H. Leister, Jr.

190K. Readings in Tolstoy, W
Intensive study of Tolstoy’s major work: War and Peace. Satisfies the Modern and World Literature concentrations; also satisfies the Global and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. W. Nidel

192. Directed Student Teaching, F, W, S
Teaching of a lower-division seminar under faculty supervision. (See course 42). T. Staff

Prerequisite(s): Literature 101. T. Staff

197. Independent Field Study, F, W, S
Student’s supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence), or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. T. Staff

198. Group Tutorial, F, W, S
May be repeated for credit. T. Staff

199. Tutorial. F, W, S
T. Staff

168D. Germany in War and Peace. *
Study of selected texts reflecting German society at war or in that ambiguous state called “peace.” Attention is given to the place of literature in German cultural life and its special role in the formation of national identity. Satisfies the Modern Literature concentration. L. Ngyard

170. Modern Italian Literature in Translation.

Readings in Italian literature and culture ranging from Romanticism to the post-modern. Emphasis on Italy’s relation to modernity in terms of artistic innovation; politics and social life; family and gender relations; regional, national, and international identities. Topics vary from year to year.

170B. Modern Italian Novel. *
Survey of several of the most important Italian novels of the twentieth century. Mostly concerned with the novels of the post-war period (Pavese, Morante, Ginzburg, Calvino), also deals separately with novels of the country (Verga et al.) and of the city (D’Annunzio, Svevo, et al.). Satisfies the Modern Literature concentration. D. Shemek

170H. Studies in the Horror Film. *
The horror genre in film: The Alexander Romance, Petronius, Apuleius, Khariton, Achilles Tatius, and Heliodorus. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. K. Basini

171. Jewish Mystical Texts. S
Overview of literature of Jewish mysticism and Kabbalah from antiquity to present. Focuses on primary texts including the Bible, Dead Sea Scrolls, Talmud, Midrash, medieval/Spanish Kabbalah, Kabbalah of Safed, Hasidism, and contemporary authors. R. Feldman

172. Medieval Romance. *
Arthurian, “realist” and allegorical romances of the twelfth and thirteenth centuries studied in their social and historical context. In English translation. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. S. Kinoshita

173. Medieval French Romance. *
Focus is on the construction of race and gender in ancient Greek culture. Literary, historical, philosophical, dramatic and medical texts (Homer, Herodotus, Kluft, Euclid, Hipppocrates, Plato, Aristotle) as well as visual media (vase painting, sculpture) are studied. J. Lynn

174. The Heroic Epic. W
A survey and analysis of “primary” epic: Gilgamesh, the Iliad, the Odyssey, and Exodus. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Poetry and Pre- and Early Modern distribution requirements. M. Walsh

121. Ancient Novel. *
Narrative fiction from the age of Alexander through the first centuries of the Christian era, with particular attention to the influence of Near Eastern and African cultures on the formation of the European novel. Principal readings: The Alexander Romance, Petronius, Apuleius, Khariton, Achilles Tatius, and Heliodorus. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. K. Basini

124. Hebrew Bible. *
An introduction to textual, source, redaction, historical, and literary criticism of individual books of the Hebrew Bible and to exegesis as science and ideology. Also studies texts and iconography of neighboring mythological traditions (Mesoopotamian, Ugaritic, Egyptian, and Greek) when appropriate. Satisfies the Pre- and Early Modern Studies Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. G. Hanul

127. Medieval French Romance. *
Arthurian, “realist” and allegorical romances of the twelfth and thirteenth centuries studied in their social and historical context. In English translation. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. S. Kinoshita

136. Representations of Gender in Medieval Literature. W

139. Rhetoric, Literature, and Performance. F
Investigates significance of the classical discipline of rhetoric as a theory of discourse that analyzes the persuasive forces of language, whether in practical public discourse (e.g., legal or political), literature, drama, art, film, or any system of representation. R. Branham


An introduction to great works of Spanish literature from various genres that provide a profound and enduring experience of Hispanic life transfigured by the literary artist into what may be interpreted as formal and exemplary perfection.

167C. Don Quixote de la Mancha. *
A close study of Books I and II of the Cervantes novel together with an examination of some of the criticism on this work written in English throughout the centuries. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. J. Aladro Font

183. Dante’s Divine Comedy. *
Reading of the Inferno, the Purgatorio, and selected canti of the Paradiso, along with selections from Dante’s lyrics and from medieval Italian and French poetry. Satisfi...
Pre- and Early Modern Literature concentration; also satisfies the Poetry and Pre- and Early Modern distribution requirements. M. Brose

190. Senior Seminar. Seminar offered to literature majors as a way to satisfy the senior exit requirement. Offered at different times by different instructors; focus is on topics of interest in pre- and early modern studies. All students are required to complete an essay of significant length as part of the seminar course work. Prerequisite: Literature 101. May be repeated for credit.

190P. Topics in Pre- and Early Modern Studies. F, W, S
Examination of individual authors or critical problems in ancient, medieval, or early modern Renaissance literature. Topics: (F) war in literature (W) phenomenon of comedy. (S) early modern travel narratives. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern and Senior Seminar distribution requirements. Prerequisites: Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. T. Walsh, G. Kallay, C. Freccero

192. Directed Student Teaching. F, W, S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) The Staff

Prerequisites: Literature 101. The Staff

197. Independent Field Study. F, W, S
Student's supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence) or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. The Staff

May be repeated for credit. The Staff

199. Tutorial. F, W, S
The Staff

199F. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. The Staff

Russian Literature

199. Tutorial. F, W, S
The Staff

Spanish/Latin American/Latino Literature

60. Introduction to Literary Genres. F
The study of poetry, drama, and prose in Spain and Latin America. (General Education Codes: IH, E.) J. Aladro Font

102. Introduction to Hispanic American Literature.

102A. From the Conquest to Sor Juana. W
A study of Hispanic American literature from the chronicles of the conquest through the seventeenth century. Readings deal with transformations in both the idea of empire and the rights of the conquered. Includes the works of Colón, Cortés, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, and others. N. Klahn

104. Erotismo y Mística. S
Examines the connections between erotic literature and mystical literature through poetic representations of sublimes where Eros and Thanatos meet. As symbolisms of mystical and erotic experiences fuse and confuse each other, we are able to establish connections between Sufi, Hindu, and Judeo-Christian mystical poetry. J. Aladro Font

130. Studies in Latin American Literary Genres.

130D. Latin American “testimonio.” *
A study of the literary expression of a particular Latin American country or region, with texts representing a variety of authors, periods, and genres. C. Connery

130H. Cuba. F
Topic: Cuban revolution. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E.) N. Klahn

A study of the literary expression of a particular Latin American country or region, with texts representing a variety of authors, periods, and genres. C. Connery

131J. Cuba. F
Topic: Cuban revolution. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E.) N. Klahn

134. Special Topics in Latin American Literature.

134C. Fiction and Marginality: The Marginal at the Center. F
Marginalized perspectives take center stage in this course that studies ways Latin American/Latino authors textual context dominant representations and realities, opening symbolic spaces for emergent historical subjects who gain agency and authority by representing unmapped terrains. Texts include chronicles, “testimonios,” writings of the self, and novels. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E.) N. Klahn

134G. Popular Culture in Latin American Narrative. *
Explores short stories and novels that have been greatly influenced by popular culture, not only in theme, but also by appropriation of popular forms of language and modes of representation. Includes works by authors from Mexico, Argentina, Cuba, and Colombia. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E.) J. Poblete

134J. Mexico through the Movies.
Traces commercial and alternative filmmaking in Mexico from its origins to the present through the works of major directors, with particular emphasis on the historical and actual function of film in Mexican culture.

Course satisfies the Modern, Spanish/Latin American, and World concentrations, and the Global distribution requirement. (General Education Codes: E.) J. Burton-Carvajal

135. Latin American Cinema.

135F. Cine y Literatura. W
Introduction to analysis and interpretation of major Spanish-language films derived from literary works by Latin American and Spanish authors. Explores mechanisms of representation and adaptation. J. Burton-Carvajal

153. The Picarosque Novel. *
The picarosque novel of 16th-century Spain considers the fictive environment as reality in order to introduce its protagonist as a rebel against social dominion. The picarosque novel is the only literary genre comparable to what is now called “literature of social protest.” Satisfies the Pre- and Early Modern and Spanish Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. J. Aladro Font

164. Fiction and History in Contemporary Spain. *
Examine prose works of selected nineteenth- and twentieth-century peninsular authors, with special attention to relation between Spanish political history and fiction. Satisfies the Modern and Spanish Literature concentrations. May be repeated for credit. J. Aladro Font

Prerequisites: Literature 101. The Staff

197. Independent Field Study. F, W, S
Student's supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence) or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. The Staff

May be repeated for credit. The Staff

199. Tutorial. F, W, S
The Staff

199F. Tutorial (2 credits). F, W, S
Students submit petition to sponsoring agency. The Staff

World Literature and Cultural Studies

109. Topics in Cultural Studies. *
Studies in the theory of cultural studies. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. May be repeated for credit. (General Education Codes: E.) The Staff

115A. Fiction in a Global Context. F
Comparative examination of fiction in the modern world and of fictional responses to social change and crisis. Topic for fall 2004: literature in juxtaposition: scenes from American and East-Central European life. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. May be repeated for credit. G. Kallay

123. The 1960s. S
An interdisciplinary study of the cultural and social movements of the 1960s. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E.) C. Connery
124. Cultural Theory in Historical Perspective, W
Examination of representations of medieval and early modern Mediterranean history. Topic: Marco Polo. Satisfies the Pre- and Early Modern and World Literature concentrations; also satisfies the Global and Pre- and Early Modern distribution requirements. (General Education Codes: E.) S. Kinoshita

135. Classical Chinese Culture and Literature, Tenth Century B.C.E. through Sixth Century C.E.*
Survey of writing and culture from the tenth century B.C.E. through the sixth century C.E., focusing on poesy, philosophical and historical writing, supernatural fiction, Buddhist/Taoist texts in contexts of fragmentation, empire building, dynastic collapse, rebellion, enslavement, and courtly society. Satisfies the Pre- and Early Modern and World Literature concentrations; also satisfies the Global, Poetry, and Pre- and Early Modern distribution requirements. (Also offered as History 151. Students cannot receive credit for both courses.) Enrollment limited to 45. (General Education Codes: E.) C. Connery

136. Classical Chinese Culture and Literature, Sixth Century through Sixteenth Century.
Survey of writing and culture from the Tang through early Ming dynasties (sixth century C.E. through sixteenth century C.E.). Themes include literary, religious, and philosophical innovation, courtly life, cultural contacts with non-Chinese people, and transformations of state and society. Satisfies the Pre- and Early Modern and World Literature concentrations; also satisfies the Global, Poetry, and Pre- and Early Modern distribution requirements. (Also offered as History 152. Students cannot receive credit for both courses.) Enrollment limited to 50. (General Education Codes: E.) S. Gillman

140. The Historical Imaginary, W
A survey of historical literature in the Americas that examines fictional attempts to re-imagine New World histories. Readings focus on secret or mangled histories, the legacies of slavery and colonialism, gendered critiques of national histories, and US imperialism. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Codes: E.) S. Gillman

190. Senior Seminar.
Seminar offered to literature majors as a way to satisfy the senior exit requirement. Offered at different times by different instructors, focus is on topics of interest in world literature and cultural studies. All students are required to complete an essay of significant length as part of the seminar course work.

190A. Topics in World Literature and Cultural Studies. F,W,S
Topics for 2004–2005: (F) The Black Fantastic: Fantasy and Speculative Fiction in the African Diaspora; (W) Key Concepts in Latino American Critical Theory; (S) Postcolonial Writing. Satisfies the Modern and World Literature concentrations; also satisfies the Global and Senior Seminar distribution requirements. (Formerly Literature 101.) Enrollment restricted to senior literature majors. May be repeated for credit. (General Education Codes: E.) L. Chude Sokei, J. Poblete, R. Wilson

190B. Studies in Slavery, Race, and Nation in the Americas.
Compares literatures and histories of slavery, abolitionism, and nationalism in nineteenth-century Cuba and the U.S. Readings include slave narratives by Juan Francisco Manzano (Cuba) and Harriet Jacobs (U.S.) and anti-slavery novels by black nationalist Martin De Lany, Cuban nationalist Cirilo Villaverde, and “sentimental” reformers Harriet Beecher Stowe and Gervásio Gomes de Avelães. Satisfies the Modern and World Literature concentrations; also satisfies the Global and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. (General Education Codes: E.) S. Gillman

190E. Studies in Autobiographical Fiction by Latinas.*
A study of the ways Latinas have privileged first-person narration in the last two decades, posing questions of origins, genealogies, cultural identities, and translocation in their search for self-definition and self-assertion. Authors will include Sandra Cisneros, Nicolasa Mohr, Esmeralda Santiago, Julia Alvarez, Cristina Garcia, Noemí Cantu, and Judith Ortiz Cofer. Students cannot receive credit for this course and course 120. Satisfies the American, English, Modern, and World Literature concentrations; also satisfies the Global and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. (General Education Codes: E.) N. Klahn

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. T he Staff

195. Senior Essay, F,W,S
Prerequisite(s): Literature 101. T he Staff

197. Independent Field Study, F,W,S
Student's supervision is conducted by a regularly appointed officer of instruction by means other than usual supervision in person (e.g., by correspondence), or student is doing all or most of the course work off campus. Students submit petition to sponsoring agency. T he Staff

198. Group Tutorial, F,W,S
T he Staff

199. Tutorial, F,W,S
T he Staff

199F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. T he Staff

200. Proseminar, F
The Proseminar provides a common experience for entering students, facilitates exchange of ideas and approaches to literary and extra-literary texts, critical issues, and theoretical problems. It focuses on broad aspects of the history of theory and criticism, on the students' critical writing, and on aspects of professional development. Enrollment restricted to graduate students. R. Terman

201. The Pedagogy of Literature (1 credit), F
Provides training for graduate students in university-level pedagogy in general and in the pedagogy of literature specifically. Coordinated by a graduate student who has had substantial experience as a teaching assistant, under the supervision of a faculty member. Enrollment restricted to graduate students. May be repeated for credit. T he Staff

202. Colloquium (2 credits), F,W,S
Student receives credit for attending designated number of freestanding lectures, colloquia, symposia, or conferences during the term and reports orally, or in writing, to instructor. Enrollment restricted to graduate students. M ay be repeated for credit. R. Wilson

204. Readings in Literature (2 credits), F,S
Focuses on selected texts or authors in literature and/or theory. Students meet with instructor to discuss readings and deepen their knowledge of a particular author, critic, theorist, or text. Topics for 2003–04: (F) Readings and Recent Writing of Dorinda (requireability to read French); (S) Beyond Hermeneutics: What Can We Do When We Do Not Interpret, and Why. Enrollment restricted to graduate students. May be repeated for credit. W. Godzich

291F. Advising (2 credits), F,W,S
Independent study formalizing the advisee-advisor relationship. Regular meetings to plan, assess, and monitor academic progress and to evaluate course work as necessary. May be used to develop general bibliography of background reading and trajectory of study. Prerequisite(s): petition on file. Enrollment restricted to graduate students. May be repeated for credit. T he Staff

English-Language Literatures:
Graduate Courses

Considers literary canon formation through the lens of neglected or "lost" works by authors otherwise considered peripheral because of their language, cultural tradition, or regional affiliation. (Formerly American Literature 210.) Enrollment restricted to graduate students. M ay be repeated for credit. K. Guzman

260. Transnational Literatures, W
Investigation of English literature which transcends national boundaries. Topic: British postcolonial literary form. (Formerly British Literature 240, Topics in British Literature.) Enrollment restricted to graduate students. M ay be repeated for credit. V. Cooppan

270. Individual Authors, S

280. Topics in English Language Literature, W,S
Topics for 2004–05: (W) Women Writers and Traditions of the English Novel; (S) African American Experimental Writing. (Formerly American Literature 205. Topics in African American Literature.) Enrollment restricted to graduate students. M ay be repeated for credit. N. Mackey, H. M oglen

294. Teaching-Related Independent Study, F,W,S
Directed graduate research and writing coordinated with teaching of undergraduate students. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. T he Staff

295. Directed Reading, F,W,S
Directed reading that does not involve a term paper. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. T he Staff

296. Special Student Seminar, F,W,S
Students submit petition to sponsoring agency. Enrollment restricted to graduate students. M ay be repeated for credit. T he Staff
297. Independent Study, F, W, S
Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. The Staff

French Literature: Graduate Courses

230. Studies in Literary and Cultural History, W
In-depth examination of one period of French literature. Topic: feudalism and courtly culture. Enrollment restricted to graduate students. May be repeated for credit. S. Kinoshita

234. French Literature Outside France, F
A study of texts written in French-speaking cultures: Belgium, Canada, Africa, the Caribbean. Enrollment restricted to graduate students. May be repeated for credit. P. Gaitel

294. Teaching-Related Independent Study, F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency. The Staff

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar, F, W, S
Students submit petition to sponsoring agency. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. The Staff

German Literature: Graduate Courses

294. Teaching-Related Independent Study, F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency. The Staff

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar, F, W, S
Students submit petition to sponsoring agency. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. The Staff

Latin Literature: Graduate Courses

296. Special Student Seminar, F, W, S
Students submit petition to sponsoring agency. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

Modern Literary Studies: Graduate Courses

231. Studies in Literary and Cultural History, F
Topic: (F) landscape and ideology. Enrollment restricted to graduate students. May be repeated for credit. L. Nygaard

280. Topics in Theory, F, W, S
Explores issues arising in both the modern practices of criticism and in writings on the theory of criticism. Topics: (F) Latin American Critical Theory; (W) The Gramsci Discourse, Part I; (S) The Gramsci Discourse, Part II. Enrollment restricted to graduate students. May be repeated for credit. (F) J. Poblete, (W) D. Shemek, (S) T. Miller

294. Teaching-Related Independent Study, F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency. The Staff

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar, F, W, S
Students submit petition to sponsoring agency. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. The Staff

Greek Literature: Graduate Courses

294. Teaching-Related Independent Study, F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. The Staff

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar, F, W, S
Students submit petition to sponsoring agency. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. The Staff

Italian Literature: Graduate Courses

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar, F, W, S
Prerequisite(s): petition on file with sponsoring agency. Students submit petition to sponsoring agency. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. The Staff

201. Studies in Antiquity, S
An in-depth study of a topic in Mediterranean and Near Eastern antiquity. Topic for 2004–05: translation, midrash, and interpretation. Enrollment restricted to graduate students. May be repeated for credit. M. Baumgarten

204. Studies in Early Modernity, *
In-depth examination of a topic in Early Modern Studies. Enrollment restricted to graduate students. May be repeated for credit. H. Berger

220. Individual Authors, *
Special focus on work of a single author in literary historical and/or historical context. Enrollment restricted to graduate students. May be repeated for credit. M. Broze

244. Queering the Renaissance, F
Seeks to understand the recent convergence in early modern scholarship between queer theory and Renaissance studies and to explore the definitions and articulations of queer theory as a mode of textual criticism and practice. Enrollment restricted to graduate students. C. Frecro

294. Teaching-Related Independent Study, F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency. The Staff

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar, F, W, S
Students submit petition to sponsoring agency. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

299. Thesis Research, F, W, S
Students submit petition to sponsoring agency. The Staff

Spanish Literature: Graduate Courses

210. Spain in the Eyes/Camera of Pedro Almodovar, *
Contemporary Spain through the camera of Pedro Almodovar from transgressive enthusiasm, experimenta- tion, and cultural disobedience of the 1980s to more uni- versal themes of human nature and borderline experiences in the pursuit of love, relationships, beauty, and art. Enrollment restricted to graduate students. J. Aladro Font

213. Latin American Film: Gender, Genre, Race, and Nation, *
Using selected feature films from Argentina, Cuba, and Mexico (1940–present), students develop expertise in the semiotics of the cinematic, historiography of “peripheral” national cinemas, genre theory, gender theory, and expressions of the national in both commercial and independent filmmaking. Reading knowledge of Spanish is desirable. Enrollment restricted to graduate students. Enrollment limited to 20. J. Burton-Carvajal
226. Teoría Crítica en América Latina. F
An overview of contemporary theoretical issues in Latin American cultural critique. Course focuses on forms of cultural analysis by J. M. Artín Barbero, M. Artín Hopenhayn, Beatriz Sario, Nestor Garcia Canclini, Jose Joaquin Brunner, Celestia O’Dalgoda, Nelly Richards, etc. Enrollment restricted to graduate students. J. Poblete


231A. Cuba. *
“Race,” art, and culture in 20th-century Cuba. Explores ways in which art and other forms of cultural expression have dealt with “race” in 20th-century Cuban society. Attention to the period of 1959 and the ways writers, artists, and intellectuals of African descent as well as governmental institutions and cultural policies have tackled this called “black problem.” Enrollment restricted to graduate students. J. Poblete

232. Procesos históricos, literarios, y culturales en el mundo hispánico.

232A. El mundo hispánico: siglos XIII–XVIII. F
Examines early manifestation of vernacular prose fiction in Spain and South America from thirteenth through eighteenth centuries. Requires students to be familiar with principal aspects of Spanish and South American social and political history. Enrollment restricted to graduate students. J. Poblete

Course accompanies formation of national literatures in Latin America through its various manifestations in romanticism, realism, modernism, and postmodernism. Addresses topics such as race and nation, the intellectual and the letter city, the search for “lo Americano” and the interpellation of popular culture. Enrollment restricted to graduate students. L. Martínez-Echazabal

232C. El mundo hispánico: De las vanguardias a la globalización. S
Study of literary and cultural “modernity” and “postmodernity” in Latin America within the literary paradigms of “vanguardismo” and “postvanguardismo,” “boom” and “post-boom,” and more recent neo-regionalist and/or post-nationalist literary and cultural terrains. Enrollment restricted to graduate students. N. Klahn

295. Directed Reading. F,W,S
Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. The Staff

296. Special Student Seminar. F,W,S
Students submit petition to sponsoring agency. The Staff

297. Independent Study. F,W,S
Students submit petition to sponsoring agency. The Staff

297. Independent Study. F,W,S

Marine Biology
See Biological Sciences, page 135.

Marine Sciences
See Ocean Sciences, page 320.

Mathematics

297 Karr Hall
(831) 459-2969
http://www.math.ucsc.edu

Faculty and Professional Interests

Professor

Bruce N. Cooperstein
Group theory, combinatorics, particularly Chevalley groups and their associated geometries; environmental economics; theories of value

Chongying Dong
Infinite-dimensional Lie algebras and their representations; conformal field theory

Arthur E. Fischer
General relativity; Riemannian geometry; Teichmüller theory; nonlinear partial differential equations on manifolds; applications to biology, medicine, and physics

Viktor Ginzburg
Global analysis, symplectic topology; Hamiltonian dynamical systems; Poisson geometry; symmetries, and group actions

Debra Lewis
Geometric Hamiltonian mechanics, geometric integration; bifurcation theory; applications of variational methods, computational mathematics

Geoffrey Mason
Modular forms, Lie algebras, and conformal field theory

Richard Montgomery
Celestial mechanics, differential geometry, gauge theory, mechanics (quantum and classical), and control theory

Maria Schonbek
Nonlinear partial differential equations, with emphasis on fluid equations

Anthony J. Tromba
Global nonlinear analysis, calculus of variations, minimal surfaces and Plateau’s problem, Riemann surfaces

Associate Professor

Robert Boe
Group theory, algebraic number theory

Jie Qing
Nonlinear analysis, harmonic analysis, partial differential equations with applications to differential geometry; mathematical physics

Hirotaka Tanimoto
Algebraic topology, orbifold string topology, conformal field theory; hypergeometric differential forms; Schwarzian derivatives

Jonathan Weitsman
Geometry and mathematical physics

Assistant Professor

Torsten Ehrhardt
Topological K-theory, bundles, Banach algebras, factorization theory

Alexander Gamburd
Spectral problems in number theory; probability and combinatorics

Toufic Suidan
Probability theory and stochastic partial differential equations, random matrix theory and combinatorics

Emeriti

Ralph H. Abraham, Emeritus
Nicholas Burgoyne, Emeritus
Marvin J. Greenberg, Emeritus
Al Kelley, Emeritus
Edward M. Landsman, Emeritus
Tudor S. Ratiu, Emeritus
Gerhard Ringel, Emeritus
Marshall Sylvan, Emeritus
Harold Widom, Emeritus

Lecturer

Frank Bauerle
Mathematical logic, recursion theory, and complexity theory

Edward Migliore
Richard R. Mitchell
Bangteng Xu

Program Description

Mathematics is both a fundamental discipline and an essential tool for students of biology, chemistry, computer engineering, computer science, Earth sciences, economics, electrical engineering, information systems management, physics, and psychology. Researchers in all these areas are constantly developing new and fascinating ways of applying mathematics. A strong mathematics background is prerequisite to advanced study in the physical and biological sciences and is often helpful in studying the social sciences.

The UC Santa Cruz mathematics program offers a wide variety of undergraduate mathematics courses:

- Courses 2 and 3 do not require thorough preparation in mathematics at the high school level. However,
Although not considered a premajor requirement, courses 23B, 24, 100, 103, 110, or Applied Math 117, 121A, 194, 20A and 20B or 19A-B, 21, 23A-B, 24, 100, 110, Computer and Applied Math 105A, 111A-B, 110 or 124, and Applied Math and Statistics 27 and mathematics courses numbered 100 or higher.

A typical program for a pure mathematics major might include the following:

1st year: 20A or 20B or 19A-B, 21, 23A
2nd year: 23B, 24, 100, 103, 110 or Applied Math and Statistics 131A
3rd year: 105A-B, 111A-B, 110 or 124
4th year: 117, 121A, 194

The first two years of a typical program for a pure mathematics major who begins mathematics studies with precalculus might include the following:

1st year: 3 19A-B
2nd year: 21, 23A-B, 24, 100

Computational Mathematics

This concentration is intended to prepare students for technical careers in industry or government while providing a solid mathematical background. Students are required to complete a minimum of seven mathematics courses (with laboratories, if appropriate) as follows:

- Ordinary Differential Equations
- Introduction to Proof and Problem Solving
- Complex Analysis
- Real Analysis
- Algebra, Calculus
- Numerical Analysis
- Introductory Chaos Theory or Applied Math and Statistics
- Chaotic Dynamic Systems or Applied Math and Statistics
- Computational Methods and Applications
- either 194, Senior Seminar, or 195, Senior Thesis

In addition, students must complete two courses in computer engineering or computer science selected from the following:

- Computer Engineering
- Computer Science
- Computer Science
- Computer Science
- Computer Science
- Computer Science
- Computer Science
- Computer Science
- Computer Science
- Computer Science

Mathematics Education

This concentration is intended to prepare students for teaching kindergarten through high school (K-12). In addition to the premajor requirements (which for this track include Engineering 5, Stat 111A), students are required to complete the following nine courses:

- Introduction to Proof and Problem Solving
- Complex Analysis
- Real Analysis
- Algebra, Calculus
- Classical Geometry
- Engineering 131
- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience

and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students may pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.

A typical program for a mathematics education major might include the following:

- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience
- and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students can pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.

A typical program for a mathematics education major might include the following:

- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience
- and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students can pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.

A typical program for a mathematics education major might include the following:

- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience
- and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students can pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.

A typical program for a mathematics education major might include the following:

- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience
- and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students can pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.

A typical program for a mathematics education major might include the following:

- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience
- and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students can pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.

A typical program for a mathematics education major might include the following:

- Introduction to Probability Theory
- History of Math
- Supervised Teaching Experience
- and either 194, Senior Seminar, or 195, Senior Thesis.

UCSC students can pursue a degree in mathematics while preparing to teach at the secondary level. In California, students seeking a single-subject credential (for secondary teaching) in mathematics are required to take the CSET series of exams (formerly the National Teachers Examination). By the time they begin student teaching in their credential program, candidates must have taken the CSET series. Contact the UCSC Education Department for details regarding teaching credentials.
1. Calculus, F,W

Inverse functions and graphs; exponential and logarithmic functions, their graphs, and use in mathematical models of the real world; rates of change; trigonometry, trigonometric functions, and their graphs; and geometric series. Students cannot receive credit for both course 3 and Applied Mathematics and Statistics 3. Applied Mathematics and Statistics 3 can substitute for course 3. Prerequisite(s): course 2 or sufficiently high score on mathematics placement exam. (General Education Code(s): Q.) The Staff

11A. Calculus with Applications, F,W,S

A modern course stressing conceptual understanding, relevance, and problem solving. The derivative of polynomial, exponential and trigonometric functions of a single variable is developed and applied to a wide range of problems involving graphing, approximation, and optimization. Students cannot receive credit for both this course and course 19A or Applied Mathematics and Statistics 11A or Economics 11A. Prerequisite(s): course 2B or 3 or Applied Mathematics and Statistics 3 or score of 31 on math placement exam. (General Education Code(s): IN, Q.) The Staff

11B. Calculus with Applications, F,W,S

A modern course stressing conceptual understanding, relevance, and problem solving. Starting with the fundamental theorem of calculus and related techniques, the integral of functions of a single variable is developed and applied to problems in geometry, probability, physics, and differential equations. Polynomial approximations, Taylor series, and their applications conclude the course. Students cannot receive credit for this course and course 19B. Prerequisite(s): course 11A. (General Education Code(s): IN, Q.) The Staff

19A. Calculus for Science, Engineering, and Mathematics, F,W,S

The limit of a function, calculating limits, continuity, tangents, velocities, and other instantaneous rates of change. Derivatives, the chain rule, implicit differentiation, higher derivatives. Exponential functions, inverse functions, and their derivatives. The mean value theorem, monotonic functions, concavity, and points of inflection. Applied maximum and minimum problems. Students cannot receive credit for this course and course 19A or Applied Mathematics and Statistics 11A or Economics 11A. Prerequisite(s): course 2B or 3 or Applied Mathematics and Statistics 3 or score of 40 or higher on math placement exam. (General Education Code(s): IN, Q.) The Staff

19B. Calculus for Science, Engineering, and Mathematics, F,W,S

The definite integral and the fundamental theorem of calculus. Areas, volumes. Integration by parts, trigonometric substitution, and partial fractions methods. Improper integrals. Sequences, series, absolute convergence and convergence tests. Power series, Taylor and Maclaurin series. Students cannot receive credit for both this course and course 11B. Prerequisite(s): course 19A. (General Education Code(s): IN, Q.) The Staff

20A. Honors Calculus. F

Challenging course designed to approach single variable calculus from the perspective of modern mathematics. Emphasis is on the evolution and historical development of core concepts underlying calculus and analysis. Prerequisite(s): advanced placement (AP) score of 4 on either the AB or BC exams or MATH Placement Exam score of 46. Enrollment limited to 30. The Staff
20B. Honors Calculus. W  
Challenging course designed to approach single variable calculus from the perspective of modern mathematics. Emphasis is on the evolution and historical development of core concepts underlying calculus and analysis. Prerequisite(s): course 20A. Enrollment limited to 30. The Staff

Systems of linear equations, matrices, determinants. Introduction to vector spaces, linear transformations, inner products, geometry of Euclidean space, and eigenvalues. One quarter of college mathematics is recommended as preparation. (General Education Code(s): Q.) The Staff

22. Introduction to Calculus of Several Variables. F,W,S  
Functions of several variables. Continuity and partial derivatives. The chain rule, gradient and directional derivative. Maxima and minima, including Lagrange multipliers. The double and triple integral and change of variables. Surface areas and volumes. Applications from biology, chemistry, earth sciences, engineering, and physics. Prerequisite(s): course 118 or 198 or 208. The Staff

23A. Multivariable Calculus. F,W,S  
Vectors in n-dimensional Euclidean space. The inner and cross products. The derivative of functions from n-dimensional to m-dimensional Euclidean space is studied as a linear transformation having matrix representation. Paths in 3-dimensions, arc length, vector differential calculus. Taylor's theorem in several variables, extrema of real-valued functions, constrained extrema and Lagrange multipliers, the implicit function theorem, some applications. Prerequisite(s): course 118 or 198 or 208. The Staff

23B. Multivariable Calculus. F,W,S  
Double integral, changing the order of integration. Triple integrals, maps of the plane, change of variables theorem, improper double integrals. Path integrals, line integrals, parametrized surfaces, area of a surface, surface integrals. Green's theorem, Stokes theorem, conservative fields. Gauss's theorem. Applications to physics and differential equations, differential forms. Prerequisite(s): course 23A. The Staff

24. Ordinary Differential Equations. S  
First and second order ordinary differential equations, with emphasis on the linear case. Methods of integrating factors, undetermined coefficients, variation of parameters, power series, numerical computation. Students cannot receive credit for this course and Applied Mathematics and Statistics 27. Prerequisite(s): course 22 or 23A; course 21 is recommended as preparation. The Staff

30. Mathematical Problem Solving. F  
Students learn techniques of problem solving such as induction, contradiction, exhaustion, dissection, analogy, generalization, specialization, and others in the context of solving problems drawn from number theory, probability, combinatorics, graph theory, geometry, and logic. Prerequisite(s): course 11A or 19A or 20A or MATH Placement Exam score of 40 or higher. B. Cooperstein

The Staff

Upper-Division Courses

100. Introduction to Proof and Problem Solving. F,W,S  
Students learn the basic concepts and ideas necessary for upper division mathematics and techniques of mathematical proof in the context of specific topics. Introduction to sets, relations, elementary mathematical logic; proof by contradiction, mathematical induction, and counting arguments. Prerequisite(s): courses 11A and 11B or 19A and 19B or 20A and 20B. Enrollment limited to 40. The Staff

103. Complex Analysis. F  
Complex numbers, analytic and harmonic functions, complex integration, the Cauchy integral formula, Laurent series, singularities and residues, conformal mappings. Prerequisite(s): course 23B; and either course 100 or Computer Science 101. The Staff

105A. Real Analysis. F  
The basic concepts of one-variable calculus are treated carefully and rigorously. Set theory, the real number system, numerical sequences and series, continuity, differentiation. Prerequisite(s): course 23B and either course 100 or Computer Science 101. The Staff

105B. Real Analysis. S  
Metric spaces, differentiation and integration of functions. The Riemann-Stieltjes integral. Sequences and series of functions. Prerequisite(s): course 105A. The Staff

105C. Real Analysis. *  
The Stone-Weierstrass theorem, Fourier series, differentiation and integration of functions of several variables. Prerequisite(s): course 105B. The Staff

106A. Systems of Ordinary Differential Equations. F  
Linear systems, exponentials of operators, existence and uniqueness, stability of equilibria, periodic attractors, and applications. Prerequisite(s): either Applied Mathematics and Statistics 27 or preferably courses 21 and 24; and either course 100 or Computer Science 101. The Staff

106B. Partial Differential Equations. W  
Topics covered include first and second order linear partial differential equations, the heat equation, the wave equation, Laplace's equation, separation of variables, eigenvalue problems, Green's functions, Fourier series. Prerequisite(s): either courses 21 and 24 or Applied Mathematics and Statistics 27; and other course 100 or Computer Science 101; course 106A is recommended as preparation. The Staff

110. Introduction to Number Theory. W  
Prime numbers, unique factorization, congruences with applications (e.g., to magic squares). Rational and irrational numbers. Continued fractions. Introduction to Diophantine equations. No calculus required. An introduction to some of the ideas and outstanding problems of modern mathematics. Prerequisite(s): course 100 or Computer Science 101. (General Education Code(s): Q.) The Staff

111A. Algebra. F  
Group theory including the Sylow theorem, the structure of abelian groups, permutation groups. Introduction to rings and fields including polynomial rings, factorization, the classical geometric constructions, and Galois theory. Prerequisite(s): course 21 or Applied Mathematics and Statistics 27 and either course 100 or Computer Science 101. The Staff

111B. Algebra. S  
Group theory including the Sylow theorem, the structure of abelian groups, permutation groups. Introduction to rings and fields including polynomial rings, factorization, the classical geometric constructions, and Galois theory. Prerequisite(s): course 111A. The Staff

113. Discrete Mathematics. *  
Basic course in theorems and applications of discrete mathematics. Sequences and series, matrix operations, recursion relations, discrete probability, algorithms, finite state machines, boolean functions, trees, elementary number theory, generating functions, graph theory. Particular emphasis on combinatorics. Applications dealing with searching and sorting, cryptography, coding, quantum mechanics, and Markov processes. Prerequisite(s): courses 19A-B, 21, or equivalent. The Staff

115. Graph Theory. *  
Graph theory, trees, vertex and edge colorings, hamilton cycles, Eulerian circuits, decompositions into isomorphic subgraphs, extremal problems, cages, Ramsey theory. Cayley's spanning tree formula, planar graphs, Euler's formula, crossing numbers, thickness, splitting numbers, magic graphs, graceful trees, rotations, and genus of graphs. Prerequisite(s): course 21 or Applied Mathematics and Statistics 27 and other course 100 or Computer Science 101. The Staff

117. Advanced Linear Algebra. W  
Review of abstract vector spaces. Dual spaces, bilinear forms, and the associated geometry. Normal forms of linear mappings. Introduction to tensor products and exterior algebra. Prerequisite(s): course 21 or Applied Mathematics and Statistics 27 and other course 100 or Computer Science 101. The Staff

118. Advanced Number Theory. *  
Topics include divisibility and congruences, arithmetical functions, quadratic residues and quadratic reciprocity, quadratic forms and representations of numbers as sums of squares, Diophantine approximation and transcendence theory, quadratic fields. Additional topics as time permits. Prerequisite(s): course 110 or 111A. The Staff

120. Coding Theory. *  
An introduction to mathematical coding, construction and properties of various codes, such as cyclic, quadratic residue, linear, Hamming, and Golay codes; weight enumerators; connections with modern algebra and combinatorics. Prerequisite(s): course 21. The Staff

121A. Differential Geometry. W  
Topics include Euclidean space, tangent vectors, differential forms and differential forms in space, mappings. Curves, the Frenet formulas, covariant derivatives, frame fields, the structural equations. The classification of space curves up to rigid motions. Vector fields and differential forms on surfaces, the shape operator, Gaussian and mean curvature. The theorems of Bonnet and Hadamard. Prerequisite(s): course 21 and 23B and either course 100 or Computer Science 101. Course 105A strongly recommended. The Staff

121B. Differential Geometry and Topology. *  
Examples of surfaces of constant Gaussian curvature, surfaces of revolution, minimal surfaces. Abstract manifolds; integration theory; Riemannian manifolds; total curvature and geodesics; the Euler characteristic, the theorem of Gauss-Bonnet. Length-minimizing properties of geodesics; complete surfaces; curvature and conjugate points covering surfaces. Surfaces of constant curvature; the theorems of Bonnet and Hadamard. Prerequisite(s): course 121A. The Staff

124. Introduction to Topology. F  
Topics include introduction to point set topology (topological spaces, continuous maps, connectedness, compactness), homotopy relation, definition and calculation of fundamental groups and homology groups, Euler char-
acetic, classification of orientable and nonorientable surfaces, degree of maps, and Lefschetz fixed point theorem. Prerequisite(s): course 100; course 111A recommended. The Staff

126. Mathematical Control Theory. *
Control theory concerns steering and stabilizing systems by means of tunable parameters. Examples are flight controllers C D P players, and biological or robotic locomotion. Studies the mathematical foundations, tools, and basic theorems of linear and nonlinear deterministic control. Prerequisite(s): courses 23B and 24 or Applied Mathematics and Statistics 27, and either course 100 or Computer Science 101.

The Staff

128A. Classical Geometry: Euclidean and Non-Euclidean. F
Rigorous foundations for Euclidean and non-Euclidean geometries. History of attempts to prove the parallel postulate and of the simultaneous discovery by Gauss, J. Bolyai, and Lobachevsky of hyperbolic geometry. Consistency proved by Euclidean models. Classification of rigid motions in both geometries. Prerequisite(s): either course 100 or Computer Science 101.

The Staff

128B. Classical Geometry: Projective. W
Theorems of Desargue, Pascal, and Pappus; homogeneous and affine coordinates; conics; relation to perspective drawing and some history. Prerequisite(s): course 21.

The Staff

130. Celestial Mechanics. *
Solves the two-body (or Kepler) problem, then moves onto the N-body problem where there are many open problems. Includes central force laws; orbital elements; conservation of linear momentum, energy, and angular momentum; the Lagrange-Jacobi formula; Sundman's theorem for total collision; virial theorem; the three-body problem; Jacobi coordinates; solutions of Euler and of Lagrange; and restricted three-body problem. Prerequisite(s): courses 19A-B and course 23A or Physics 5A or 6A; courses 21 and 24 strongly recommended. Enrollment limited to 35.

The Staff

134. Cryptography. S
Introduces different methods in cryptography (shift cipher, affine cipher, Vigenere cipher, Hill cipher, RSA cipher, ElGamal cipher, knapsack cipher). The necessary material from number theory and probability theory is developed in the course. Common methods to attack ciphers discussed. Prerequisite(s): course 100; course 110 recommended as preparation. R. Botte

141. Introduction to Nonlinear Mathematics. *
Modeling problems involving nonlinear differential equations. Applications to chemical reactions, electrical circuits, shock waves, ecosystems, microeconomics, stochastic processes. Exact solutions, intuitive and pictorial methods of analysis. Prerequisite(s): course 21 and 24 or Applied Mathematics and Statistics 27, and either course 100 or Computer Science 101; 106A recommended. The Staff

145. Introductory Chaos Theory. *
The Lorenz and Rossler attractors, measures of chaos, attractor reconstruction, applications from the sciences. Concurrent enrollment in course 145L is required. Students cannot receive credit for this course and Applied Mathematics and Statistics 146. Prerequisite(s): course 22 or 23A; course 21A; and course 100 or Computer Science 101. Concurrent enrollment in course 145L is required. The Staff

145L. Introductory Chaos Laboratory (1 credit). *
Laboratory sequence illustrating topics covered in course 145. One three-hour session per week in microcomputer laboratory. Concurrent enrollment in course 145L is required. The Staff

148. Numerical Analysis. *
The theory of constructive methods in mathematical analysis and its application with scientific computation. Some typical topics are difference equations, linear algebra, iteration, Bernoulli's method, quotient difference algorithm, the interpolating polynomial, numerical differentiation and integration, numerical solution of differential equations, finite Fourier series. Prerequisite(s): course 22 or 23A; and course 21 and 24 and Applied Mathematics and Statistics 27; and course 100 or Computer Science 101. Concurrent enrollment in course 148L is required. The Staff

148L. Numerical Analysis Laboratory (1 credit). *
Laboratory sequence illustrating topics covered in course 148. One three-hour session per week in microcomputer laboratory. Concurrent enrollment in course 148L is required. The Staff

160. Mathematical Logic I. W

The Staff

161. Mathematical Logic II. S
Continuation of course 160: arithmetization of syntax, Tarski's theorem on the undefinability of truth, Gödel's first incompleteness theorem, naïve set theory and its limitations (Russell's paradox), cardinal numbers, cardinal arithmetic, Axiom of Choice, finite, countable and uncountable sets, and Continuum Hypothesis. Prerequisite(s): course 160. Enrollment limited to 45.

The Staff

181. History of Mathematics. W
A survey from a historical point of view of various developments in mathematics. Specific topics and periods to vary yearly. The Staff

188. Supervised Teaching. F,W,S
Supervised tutoring in self-paced courses. May not be repeated for credit. Students submit petition to sponsoring agency. The Staff

194. Senior Seminar. W,S
S designed to expose the student to topics not normally covered in the standard courses. The format varies from year to year. In recent years each student has written a paper and presented a lecture on it to the class. Enrollment priority given to seniors. The Staff

Students research a mathematical topic under the guidance of a faculty sponsor and write a senior thesis demonstrating knowledge of the material. Students submit petition to sponsoring agency. The Staff

199. Tutorial. F,W,S
Students submit petition to sponsoring agency. The Staff

Graduate Courses

200. Algebra I. F
Group theory: fundamentals, free groups, p-groups, group action on a set, Sylow theorems, semidirect products, simple, nilpotent and solvable groups. Ring theory: Chinese remainder theorem, prime ideals, localization. Euclidean domains, PID's, UFD's, polynomial rings. Prerequisite(s): courses 111A and 117 are recommended. May be repeated for credit. The Staff

201. Algebra II. W
Module theory: exact sequences, free modules and vector spaces, modules over a PID, applications. Linear algebra: characteristic polynomials, normal forms. Field theory: transcendental and algebraic extensions, normal, separable, and Galois extensions, splitting fields, the Fundamental Theorem of Galois Theory, perfect fields, cyclotomic polynomials and extensions, applications to classical problems and to solvability by radicals. Course 200 is recommended as preparation. The Staff

202. Algebra III. S
Module theory, the exterior and tensor algebras, quadratic and bilinear forms and their isometry groups. Associative algebra, including Jacobson radical and Wedderburn's theorem. Commutative algebra (time permitting), including Notherian rings, Hilbert basis and N -nullstellensatz theorem. Course 201 is recommended as preparation. The Staff

203. Analysis I. F
Metric spaces. Elements of point set topology (this includes Topological spaces, completeness, compactness, continuous functions, Urysohn lemma, Tychonoff theorem). Measure theory and the Lebesgue integral. The Fundamental Theorem of Calculus (time permitting), including N -nullstellensatz theorem. Course 201 is recommended as preparation. The Staff

204. Analysis II. W
Hilbert space, trigonometric series, Banach space techniques, Baire's theorem. The Fundamental Theorem of Calculus (time permitting), including N -nullstellensatz theorem. Course 203 is recommended as preparation. The Staff

205. Analysis III. S
Lp spaces in detail. Differentiation, distribution theory. Fourier transforms, Sobolev spaces. Courses 203 and 204 are recommended as preparation. The Staff

208. Algebra IV. F
Topics include tensor product of modules over rings, projective modules and injective modules, Jacobson radical, Wedderburn's theorem, category theory. Algebraic number theory, Artinian rings, affine varieties, projective varieties. Hilbert's N -nullstellensatz, prime spectrum, Zariski topology, discrete valuation rings, and Dedekind domains. Prerequisite(s): courses 200, 201, and 202. The Staff

209. Complex Analysis. W
Holomorphic and harmonic functions, the Cauchy integral theorem, the maximum principle and its consequences, conformal mapping, analytic continuation. The Riemann mapping theorem. Prerequisite(s): course 103.

210A. Algebraic Topology. *
Introduction to basic concepts in algebraic topology. Topics include fundamental groups, covering spaces, homology groups, cohomology rings, Poincare duality, and applications. Offered every two or three years. Prerequisite(s): courses 200 and 203.

The Staff

210B. Algebraic Topology. *
A continuation of 210A. Topics include theory of characteristic classes of vector bundles, cohomology theory, and
Part of the text is missing or distorted. The text appears to be a list of courses and their descriptions, but some parts are not clearly visible. It seems to cover a variety of topics in mathematics, including differential equations, Lie groups, algebraic geometry, and more. Due to the quality of the image, it is not possible to provide a complete and accurate transcription of the text.
239. Homological Algebra. * 
H homology and cohomology theories have proven to be powerful tools in many fields (topology, geometry, number theory, algebra). Independent of the field, these theories use the common language of homological algebra. Teaching of this course is to acquaint the participants with basic concepts of category theory and homological algebra, as follows: chain complexes, homology, homotopy, several (co)homology theories (topological spaces, manifolds, groups, algebras, Lie groups), projective and injective resolutions, derived functors (Ext and Tor). Depending on time, spectral sequences or derived categories may also be treated. Courses 200 and 202 strongly recommended. The Staff

240A. Representations of Finite Groups I. * 
Introduces ordinary representation theory of finite groups (over the complex numbers). Main topics are characters, orthogonality relations, character tables, induction and restriction, Frobenius reciprocity, Schur indicator, Schur index, Artin's and Brauer's induction theorems. Recommended: successful completion of courses 200-202. The Staff

240B. Representations of Finite Groups II. * 
Introduces modular representation theory of finite groups (over a field of positive characteristic). Main topics are Grothendieck groups, Brauer characters, Brauer character table, projective covers, Brauer-Cartan triangle, relative projectivity, vertices, sources, Green correspondence, Green's indecomposability theorem. Prerequisite(s): recommended completion of course 200-202 and 221A. The Staff

246. Representations of Algebras. * 
Material includes associative algebras and their modules, projective and injective modules, projective covers, injective hulls, K_1, Schur's theorem, Cartan matrix, semisimple algebras and modules, radical, simple algebras, symmetric algebras, quivers and their representations, Morita theory, and basic algebras. Prerequisite(s): courses 200, 201, and 202. The Staff

248. Symplectic Geometry. * 
Basic definitions. Darboux theorem. Basic examples: cotangent bundles, Kahler manifolds and co-adjoint orbits. Normal form theorems. Hamiltonian group actions, momentum maps. Reduction by symmetry groups. Atiyah-Guillemin-Sternberg convexity. Relations with other geometries including contact, Poisson, and Kahler. Prerequisite(s): course 203; course 234A is recommended as preparation. The Staff

249A. Mechanics I. S 
Covers symplectic geometry and classical Hamiltonian dynamics. Some of the key subjects are the Darboux theorem, Poisson brackets, Hamiltonian and Lagrangian systems, the Legendre transformation, variational principles, Hamilton-Jacobi equation, geodesic equations, and an introduction to Poisson geometry. Courses 203, 204, and 234A are recommended as preparation. The Staff

249B. Mechanics II. * 
Hamiltonian dynamics with symmetry. Key topics center around the momentum map and the theory of reduction in both the symplectic and Poisson context. Applications are taken from geometry, rigid body dynamics, and continuum mechanics. Course 249A is recommended as preparation. The Staff

249C. Mechanics III. * 
Introduces students to active research topics tailored according to the interests of the students. Possible subjects are complete integrability and Kac-Moody Lie algebras, Smale's topological program and bifurcation theory; KAM theory; stability and chaos; stability; quantization. Course 249B is recommended as preparation. Offered in alternate academic years. The Staff

252. Fluid Mechanics. * 
First covers a basic introduction to fluid dynamics equations and then focuses on different aspects of the solutions to the N-Navier-Stokes equations. Prerequisite(s): courses 105A and 106B recommended. Enrollment restricted to graduate students. The Staff

254. Geometric Analysis. * 
Introduction to some basics in geometric analysis through discussions of two fundamental problems in geometry: the resolution of the Yamabe problem and the study of harmonic maps. The analytic aspects of these problems include Sobolev spaces, best constants in Sobolev inequalities, and regularity and priori estimates of systems of elliptic PDE. Prerequisite(s): courses 213A, 234A, and 234B recommended. The Staff

256. Algebraic Curves. W 
Introduces compact Riemann surfaces and algebraic geometry via an in-depth study of complex algebraic curves. Prerequisite(s): courses 200, 201, 202, 203, 204, and 205 recommended. Enrollment restricted to graduate mathematics and physics majors. The Staff

260. Combinatorics. * 
Combinatorial mathematics, including summation methods, binomial coefficients, combinatorial sequences (Fibonacci, Stirling, Eulerian, harmonic, Bernoulli numbers), generating functions and their uses, Bernoulli processes and other topics in discrete probability. Oriented toward problem solving applications. Applications to statistical physics and computer science. The Staff

280. Topics in Analysis. * 
The Staff

281. Topics in Algebra. * 
The Staff

282. Topics in Geometry. * 
The Staff

283. Topics in Combinatorial Theory. * 
The Staff

284. Topics in Dynamics. * 
The Staff

285. Topics in Partial Differential Equations. * 
Topics such as derivation of the Navier-Stokes equations. Prerequisite(s): courses 213A, 234A, and 234B recommended. Enrollment restricted to graduate mathematics and physics majors. The Staff

320. Re-Evaluation Counseling. * 
Class introduces the fundamentals of re-evaluation counseling (co-counseling) and focuses on those aspects of the theory and practice which facilitate living in a diverse world. Will be offered in the 2005-2006 academic year. In- class instructor before first class meeting. Enrollment limited to 20. P. Roby

42. Student-Directed Seminar. F,W,S 
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80. Cultural Identities and Global Consciousness (Merrill Core Course). F 
Introduces students to the rapidly evolving global society. Using autobiographies, nonfiction, novels, and film, takes students into lives of ordinary people, both in the U.S. and abroad, struggling with social forces threatening to overwhelm their lives. Taught in small seminars, instructors paying close attention to students' academic progress and writing skills. Enrollment restricted to first-year college members. (General Education Code(s): T3-Social Sciences, E1) J. Schumacher
80B. White Racial Identity in a Multicultural Society. S
Examines white racial identity in the U.S., including different manifestations of racism, white privilege, white culture, inter-racial and intra-racial relations. Students develop and implement action plans to combat racism. Experiential format. Enrollment limited to 25. (General Education Code(s): T3-Social Sciences.) G. Shoemaker

80C. Merrill Seminar. S
A research-based, interdisciplinary offering, on a topic of particular cultural, historical, or contemporary interest, open to all undergraduate students, taught by either a Merrill College Fellow or other member of the UCSC faculty. (General Education Code(s): T5-Humanities and Arts or Social Sciences.) The Staff

80X. Cultural Identities and Global Consciousness (Freshman Scholars Section: Merrill Core Course). F
Introduces students to the rapidly evolving global society. Using autobiographies, nonfiction, novels, and film, takes students into lives of ordinary people, both in the U.S. and abroad, struggling with social forces threatening to overwhelm their lives. Taught in small seminars, instructors pay close attention to students' academic progress and writing skills. Merrill College members are selected for this year-long scholars program on the basis of an application submitted prior to fall quarter. (General Education Code(s): T3-Social Sciences, E.) J. Schechter

80Y. The Perspective of First Peoples (Freshman Scholars). W
Interdisciplinary and comparative examination of American Indian peoples' history, literature, and ecological and environmental activism. Careful reading of documentary history and sampling of novels, tales, poems, and environmental essays by American Indian writers. Material from all North American First Peoples' cultural areas. Merrill College members are selected for this year-long scholars program on the basis of an application submitted prior to fall quarter. (General Education Code(s): T4-Humanities and Arts) D. Price

80Z. Modern Moral Problems (Freshman Scholars). S
An examination of the morality involved in such issues as affirmative action, foreign aid, immigration, abortion, and assisted suicide. Close reading of contemporary articles on these subjects. An emphasis on the construction of persuasive arguments. Merrill College members are selected for this year-long scholars program on the basis of an application submitted prior to fall quarter. (General Education Code(s): C.) J. Jabbar

85A. Merrill Classroom Connection Field Study. F, W, S
Supervised hands-on experience assisting in classrooms and after-school programs at local schools including one-on-one mentoring, small group instruction, art projects, and playgrounds. Includes weekly sections, readings of practical and theoretical relevance, field notes, and a final paper. Permission of instructor required; contact Classroom Connection Coordinator at 459-5671. M. Turrentine may be repeated for credit. T. Turrentine

85B. Merrill Classroom Connection Field Study. 3 credits. F, W, S
Supervised hands-on experience assisting in classrooms and after-school programs at local schools including one-on-one mentoring, small group instruction, art projects, and playgrounds. Includes weekly sections, readings of practical and theoretical relevance, field notes, and a final paper. Permission of instructor required; contact Classroom Connection Coordinator at 459-5671. M. Turrentine may be repeated for credit. T. Turrentine

93. Field Study. F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in any one quarter. Approval of student's adviser and provost required. The Staff

93F. Field Study (2 credits). F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Approval of instructor required. M. Turrentine may be repeated for credit. The Staff

93G. Field Study (3 credits). F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Approval of instructor required. M. Turrentine may be repeated for credit. The Staff

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits). F, W, S
Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

120. Personal Empowerment. W
Intensive course on individual goal-oriented behavior, commonly called problem solving. Focus on purpose, goals, meaning, emotions, language, model-building, reality, thinking, logic, creativity, the steps of problem solving, common blocks, and techniques of unblocking. Meet with instructor prior to advance enrollment; priority given to upper-level students. Enrollment limited to 20. F. Andrews

192. Directed Student Teaching. F, W, S
Supervised hands-on experience assisting in classrooms and after-school programs at local schools including one-on-one mentoring, small group instruction, art projects, and playgrounds. Includes weekly sections, readings of practical and theoretical relevance, field notes, and a final paper. Permission of instructor required; contact Classroom Connection Coordinator at 459-5671. M. Turrentine may be repeated for credit. T. Turrentine

193. Field Study. F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in one quarter. Approval of student's adviser and provost required. The Staff

193F. Field Study (2 credits). F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in one quarter. Approval of student's adviser and provost required. M. Turrentine may be repeated for credit. The Staff

193G. Field Study (3 credits). F, W, S
Provides for individual programs of study sponsored by the college and performed off campus. Approval of instructor required. M. Turrentine may be repeated for credit. The Staff

195. Senior Research Project. F, W, S
Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. This may be a multiple-term course extending over two or three quarters; in this case the grade and evaluation submitted for the final quarter apply to all previous quarters. Petition may be obtained at the Merrill College Office. Approval of student's adviser, certification of adequate preparation, and approval by the Merrill Provost required. May be repeated for credit. The Staff

199. Tutorial. F, W, S
Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency. The Staff

Molecular, Cell, and Developmental Biology

See Biological Sciences, page 135.

Music

244 Music Center
(831) 459-2292
mus@ucsc.edu
http://music.ucsc.edu

Faculty and Professional Interests

Professor

LINDA C. BURMAN-HALL
Baroque music and performance practices; historic keyboard repertoire (harpsichord, organ, and fortepiano); Indonesian music cultures; ethnomusicology

DAVID H. COPE
Composition; 20th-century music history with focus on the avant-garde 18th- and 19th-century theory; analysis; Experiments in Music Intelligence

SHERWOOD HUDLEYS, Emeritus

EDWARD F. HOUGHTON
Medieval and Renaissance music, 15th- and 16th-century polyphony, conducting

DAVID EVAN JONES
Composition and analysis (often computer assisted), timbre and orchestration, language and music

ANATOLE LEIKIN
Classical and romantic music history and performance practices, piano and fortepiano, Russian music

FREDRIC LIEBMAN
Ethnomusicology; composition; the music industry and legal/ethical issues; American vernacular music; music of East, Southeast, and South Asia

LETA E. MILLER
Renaissance and baroque music history and performance practices, 20th-century American music, modern and baroque flute, 16th-century chanson and madrigal, music and science, 18th- and 20th-century flute literature and performance styles, music of Bach and Handel Harrison
Gordon Mumma, Emeritus

Nicole A. Paient
Orchestral and choral conducting baroque, classical, and 20th-century performance practices; Handel; le Groupe des Six; French 20th-century music; interdisciplinary art

John M. Schechter
Ethnomusicology; music theory; South American traditional and contemporary music; Quechua music—culture, music and ritual; organology; Strawinsky; Founder/Director, UCSC Latin American Ensembles

Associate Professor

Hi-Kyoung Kim
Composition, 20th-century music, tonal and Schenkerian analysis, orchestration, Korean traditional music

Paul Nauert
Theory; composition; rhythm and meter; music cognition; mathematical and computer models of the compositional process

Assistant Professor

Amy C. Beal
American music, 20th-century music, experimentalism, post-war and cold war cultural practices, German new music festivals and radio stations, ethnomusicology, piano, contemporary music performance; John Cage

Benjamin L. Carson
Theory and composition; music cognition and consciousness; rhythm and voice leading; history of musical subjects

Karlton E. Hester
Primedited, electroacoustic and spontaneous composition; flutes, saxophones and interdisciplinary performance; improvisational and Afrocentric music theory, analysis and history

Dard Neuman
Ethnomusicology, Hindustani music; colonialism, nationalism, technology and performance; star

Nicole Treadwell
Material through early baroque music history and performance practices; early plucked-string instruments ( theorbo, lute, and baroque guitar, lute lute); 16th- and 17th-century Italian theatrical music; gender studies; women and music; literary and critical theory

Lecturer

Karen L. Andrie
Cello

Erika Arulanathan
Group piano, musicianship

Gerald J. Bassermann
Electronic music

Mark Brandenburg
Clarinet

Paul D. Contos
Saxophone

Mary Jane Cope
Piano, fortepiano

William D. Coulter
Classical guitar

Jacques A. Desgardins
Concert choir

Peter O. Elsea
Electronic music and music technology

Maria V. Ezerova
Piano, musicianship

Barry L. Green
String bass

Robert Klevan
Wind Ensemble

Patrice L. Maginnis
Voice

Roy T. Malan
Violin, viola

George E. Marsh
Percussion: trap set

Patricia L. Mitchell
Oboe

Owen M. Miyoshi
Trumpet

Diana L. Nieves
Latin American ensembles

Jane D. Orzel
Bassoon

Mesut Özgen
Classical guitar

Stan E. Popkin
String bass, jazz ensembles

John T. Sackett
Music theory

Wayne J. Solomon
Trombone

Brian J. Stauffenbiel
Voice

Undang Sumarna
West Java gamelan

Susan C. Vollmer
Horn

William K. Winant
Orchestral percussion, percussion ensemble

Greer Ellis Wolfson
Flute

Professor

William G. Matthews, Professor of Astronomy
Galaxies, high-energy astrophysics, gaseous nebulae, comets (music)

Distinguished Adjunct Professor

Ali Akbar Khan
North Indian classical music

Program Description

The UCSC music curriculum is distinctive in developing musicians who integrate scholarship with performance. Although this rigorous program primarily addresses Western music, it also incorporates the study of world music cultures in both their art and vernacular traditions. A major in music establishes a substantial foundation for further academic or performance studies. Two undergraduate majors are offered: the bachelor of music, which especially develops the student's attainment in performance, and the bachelor of arts, which cultivates greater breadth in the student's academic achievement. Three minors in music are also offered: a general one in music, one in electronic music, and one in jazz. The electronic music and jazz minors are open to music majors, as well as to students with other majors.

The music program provides courses for both general education and the music major/minor curriculum. Students from all disciplines are encouraged to enroll in music courses, including performance groups and private instruction.

The newly completed Music Center includes a 400-seat recital hall with recording facilities, specialty equipped classrooms, individual practice and teaching studios, a student computer lab, rehearsal space for ensembles, a gamelan studio, and studios for electronic and computer music. MCH Library has a separate music section and listening rooms with individual audio and video facilities. Recording and media equipment is available from the Instructional Media Center.

Letter Grade Requirement

For all students starting fall 2001 and later, all upper-division courses applied toward the music majors must be taken for a letter grade, except Music 120 and ensembles, which may be taken Pass/No Pass.

Requirements for the Bachelor of Arts

The course requirements for the B.A. in music include courses 30A/30B/30M/30N/100A-B-C, 101A-B-C-D; either course 180A or 180B; another course selected from either 120, 124, 130, or the 180A or 180B course not already taken; and 197. Basic keyboard skills are required as a component of the music theory curriculum. Any student will need to take Music 60, Group Instruction in Piano, concurrently with the Music 30 sequence to achieve the appropriate level of skill. In addition, music majors are required to enroll in a minimum of six quarters of evaluated instrumental or choral ensembles, as well as a minimum of six quarters of evaluated individual instrumental or vocal lessons. It is strongly recommended that these ensembles and lessons be taken every quarter from the beginning of the core curriculum (course 30 sequence). Music majors in the B.A. program must successfully complete the proficiency audition (see below) as well as the senior comprehensive examination requirement (course 197).

Though a foreign language is not required for completion of the B.A. in music, it is strongly recommended that students planning graduate work complete study of a language pertinent to their research area to at least the equivalent of level 3 at UCSC or be able to pass the level 4 entrance examination.

Students are encouraged to prepare a senior project, which may take one of three forms: a full senior recital, a full senior thesis, or a partial recital with a related shorter thesis.

Music B.A. Sample Planners

The following are two recommended academic plans for students to complete during their first two years as preparation for the music major. Plan One is a guideline for students who are committed to the major early in their academic career; Plan Two is for students who are considering the major.

Students should check with the department office for the most up-to-date course schedules and program planning advice since courses are not necessarily taught in the same quarters each academic year.
**Plan One**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Mus 30A/L</td>
<td>Mus 30B/M</td>
<td>Mus 30C/N</td>
</tr>
<tr>
<td>(fsh)</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td>(gpr)</td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>(group piano, Mus 60, may be required; see courses 30A/B/C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Mus 100A</td>
<td>Mus 100B</td>
<td>Mus 100C</td>
</tr>
<tr>
<td>(soph)</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
</tbody>
</table>

**Plan Two**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Mus 11 (reccom)</td>
<td>Mus 13 (reccom)</td>
<td>Mus 14 (reccom)</td>
</tr>
<tr>
<td>(fsh)</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td>(gpr)</td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td>2nd</td>
<td>Mus 30A/L</td>
<td>Mus 30B/M</td>
<td>Mus 30C/N</td>
</tr>
</tbody>
</table>

**General Examinations**

All students majoring in the B.A. program are required to take the following examinations, which are discussed in greater detail in the music student handbook.

Core Curriculum Placement Examination (A sample of the exam can be viewed at [http://music.ucsc.edu](http://music.ucsc.edu)). Students are tested in the areas of theory, music literature, and ear training. This exam (or equivalent) is a prerequisite to course 30A/L. Students should also take the exam to place out of course 13 or to place into course 14. The exam is given during fall quarter on the same day as the music orientation meeting. Transfer students who demonstrate acceptable competency on the placement examination may be recommended for advanced placement based on a further examination (including testing in keyboard and sight-singing skills).

Advisory audition. Students are required to take an advisory audition on their major instrument or in voice at the conclusion of course 30A/L.

Proficiency audition. Students are required to demonstrate at least an "upper-intermediate" level of proficiency on their major instrument or in voice before enrolling in course 100B.

Senior exit seminar. Students in the B.A. program are required to take the exit seminar (course 197) which encompasses material from all of the sections of the required curriculum.

**Requirements for the Bachelor of Music**

The bachelor of music degree (B.M.) is designed for those who intend to pursue a career in performance. Acceptance to the program is by audition during fall quarter. Junior transfer students entering in winter quarter may audition in the spring. These auditions are open to registered UCSC students only, although prospective students may submit a tape to the Music Department and ask to receive an informal opinion about their chances for acceptance into the major.

B.M. students major in an instrument or in voice. For the audition, students should prepare three pieces or movements of a contrasting nature from at least two different stylistic periods. (Two contrasting movements from the same sonata or concerto may count as two of the three required pieces) Prospective students' optional tapes should also meet these specifications in order to receive an unofficial evaluation from the Music Department.

The requirements for the B.M. include courses 30A/L-B/M-C/N, 100A-B-C-D, and 180A or 180B. In addition, students are required to enroll in a minimum of 12 quarters of evaluated instrumental or vocal ensemble, as well as a minimum of 11 quarters of evaluated instrumental or choral lessons. A senior recital is required in the final quarter. The music core curriculum placement examination (see above), or passing course 14 with a final examination score of approximately 80 percent or higher, is a prerequisite to course 30A/L. Basic keyboard skills are required as a component of the music theory curriculum; some students will need to take course 60, Group Instruction in Piano, concurrently with the course 30 sequence to achieve the appropriate level of skill. B.M. students take a jury examination in their major instrument or in voice at least twice a year and perform one piece in the regular U C S C student recital series at least once a year. In addition to these requirements, voice majors are required to take French 1, German 1, and Italian 1.

B.M. programs differ from the B.A. program in requiring more credits in performance and slightly fewer in theoretical disciplines. B.M. students are not required to take course 120, 124, or 130. The senior exit requirement for B.M. students is a senior recital (not the senior exit seminar).

**B.M. Four-Year Sample Study Planner for Students Concentrating in an Instrument**

Note: It is typical of B.M. programs at all institutions to spread general education requirements throughout a student's four years in order to allow for early specialization. Students should check with the department office for the most up-to-date course schedules and program planning advice, since courses are not necessarily taught in the same quarters each academic year. Numbers of quarter credits are in parentheses.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td>(fsh)</td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>gen ed coll core (5)</td>
<td>gen ed (5)</td>
<td>gen ed (5)</td>
</tr>
<tr>
<td></td>
<td>gen ed (5)</td>
<td>gen ed (5)</td>
<td>Mus 14 (5)</td>
</tr>
<tr>
<td>2nd</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td>(soph)</td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>Mus 30A (5)</td>
<td>Mus 30B (5)</td>
<td>Mus 30C (5)</td>
</tr>
<tr>
<td></td>
<td>Mus 30L (2)</td>
<td>Mus 30M (2)</td>
<td>Mus 30N (2)</td>
</tr>
<tr>
<td></td>
<td>Mus 60D*</td>
<td>Mus 60E*</td>
<td>Mus 60F*</td>
</tr>
<tr>
<td></td>
<td>gen ed (5)</td>
<td>gen ed (5)</td>
<td>gen ed (5)</td>
</tr>
<tr>
<td>3rd</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td>(pr)</td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>Mus 100A (5)</td>
<td>Mus 100B (5)</td>
<td>Mus 100C (5)</td>
</tr>
<tr>
<td></td>
<td>Mus 102A (5)</td>
<td>Mus 103B (5)</td>
<td>Mus 101B (5)</td>
</tr>
<tr>
<td>4th</td>
<td>lessons</td>
<td>lessons</td>
<td>lessons</td>
</tr>
<tr>
<td>(sr)</td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>ensemble</td>
<td>ensemble</td>
<td>ensemble</td>
</tr>
<tr>
<td></td>
<td>Mus 101C (5)</td>
<td>101D (5)</td>
<td>elective (2-5)</td>
</tr>
<tr>
<td></td>
<td>gen ed (5)</td>
<td>gen ed (5)</td>
<td>gen ed elective (5)</td>
</tr>
</tbody>
</table>

*Music 60 (Group Instruction in Flute) is not a course requirement for the major but should be taken if the student needs preparation for the keyboard proficiency examination. The course is geared to the Music 30A/B/C sequence. (Current music majors frequently take 17-20 credits in this configuration of courses.)

Voice majors need to work closely with an adviser to schedule general education courses because of the added language requirements; a Summer Session may be necessary. It is recommended that voice majors take a language course each fall quarter during the first three years and that vocal repertoire in that language be stressed throughout the academic year. For example, instead of a general education course fall quarter of the freshman, sophomore, and junior years, a student concentrating in voice might enroll in Italian 1, German 1, and French 1, respectively.

**M. orns**

**Music**

The music minor offers a focus for music activities and a background in both music history and theory. A student may earn a minor in music by completing the following courses: 11; 30A/L-B/M-C/N; one of either 120, 130, 180A or 180B, or any music course in the 80 series; one of 101A-B-C-D; and a combination of evaluated individual or group lessons and performing ensembles of the three-course electronic music audio sequence (61, 124, 125) together totaling six quarters. Of the examinations required for the B.A., only the core curriculum placement exam (or equivalent) is required for the music minor.

**Electronic Music**

The electronic music minor focuses on the study of creativity and production of electronic music. It is designed to complement the music major or programs in other media by providing instruction in advanced skills of electronic music production (sound synthesis, and computer-assisted composition). A student may obtain a minor in electronic music by completing the following:

- course 11;
- course 13 (may be satisfied through the music core curriculum placement examination);
- course 14 (or course 30A/L placement exam);
- course 80C, 81, 124, 125, and 167;
- course 80L or 88R (or a similar music course with a technical focus as approved by the department);
- Physics 80A or an introductory computer programming course such as Computer Science 60G, 60N, or 109.

**Jazz**

The jazz minor focuses on the study of the history, theory, and performance of jazz. In addition, students may be introduced to musical styles that have had profound influences on this uniquely American art form: folk and popular music, jazz, and Western classical music. The jazz minor is limited to students with sufficient ability on their instruments to pass auditions for entry into the jazz ensembles. The required courses for the minor in jazz are the following:

- course 11;
- course 14 (students not qualified to take course 14 must also take course 13 as a prerequisite);
- course 75;
- course 80E;
- course 80F, 80G, 80H, or 800;
- six quarters of ensembles, including at least three quarters of the jazz ensembles (courses 3 and/or 164).

All Music Department ensembles are 2-credit courses.

- courses 174A and 174B.

Detailed information about the music majors and minors may be obtained from the Music Department Office.

**Honors**

Honors are conferred by vote of the music faculty. B.A. students may receive Honors for the senior exit seminar, for the senior project (thesis or recital), or for music coursework in general, particularly in the core curricu-
lum and required music courses. Normally, only students who have demonstrated a broad and well-balanced preparation and who have received Honors in two of the three areas will be considered for Honors in the major, which appear on the diploma. B.A. students who wish to be considered for Honors in the major are advised to prepare a senior project. In rare instances, students who receive Honors in all three areas may be awarded Highest Honors in the major. B.M., students who receive Honors in the senior recital, excellent evaluations in performing courses, and very good to excellent evaluations in non-performance music courses or the senior exit seminar will be considered for Honors or Highest Honors in the major.

Transfer Students

The Music Department encourages transfer students to take the core curriculum placement examination and seek academic counseling before transfer (a sample of the exam can be viewed at http://music.ucsc.edu). Transfer students with some background in music theory normally test into course 14 or into 30A/L, which is only offered fall quarter. Students who test into course 13 or 14 take one or both of these courses in their first year in order to prepare to enroll in course 30A/L, the following fall. Transfer students who have completed all of their general education requirements and who test into course 30A/L upon transfer may be able to complete the music major in two years.

B.A. transfer students should note that upon completion of course 100A, they need to perform on a musical instrument or voice at an upper-intermediate level. Prospective students wishing to have their performance skill level assessed by faculty in preparation for entry to the program may send a tape for faculty review.

B.M. transfer students should prepare to audition in the fall quarter after enrollment. (For audition requirements, see the B.M. section above) In certain cases, some or all of the applied music requirement may be waived based on prior course work.

B.M. Sample Study Planner for Transfer Students Concentrating in an Instrument

This plan assumes that all general education requirements have been met. The music core curriculum placement examination generally places junior transfer students in Music 30A/L (which is only offered during fall quarter).

Students should check with the department office for the most up-to-date course schedules and program planning advice, since courses are not necessarily taught in the program may send a tape for faculty review.

Transfer students concentrating in voice could enroll in Italian 1 and German 1 in the fall and winter quarters, respectively, of the junior year, and in French 1 in the spring quarter of the senior year. Such a transfer student would complete any desired electives prior to arrival at UCSC and/or in Summer Session. However, transfer students should try to satisfy as many of the language requirements as possible before entering the program.

Individual Instruction

Lessons in the instruments listed below are available on a fee basis and by audition with the instructor. Concurrent enrollment in an ensemble on the same instrument (or voice) is required.

- Courses 61, 62, and 161, carry partial course credit. Each quarter of enrollment in course 61 is equivalent to 2 credits; each quarter of enrollment in course 62 or 161 is equivalent to 3 credits. Course 162, open to advanced students only, carries 5 credits.
- Class instruction for partial credit (courses 60 and 63) is available on some instruments but may not be used to fulfill the individual lesson requirements for the major.

Base B. Green
Bassoon: J. Orzel
Cello: K. Andrie
Clarinet: H. Brandenburg
Class Piano: M. Ezerova
Cornetto: W. Mathews
Flute: A. Ellison Wolfson
Guitar, classical: W. Coulter, M. Ozgen
Harp: J. Cope, M. Ezerova, A. Leikin
Horn: S. Vollmar
Oboe: P. Mitchell
Percussion: G. Marsh, W. Inman
Piano, classical: M. J. Cope, M. Ezerova, A. Leikin
Saxophone: P. Contos
Trombone and tuba: W. Solomon
Trumpet: O. Klevan
Violin and viola: R. Malone
Voice: P. Maginnis, B. Staufenberg

Performance Groups

The participants in some groups are selected by auditions open to the entire university community. Students may receive 2 course credits for each quarter of enrollment in any of the ensembles.

University Orchestra: N. Paiement
University Concert Choir: J. D’Espinard
Women’s Chorale: Staff
Chamber Singers: N. Paiement
University Opera Theater: B. Staufenberg
Opera Workshop: P. Maginnis, B. Staufenberg
Early Music Consort: L. Burman-Hall, L. Miller
Chamber Music: Staff

Large Jazz Ensemble: R. Klevan
Small Jazz Ensembles: S. Poplin
Latin American Ensembles: J. Schechter
West Javanese Gamelan: U. Sumarna
Balinese Gamelan Angklung: L. Burman-Hall
Gender Wayang Ensemble: L. Burman-Hall
Wind Ensemble: R. Klevan

Graduate Programs

Doctorate of Musical Arts

The D.M.A. program must present a half-concert of the music they have composed that year and submit the scores and a recording of the concert as a portfolio. This portfolio will inform the music faculty’s evaluation of the students’ status in the program. M.A. students admitted to the D.M.A. program at the time of their original application may apply (or reapply) for the D.M.A. program at the completion of their first year of study. The student’s portfolio of first-year compositions will be central to the faculty’s consideration of the student’s application. If the application is accepted, the student will continue into the second year of the D.M.A. program.

Requirements

For students entering with the bachelor’s degree, a minimum of 102 credits in course work at UCSC will be required. All students must be in residence for a minimum of nine quarters. Students must enroll in a minimum of twelve credits each quarter until they advance to candidacy. After advancing to candidacy, students remaining in residence must take a minimum of two five-credit courses per quarter.

For students entering with a master’s degree from another institution, a minimum of 72 credits in course work at UCSC will be required. All students must be in residence for a minimum of nine quarters. Students must enroll in a minimum of twelve credits each quarter until they advance to candidacy. After advancing to candidacy, students remaining in residence must take a minimum of two five-credit courses per quarter.

Core Courses

Music 200, 201, and 202 are required of all M.A. and D.M.A. students. Students entering the D.M.A. with a master’s degree from another institution may be exempted from one or more of these three core requirements by submitting work that demonstrates the relevant skills. Music 203H is required of all students in the world music composition track. Music 206B is required of all students in the computer assisted composition track. One additional focus course selected from the Music 206 series, and one elective (which may also be an offering of Music 206) are also required. The remainder of the course requirements for the D.M.A. are specific to the field of composition. Music 219A and B introduce the discipline to first-year graduate students. Music 220 gives the students greater leeway in which to develop their own individual styles and techniques. Independent study courses in composition are taken in preparation for the completion of the qualifying recital (which is required of students entering with a bachelor’s degree) and in preparation for the dissertation.

Pre-qualifying Reviews

Before the end of the first year of study, all students accepted into the D.M.A. program must present a half-concert of the music they have composed that year and submit the scores and a recording of the concert as a portfolio. This portfolio will inform the music faculty’s evaluation of the students’ status in the program. M.A. students at UC Santa Cruz who were not admitted to the D.M.A. program at the time of their original application may apply (or reapply) for the D.M.A. program at the completion of their first year of study. The student’s portfolio of first-year compositions will be central to the faculty’s consideration of the student’s application. If the application is accepted, the student will continue into the second year of the D.M.A. program.
The Qualifying Recital

All students admitted to the D.M.A. program must present a full recital of their work at the end of their second year of study. The D.M.A. Qualifying Recital will be evaluated by the student’s primary adviser and by a second “reader” (generally a second composer on the UCSC faculty) selected by the student in consultation with the primary adviser.

Dissertation Prospectus

The dissertation prospectus must be submitted by the beginning of spring term one year before the scheduled Qualifying Examination. The prospectus must include a proposal describing the scope and nature of the dissertation composition and the accompanying essay. In addition to defining the parameters of the dissertation itself, the dissertation prospectus will suggest to the student’s Qualifying Examination Committee those areas of study that should be emphasized in the student’s Qualifying Examination.

Qualifying Examination. Advancement to candidacy is contingent upon the passing of a written examination and an oral examination normally administered at the end of year three for students entering with a bachelor’s degree, and year one or two for students entering with a master’s degree from another institution. For the written portion of the examination, the Qualifying Examination Committee provides questions on the three topics assigned as areas of emphasis. The oral examination is administered by the student’s Qualifying Examination Committee and may concern any aspect of the assigned topics with an emphasis on those issues addressed in the written portion of the examination. Advancement to candidacy is granted upon notice that the student has passed the written and oral examinations.

Dissertation

D.M.A. students must complete a dissertation consisting of a substantial musical composition, accompanied by an essay. One to two years of work beyond the qualifying examinations should be sufficient for the completion of the dissertation, except in cases where extended fieldwork is required.

Final Examination

The final examination will be a public oral defense of the dissertation. After an oral presentation by the candidate, the candidate will be questioned by the Dissertation Committee.

Students entering the D.M.A. program in composition will be expected to have completed the equivalent of a BA in music, a bachelor of music degree, or an M.A. in music. Student applications must include scores for the UCSC Music Graduate Entrance Examination, three composition scores with recordings (if available), a writing sample (e.g., term papers, thesis essay), all undergraduate transcripts, letters of recommendation, and a dissertation prospectus. Students are expected to demonstrate competency in English through submission of TOEFL scores or by placement examination or, during the first year of enrollment, by satisfactory completion of level 3 of the language at UCSC. With the approval of the primary adviser, students whose emphasis is algorithmic composition may complete three quarters/year of university-level instruction in computer programming in lieu of fulfillment of the foreign language requirement.

The final requirements for the degree are a thesis comprising a substantive and original creative or scholarly work (course 299, Thesis Research) and a related public performance (course 298, Graduate Recital).

Special requirements for admission to the program include completion of the UCSC Music Graduate Entrance Examination and submission of a portfolio of recent work that includes a writing or composition sample (e.g., term paper or senior thesis, scores, or other projects) and a 10- to 20-minute unedited CD, audio-, or videocassette of one or more recent performances as instrumentalist, vocalist, conductor, or performances of original compositions.

Scores for the Graduate Record Examination General Test are required by the University of California. The application deadline is February 1 for all students, including those who wish to be considered for fellowships in the following academic year. Further details about the program are available from the Music Department.

Lower-Division Courses

1A. Women’s Chorale (2 credits).

Study of vocal and choral techniques in the context of ensemble rehearsals, often culminating in public performance. Repertoire to include varied works for treble choir, both a cappella and with instrumental accompaniment. Familiarity with basic music notation recommended. Some additional rehearsal time, both individually and with the group is required. Admission by audition with conductor prior to first class meeting. See enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) The Staff

2. University Orchestra (2 credits). F,W,S

A study of selected works for orchestra, culminating in one or more public concerts. Admission by audition with conductor prior to first class meeting. See enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) The Staff

3. Large Jazz Ensemble (2 credits). F,W,S

Instruction in performance in large jazz ensembles with written arrangements. Prepares a specific repertoire for public performance. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 25. May be repeated for credit. (General Education Code(s): A.) The Staff

4A. Latin American Ensemble: "Voces" (2 credits). F,W,S

Instruction in diverse musical traditions and their culturally-grounded performance contexts. Of native American, Ibero-American, and African American music cultures of Latin America, including texted music in Spanish and Quechua or other regional languages. The class forms an ensemble that prepares varying cultural and national repertoires for public performance. Some Spanish language ability is recommended. Attend first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 25. May be repeated for credit. (General Education Code(s): A.) The Staff

4B. Latin American Ensemble: "Taki Nán" (2 credits). F,W,S

Development of Latin American, Native American, Ibero-American, African-American, and/or Nueva Canción (New Song) repertoire in a small ensemble setting. Three quarters of course 4A or previous enrollment in course 4B required prior to enrollment in this course. Admission by audition with instructor at first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 10. May be repeated for credit. (General Education Code(s): A.) The Staff

5A. West Java Dance Gamelan Ensemble: Beginning (2 credits). F,W,S

Instruction in practice and performance of gamelan music from Java or Sundanese. Preparation of several works for public presentation. Attend first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) U. Sumarna


Instruction in practice and performance of gamelan music from Java or Sundanese. Preparation of several works for public presentation. Attend first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) U. Sumarna

5C. West Java Dance Gamelan Ensemble: Advanced (2 credits). F,W,S

Instruction in practice and performance of gamelan music from Java or Sundanese. Preparation of several works for public presentation. Attend first class meeting. See the en-
30B. Theory, Literature, and Musicianship I, W
An integrated and intensive approach to music composition, harmony, species counterpoint, and analysis, including live class performance of all materials. Includes sight-singing, singing of atonal melody, score-reading, keyboard harmony, dictation. Covers early-eighteenth-century style. Specified keyboard skills must be demonstrated at the end of each quarter (see undergraduate Music Student Handbook for a complete listing of skills). Prerequisite(s): course 30A; instructor determination at first class meeting. Concurrent enrollment in 30M required; concurrent enrollment in course 60 unless prior keyboard training can be demonstrated. Enrollment limited to 20. H. Kim, A. Lekin, P. Nauert, J. Schechter

30C. Theory, Literature, and Musicianship I, S
An integrated and intensive approach to music composition, harmony, species counterpoint, and analysis, including live-class performance of all materials. Includes sight-singing, singing of atonal melody, score-reading, keyboard harmony, dictation. Covers late-eighteenth-century style. Specified keyboard skills must be demonstrated at the end of each quarter (see undergraduate Music Student Handbook for a complete listing of skills). Prerequisite(s): course 30B; instructor determination at first class meeting. Concurrent enrollment in 30N required; concurrent enrollment in course 60 unless prior keyboard training can be demonstrated. Enrollment limited to 20. H. Kim, A. Lekin, P. Nauert, J. Schechter

30L. Theory, Literature, and Musicianship I Laboratory (2 credits), F
Keyboard (score-reading, figured-bass, progressions, chorales) and musicianship (sight-singing, atonal melody, rhythm) laboratory sequence illustrating topics covered in courses 30A-B-C, respectively. Two 1-hour laboratory sessions per week. Prerequisite(s): admission by core curriculum placement examination or by passing course 14 with a final examination score of approximately 80% or higher. Concurrent enrollment in course 30A required. Enrollment limited to 6. The Staff

30M. Theory, Literature, and Music Technique (2 credits), W
Elementary group instruction in instrumental (excluding piano) or vocal techniques, including group and individual performance experience. A minimum of six hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed for a course fee. Admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment priority given to music majors and minors. May be repeated for credit. The Staff

60. Group Instruction in Piano (2 credits), F, W, S
Elementary instruction in piano technique, including group and individual performance experience. A minimum of six hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed for a course fee. Admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment priority given to music majors and minors. May be repeated for credit. The Staff

61. Individual Classes: Half Hour (2 credits), F, W, S
One-half hour of individual instrumental or vocal instruction. Repertory, technique, and performance practice. A minimum of six hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed for a course fee. Admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment priority given to music majors and minors. May be repeated for credit. The Staff

62. Individual Lessons: One Hour (3 credits), F, W, S
One hour of individual instrumental or vocal instruction. Repertory, technique, and performance practice. A minimum of nine hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed for a course fee. Admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment priority given to music majors and minors. May be repeated for credit. The Staff

63. Group Instrumental and Vocal Lessons (2 credits), F, W, S
Elementary group instruction in instrumental (excluding piano) or vocal techniques, including group and individual performance experience. A minimum of six hours per week of individual practice is required. Students are billed for a course fee. Admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment priority given to music majors and minors. May be repeated for credit. The Staff

75. Jazz Theory, S
Studies in the modes, scales, chord alterations and extensions, chord voicings, chord progressions, and forms that underlie jazz improvisation, composition, and arranging in a variety of styles. Prerequisite(s): course 14. Enrollment limited to 30. (General Education Code(s): A.)
80A. Music Cultures of Asia. *  
A survey designed to introduce several music cultures from Asia. Focus on understanding and appreciating the musical styles, the performance practices, and the cultural functions of music and dance in the Orient. Performance in a related music culture is strongly recommended and may be satisfied by concurrent enrollment in course 5A, 5B, 5C, or 8, as available. Offered on a rotational basis with other non-Western music courses in the 80 series. (General Education Code(s): T4-H humanities and Arts, A, E.) L. Burman-Hall, F. Lieberman

80B. Music Cultures of Africa, South and North America, and Europe. *  
Topics reflecting distinctive features of selected music cultures of Africa, Asia, and the Americas. Focuses on understanding and appreciating the musical styles and cultural functions in the performing arts of these areas. Involves live class performance of musics discussed. Offered on a rotational basis with other non-Western music courses in the 80 series. (General Education Code(s): T4-H humanities and Arts, A, E.) J. Schechter

80C. History, Literature, and Technology of Electronic Music. F  
This survey of electronic music from previous centuries to the present studies the works and aesthetics of important composers, acoustics, musical perception, the effects of technological innovation on cultural evolution, and the development of synthesizers and computer music. (General Education Code(s): T6-Natural Sciences or Humanities and Arts, A.) G. Basermann

80D. Music of Indonesia. *  
A detailed study of musical style in cultural context in Indonesia, including court and village traditions and recent developments. The comparative approach includes reference to Baliinese, Javanese, and Sundanese music cultures, and traditions of other regions, such as Madura, Cirebon, and/or the outer islands. Performance in a related music culture is strongly recommended and may be satisfied by concurrent enrollment in course 5A, 5B, 5C, or 8, as available. Offered on a rotational basis with other non-Western music courses in the 80 series. (General Education Code(s): T4-H humanities and Arts, A, E.) L. Burman-Hall

80E. History of Jazz. F  
Designed to provide students with thorough and comprehensive background in history and roots of jazz as a musical style from its African roots to the present. Essential jazz styles and traditions are discussed through lectures, required listening, readings, presentation, and film presentations. (General Education Code(s): T4-H humanities and Arts, A, E.) K. Heter

80F. Music in Latin American Culture: Regional Traditions. *  
In-depth study of select music cultures of Mexico, Central America, and Caribbean, Brazil, Chile, Argentina, Colombia, and Peru. Characteristic regional genres, ensembles, instruments, and music rituals. Case studies by ethnomusicologists with expertise in specific regional musics. Also Latin American Nueva Cancion, women's music, and overarching themes in Latin American music, as a whole. Offered on a rotational basis with other non-Western courses in the 80 series. (General Education Code(s): T4-H humanities and Arts, A, E.) J. Schechter

80G. American Musical Theater. W  
Surveys American musicals from operetta through rock musicals with a historical approach focusing on selected examples from the literature. Music reading or musical experience helpful but not required. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80H. American Popular Music. F  
Covers vernacular styles including Stephen Foster, vaudeville, Tin Pan Alley, the Hit Parade, blues, gospal, soul, rhythm and blues, Anglo-American folk ballads, country music, bluesgrass, hillbilly, and the merger of these roots into rock and roll in the mid-1950s. The parallel development of doo-wop, girl groups, and the rise of rock with the British invasion in the mid-60s—mainly the Beatles. Musical experience helpful but not required. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80J. American Folk Music. *  
Surveys American folk music, both instrumental and vocal, by region and period. Approach is primarily through listening. Previous musical experience helpful, but not required. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80K. Opera and Drama. *  
A survey of opera from its beginnings ca. 1600 to the present, with emphasis on the ways in which opera reflects structures express dramatic content. Class screenings and critical readings provide the basis for discussion of specific operas. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) The Staff

80L. Artificial Intelligence and Music. W  
An introduction to basic concepts in music and artificial intelligence, and to algorithmic composition (composition by a set of explicit instructions, often using the computer). Other topics include basic introductions to related concepts in linguistics, mathematics, neural nets, pattern matching, genetic algorithms, fuzzy logic, and interactive systems. Previous experience in one or more of these topics is helpful but not required. Students produce a project based on one of the models presented in class. Offered in alternate academic years. (General Education Code(s): T6-Natural Sciences or Humanities and Arts, A.) D. Cope

80M. Film Music. *  
A survey of film music by the major film composers. Includes study of film scores, by among others, Alfred Newman, Max Steiner, Bernard Herrmann, Toru Takemitsu, and Ennio Morricone, as well as a discussion of current trends and film composers. Discussion of the contribution of composers such as Aaron Copland, Serge Prokofiev, and Leonard Bernstein. Techniques and styles of film music are explored through lectures, required readings, critical viewings of relevant films. A musical background, including the ability to read music, is helpful but not necessary. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) D. Cope

80N. Music of the Grateful Dead. *  
In-depth exploration of the music of the Grateful Dead. Contextual study of the sociology and history of the late 1960s psychedelic music movement background for study of the music as the band evolved through time. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80P. Wagner's Operas. *  
Introduction to operas of Richard Wagner including their dramatic, mythic, and political dimensions. Primary course work includes careful study of the late operas from the Ring Cycle through Parsifal. Previous experience in music and/or German is helpful but not required. Enrollment limited to 15. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80Q. A Survey of African Music. S  
Traces the various stylistic musical areas throughout the African continent and explores the development of traditional African music from antiquity into the 20th century. (General Education Code(s): T4-H humanities and Arts, A, E.) K. Heter

80R. Music and the World Wide Web. *  
A survey of musical applications of the World Wide Web and the technologies used: for musical research, playback, composition, performance, and publishing. Historical perspectives and artistic ethics also discussed. Students prepare a creative project using software, tools, techniques, sound sources available on the web, and learn how to publish the results on the web. Enrollment limited to 44. Offered in alternate academic years. (General Education Code(s): T6-Natural Sciences or Humanities and Arts, A.) G. Basermann

80S. Women in Music. F  
An exploration of the sociopolitical position of women as composers and performers in Western music history with a focus on specific figures from the Middle Ages to present. (Also offered as Women's Studies 80S. Students cannot receive credit for both courses.) Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) L. Miller

80T. Celtic Music. *  
An introduction to traditional folk music of Ireland, Scotland, Britain, and Wales. Covers the history of Celtic music beginning in the sixteenth century and finishing with the contemporary Celtic music, with an emphasis on traditional Irish music. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) The Staff

80V. The Music of the Beatles. S  
The most significant group in the history of popular music, the Beatles spanned the gamut of styles from hard-edged R & B to sophisticated art-rock. This course explores their work in detail, in its own terms, and in the historical, cultural, and technological contexts. Course 80H is recommended but not required as preparation. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80W. Music Business. *  
Explores the many facets of the music industry: history, technology, economics, sociology, and legislation. Provides both a broad understanding of the industry and a pragmatic survey of available career paths. Offered in alternate academic years. (General Education Code(s): T4-H humanities and Arts, A.) F. Lieberman

80X. Music of India. W  
A survey course in Hindustani (North Indian) and Carnatic (South Indian) music covering the Raga (modal system) and Talas (metrical system) as they have developed in the two traditions. Consideration is given to the historical development of the music, from Vedic chanting to the modern Raga system; social functions of the music throughout history; and instrumental and vocal forms with an emphasis on listening. (General Education Code(s): T4-H humanities and Arts, A.) The Staff

80Y. Music of Bob Dylan. *  
In-depth exploration of Bob Dylan's music and lyrics focusing both on their artistic value and their significant influences on the development of popular music. Musical
contemporary, historical and cultural context, and biographical information enrich the story. Course 80H is recommended but not required. (General Education Code(s): T4-Humanities and Arts, A.) F. Lieberman

81. Electronic Sound Synthesis. W
Introduction to electronic music studio techniques, relevant electroacoustical studies, and procedures of electronic music composition. Practical experience in the UCSB electronic music studio with an analog synthesizer; mixing, equalization, multitrack recording equipment, and other sound processing. Prerequisite(s): see the enrollment conditions section in the quarterly Schedule of Classes completion of course 80C. Application available at department office during last two weeks of previous quarter. Preference given to music majors, film and digital media majors, and students with substantial musical experience. Enrollment limited to 25. P. Elsea

94. Group Tutorial, F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Admission requires approval of department. The Staff

99. Tutorial, F,W,S
A program of directed study arranged with a department faculty member. Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S
A program of directed study arranged with a department faculty member. Class time is proportionally less than a five-credit course. Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

100A. Theory, Literature, and Musicianship II. F
Tonal counterpoint. Chromatic harmony and its ramifications. Prerequisite(s): courses 30N and 30N and Piano Proficiency Exam; instructor determination at first class meeting. Enrollment limited to 20. B. Carson, D. Cope, D. Jones, H. Kim, P. Nauert

100B. Theory, Literature, and Musicianship II. W
Chromatic harmony and its ramifications. Introduction to twentieth-century methods of composition, including serial techniques. Prerequisite(s): course 100A; instructor determination at first class meeting. Enrollment limited to 20. B. Carson, D. Cope, D. Jones, H. Kim, P. Nauert

100C. Theory, Literature, and Musicianship II. S
Twentieth-century methods of composition. Prerequisite(s): course 100B; instructor determination at first class meeting. Enrollment limited to 20. B. Carson, D. Cope, D. Jones, H. Kim, P. Nauert

101A. History of Western Art Music, W
First quarter of a four-quarter, detailed chronological study of Western art music from antiquity to the present. Coordinated lectures, readings, listening assignments, and analysis of representative works: Art Music, Baroque, and Renaissance. Prerequisite(s): course 30A. L. Miller, N. Treadwell

101B. History of Western Art Music, S
Second quarter of a four-quarter, detailed chronological study of Western art music from antiquity to the present. Coordinated lectures, readings, listening assignments, and analysis of representative works: Baroque. Prerequisite(s): course 30B. L. Miller, N. Treadwell

101C. History of Western Art Music, F
Third quarter of a four-quarter, detailed chronological study of Western art music from antiquity to the present. Coordinated lectures, readings, listening assignments, and analysis of representative works: Classical and Romantic. Prerequisite(s): course 30C. A. Beal, A. Lekin

101D. History of Western Art Music, W
Fourth quarter of a four-quarter, detailed chronological study of Western art music from antiquity to the present. Coordinated lectures, readings, listening assignments, and analysis of representative works: twentieth century. Prerequisite(s): course 30C. A. Beal, D. Jones, P. Nauert

120. Seminar in Music Composition, W
Instruction in individual composition offered in the context of a group; composition in traditional large and small forms. Prerequisite(s): course 30C. Enrollment limited to 16. D. Cope, D. Jones, H. Kim, P. Nauert

124. Intermediate Electronic Sound Synthesis, S
Composition with the use of small computers in the electronic music studio. Techniques covered include hybrid synthesis, digital synthesis, and MIDI-controlled systems. No programming is involved, but basic computer literacy is helpful. Prerequisite(s): course 81. Enrollment limited to 25. P. Elsea

125. Advanced Electronic Sound Synthesis, F
Continuing study in the electronic music studio, with concentration on compositional development. Includes advanced applications of skills developed in courses 81 and 124, expansion of background knowledge and relevant electroacoustical studies. Prerequisite(s): course 124. Enrollment limited to 25. P. Elsea

130. Orchestration, F
A study of the nature of each instrument of the orchestra. Scoring for various small instrumental combinations culminating in a transcription for full orchestra. Prerequisite(s): course 30C. Enrollment limited to 15. H. Kim

140. Film Music Composition, *
Covers basic principles of film composition, terminology, general technology, and strategies for film scoring. Consists of discussions of particular film types, and students will compose music appropriate to the genre and mood of the film clips. Enrollment limited to 20. D. Cope

159A. Opera Workshop (2 credits), F,W
A workshop for singers, accompanists, and directors, the course develops a wide variety of skills related to opera through scene work. Attention will be given to movement, acting, coaching, and operatic stage-directing techniques. Prerequisite(s): one year of music education and at least one 30-minute recital are required. May be taken three times for credit. Concurrent enrollment in an ensemble in the music major or minor is required. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

159B. Opera Workshop (3 credits), F,W
A workshop for singers, accompanists, and directors, the course develops a wide variety of skills related to opera through scene work. Attention will be given to movement, acting, coaching, and operatic stage-directing techniques. Prerequisite(s): one year of music education and at least one 30-minute recital are required. May be taken three times for credit. Concurrent enrollment in an ensemble in the music major or minor is required. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

160. University Opera Theater, S
A production workshop, culminating in one or more staged performances of an entire opera or selected scenes from the operatic repertory. Admission by audition with instructor prior to first class meeting; auditions usually take place in fall quarter. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) P. Maginnis, B. Staufenbied

161. Individual Lessons: One Hour (3 credits), F,W,S
One hour of individual instrumental or vocal instruction. Repertory, technique, and performance practice. A minimum of nine hours per week of individual practice is required. Concurrent enrollment in an ensemble in the music major or minor is required. Students are billed for a course fee. Admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

162. Advanced Individual Lessons: One Hour, F,W,S
One hour of individual instruction for advanced students. Study of repertory, technique, and performance practice. A minimum of 18 hours per week of individual practice and at least one 30-minute recital are required. May be taken three times for credit. Concurrent enrollment in an ensemble in the music major or minor is required. Students are billed for a course fee. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

163. Early Music Consort (2 credits), W
A study of selected works for varied early music instrumental and vocal resources, culminating in one or more public concerts. Individual lessons are recommended in conjunction with consort work. Recommended for students who have instrumental or vocal competence and music literacy. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

164. Jazz Ensembles (2 credits), F,W,S
Instruction in combo performance and techniques of the jazz idiom. The class forms several ensembles that prepare a specific repertory for public performance. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

165. Chamber Music Workshop (2 credits), F,W,S
A study of selected works for various small combinations of instruments, culminating in one or more public concerts. Individual lessons are recommended in conjunction with consort work. Recommended for students who have instrumental or vocal competence and music literacy. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit.

166. Chamber Singers (2 credits), F,W,S
The study of selected works for small vocal ensemble from the fifteenth through twentieth centuries, with performances on and off campus throughout the academic year. Students must have demonstrated vocal and music reading skills. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) P. Maginnis, B. Staufenbied

167. Chamber Singers (2 credits), F,W,S
The study of selected works for small vocal ensemble from the fifteenth through twentieth centuries, with performances on and off campus throughout the academic year. Students must have demonstrated vocal and music reading skills. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code(s): A.) P. Maginnis, B. Staufenbied
Continuing studio work in electronic music. Students carry out individual projects, meeting in weekly seminar to share problems and discoveries. Relevant advanced topics are covered, including new developments in the art. Prerequisite(s): course 124. Enrollment limited to 20. M ay be repeated for credit. P. Elsaa

168. Contemporary Music Ensemble (2 credits). W
A study of selected works for various small combinations of instruments and voice, culminating in one or more public concerts. Admission by audition with instructor prior to first class meeting. See the enrollment conditions section of the quarter Schedule of Classes. May be repeated for credit. A. Beal, D. Cope, D. Jones, H. Kim

170. Gender Wayang Ensemble (2 credits). *
Techniques and repertoire of Gender Wayang, a traditional Balinese ensemble of metal-keyed percussion instruments. Works may include music for shadow plays and ritual pieces. Intermediate to advanced level skills in mallet percussion (individual lessons, gamelan, or percussion ensemble experience). Admission by audition with instructor at first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 4. M ay be repeated for credit. (General Education Code(s): A, L.) Burman-Hall

174A. Beginning Jazz Improvisation. F
Introduction to the basics of jazz improvisation, including theory, harmony, rhythm, improvisation techniques, aesthetics and idiomatic devices. Exposure to jazz repertoire through in-class performances of swing, blues, modal and Latin styles. Admission by audition with instructor at first class meeting. Enrollment limited to 20. M ay be repeated for credit. K. Hester

174B. Intermediate Jazz Improvisation. W
Continued development of basic skills in jazz improvisation through in-class performances, including theory, harmony, rhythm, improvisation techniques, aesthetics, and idiomatic devices. Introduction of intermediate materials and approaches; extended harmony; bebop, ballad, and jazz-rock/fusion styles. Admission by audition with instructor at first class meeting. Enrollment limited to 20. M ay be repeated for credit. K. Hester

180A. Studies in World Musics: Asia and the Pacific. *
In-depth ethnomusicological studies of selected music cultures of East Asia, Southeast Asia, and the Pacific. Emphasizes comparison of historical, theoretical, contextual, and cultural features. Includes basic ethnomusicological points of reference, as regards organology, music ritual, notation and transcription, and aspects of field research. Prerequisite(s): course 30B; concurrent enrollment in a non-Western performing ensemble is strongly recommended. Enrollment restricted to music majors and graduate students. Anthropology majors may enroll with permission of instructor. Enrollment limited to 30. (General Education Code(s): A, E, J.) Schachter

180V. Seminar in the Music of the Beatles. S
Detailed study of the Beatles’ music. While course 80V introduces the Beatles to general students, this course is designed for music majors, music minors, students able to read music, or non-majors with strong knowledge of the Beatles’ repertory. Interview only; instructor determination at or before first class meeting. Prerequisite(s): course 80H or equivalent experience; basic knowledge of Beatles repertory. Enrollment limited to 30. F. Lieberman

180W. Seminar in Music Business. *
An exploration of the many facets of the music industry: history, technology, economics, sociology, and legislation. Intended to provide both a broad understanding of the industry and a pragmatic study of available career paths. While designed for general students, this seminar is specifically directed to those students desiring to pursue a music business career, whether in performance, management, the record business, writing about music (journalism, criticism), or entertainment law. Admission by permission of instructor at or before first class meeting. Enrollment limited to 25. F. Lieberman

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) U per-division standing and a proposal supported by a music faculty member willing to supervise required. The Staff

195A. Senior Thesis, F,W,S
Preparation of senior thesis over one or two quarters. If taken as a multiple-term course, the grade and evaluation submitted for the final quarter applies to the previous quarter. Students submit petition to sponsoring agency. The Staff

195B. Senior Thesis, F,W,S
Preparation of senior thesis over one or two quarters. If taken as a multiple-term course, the grade and evaluation submitted for the final quarter applies to the previous quarter. Students submit petition to sponsoring agency. The Staff

196A. Senior Recital Preparation (without individual lessons), F,W,S
Prerequisite(s): juried audition or approved composition portfolio. M ay be repeated for credit. The Staff

196B. Senior Recital Preparation (with individual lessons), F,W,S
Students are billed for a course fee. Prerequisite(s): juried audition. M ay be repeated for credit. The Staff

197. Senior Exit Seminar (2 credits). S
Designed for music majors in their final quarter. Focuses on music in social context while seeking to integrate knowledge from previous music courses in preparation of a series of analytical projects. Admission by instructor determination at first class meeting. L. Burman-Hall, D. Cope, D. Jones, H. Kim, A. Lekin, L. Miller

199. Tutorial, F,W,S
A program of directed study arranged with a department faculty member. Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
A program of directed study arranged with a department faculty member. Class time is proportionally less than a five-credit course. Students submit petition to sponsoring agency. T he Staff

Graduate Courses

200. Introduction to Research Methods. F
A practical introduction to graduate study in music. Beginning with the kinds of questions asked, exploring the various strategies for finding answers, and finally presenting results in varied public forms (lecture, performance, research paper). A. Beal, L. Burman-Hall, B. Carson, A. Lekin, L. Miller

201. Pretonal and Tonal Analysis. W
A study and analysis of pre-tonal and tonal music from the Greeks through the mid-nineteenth century. The course examines a variety of historical theoretical concepts. Enrollment restricted to graduate students. Offered in alternate academic years. L. Burman-Hall, D. Cope, A. Lekin, L. Miller, P. Nauert

202. Tonal and Postonal Analysis. *
Encompasses various forms of linear analysis, set theory, and selected topics in current analytical practice. Offered in alternate academic years. B. Carson, D. Cope, D. Jones, H. Kim, P. Nauert

203. Special Topics in Performance Practice. Research in primary and secondary sources of information about performance practice in various times and places. Undergraduates who have completed the appropriate course 101 courses may enroll in 203 courses by interview with the instructor. T he Staff

203A. Performance Practice in the Middle Ages. *
A study of performance practices in medieval music from Gregorian chant to the 14th century. History of instruments and notation. Rhythmic interpretations of chant and a study of improvised practices in organum. Editing and performance of representative works. Offered on a rotational basis with other courses in the 203 series. E. Houghton, L. Miller

203B. Performance Practice in the Renaissance. *
A study of performance practices in Renaissance music, including concepts of mode, musica ficta, ornamentation, text underlay, tempo, and articulation. Basic principles of white notation and a brief history of instruments. Transcription, editing, and performance of a Renaissance work. Offered on a rotational basis with other courses in the 203 series. E. Houghton, L. Miller

203C. Performance Practice in the Baroque. W
An examination of historically informed performance practice in Baroque music, with attention to aspects of ornamentation, articulation, figured bass realization, dance choreography, rhythm and tempo, and organology. In-class performances and editing of source materials are included. Offered on a rotational basis with other courses in the 203 series. L. Burman-Hall, L. Miller

203D. Performance Practice in the Classic Period. *
Issues in performance practice focusing on selected topics and styles from the time of C.P.E. Bach through
Haydn. Development of selected genres and ensembles, sources and editing, and interpretation and improvisation. L. Burman-Hall

203E. Performance Practice in the Romantic Period. S
Interpretation of music from Beethoven to Scriabin through examinations of both the musical texts (form, genre, harmony, texture, orchestration, etc.) and the period performance practices. Topics range from interpretative analyses of selected compositions to critical assessments of modern as well as documented nineteenth- and early twentieth-century performances. Offered on a rotational basis with other courses in the 203 series. A. Lekin

203F. Performance Practice in the Twentieth Century. *
Projects in analysis, notational studies, extended instrumental techniques, and the aesthetics and performance practices associated with composers from Debussy to the present. Reading and listening focuses on the writings and performances of the composers themselves and upon interpretive writings by informed performers of twentieth-century music. Offered on a rotational basis with other courses in the 203 series. May be repeated for credit. A. Beal, B. Carson, D. Cope, D. Jones

203G. Concepts, Issues, and the Practice of Ethnomusicology. *
Ethnomusico logical field methodology; vocal and instrumental performance practices as related to the ethnomusicological endeavor. Specific topics, such as regional music traditions, historical overview, and initial issues of ethnomusicology; field research concepts and procedures; studies in instrumental and vocal performance practices of diverse cultures; selected writings of Charles Seeger; transcription and analysis issues; studies in microtonics. Offered on a rotational basis with other courses in the 203 series. J. Schachter

203H. Area Studies in Performance Practice. W
Intensive examination of the vocal and instrumental performance practices of living musical traditions of Indonesia, Latin America, or other regions. Topics may incorporate soloistic and ensemble traditions, secular and sacred traditions. Research rubrics include tuning, tone quality, performance posture and rhetoric, and improvisational and fixed patterns, as dictated by regional norms. May be repeated for credit in a different area. Offered on a rotational basis with other courses in the 203 series. May be repeated for credit. L. Burman-Hall, H. Kim, J. Schachter

204. Graduate Seminar on Music Education. *
Designed to provide a coherent and integrated approach to classroom music teaching. Students have part-time responsibilities for public elementary school classes under the supervision of the instructor. Weekly seminars cover the practical application of music knowledge to young people in a systematic and comprehensive manner. Interview with instructor at first class meeting. Enrollment restricted to graduate students. Enrollment limited to 6. The Staff

206D. Perception and Cognition. F
Applications of experimental mind science research to questions about perception, attention, and awareness in the experience of music. Topics include multidimensional aural perception, studies of memory and linguistics, applied to questions of music theory and analysis. Enrollment restricted to graduate students. Enrollment limited to 16. May be repeated for credit. B. Carson

220. Graduate Seminar in Music Composition. S
Instruction in individual composition offered in the context of a group; composition in large forms of the twentieth century with emphasis on techniques since 1950. May be taken by upper-division undergraduates for credit. May be repeated for credit with a different instructor. Interview with instructor at first class meeting. Enrollment limited to 16. May be repeated for credit. D. Cope, D. Jones, H. Kim, P. Nauter

225. Computer Assisted Composition. *
An introduction to techniques of algorithmic and computer-assisted composition in a variety of contemporary idioms. Topics include stochastic methods, advanced constructions such as probability and Markov chains, fuzzy logic or generative grammars, and the realization of abstract compositional design. Pioneering algorithmic work by composers such as I.M. Hillel and Xenakis will be studied. Students will be introduced to a widely used compositional language such as Lisp or MAX and use it to implement a series of studies and compositions. Admission by interview with instructor; composition portfolio required. Enrollment restricted to graduate students. Enrollment limited to 10. D. Cope

261. Graduate Applied Instruction (3 credits). F, W, S
One hour of individual instrumental or vocal instruction for graduate students. Repertoire, technique, and performance practice. A minimum of nine hours per week of individual instruction is required. Students are billed a course fee. Admission by audition with the instructor prior to first class meeting; see the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. The Staff

265. Graduate Ensemble Participation (2 credits). F, W, S
Participation by graduate students in ensembles. Enrollment limit appropriate to the size of each ensemble. Admission by audition with the instructor prior to first class meeting; see the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. The Staff

281. Electronic Sound Synthesis. W
Introduction to electronic music studio techniques, relevant electroacoustic studies, and procedures of electronic music composition. Practical experience in the UCSC electronic music studio with analog synthesizer; mixing, equalization, multitrack recording equipment, and other sound processing. Prerequisite(s): permission of instructor; course 80C. Enrollment restricted to graduate students. Enrollment limited to 5. P. Elisa

295. Directed Reading. F, W, S
Directed reading which does not involve a term paper. May be repeated once for credit. Students submit petition to sponsoring agency. The Staff

297. Independent Study. F, W, S
Independent study, creative work, or research for graduate students who have not yet begun work on their thesis. Students submit petition to sponsoring agency. The Staff

298. Graduate Recital. F, W, S
A public performance in the student's primary area of interest, related to the thesis project, under the supervision of a faculty member. Students submit petition to sponsoring agency. The Staff

A thesis consisting of a substantive and original creative or scholarly work, related to the graduate recital, under the supervision of a faculty member. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Additional Courses of Interest
Check the quarterly Schedule of Classes for 2004-05 course offerings.

Physics 80A, Physics and Psychophysics of Music
Economics 80G, Money and Art: Two All-Consuming Passions
Economics 137, Performing Arts in the Public and Private Economy

Natural History
See Environmental Studies, page 226.

Natural Sciences
See Physical and Biological Sciences, page 329.

Neuroscience and Behavior
See Biological Sciences, page 136.
80. Values and Change in a Diverse Society (Oakes Core Course). F
Examines historical and contemporary aspects of multiculturalism in the U.S. Students explore how social inequality based on race, class, and gender occurs among all levels of society. Students encouraged to continue to address these issues after completion of course. Enrollment restricted to first-year college members. Enrollment limited to 20. (General Education Code(s): T6-Humanities and Arts or Social Sciences, E.) The Staff

93. Field Study, F,W,S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by lower-division students doing part-time off-campus study. Prerequisite(s): approval of student's advisor, certification of adequate preparation, approval of provost. May be repeated for credit. The Staff

94F. Group Tutorial (2 credits). F,W,S
A program of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency. The Staff

95. Directed Reading, F,W,S
Directed reading on selected topics in literature. Students submit petition to sponsoring agency. The Staff

99. Tutorial, F,W,S
Individual study for lower-division students directed by a fellow of Oakes. Students submit petition to sponsoring agency. The Staff

99F. Independent Study (2 credits). F,W,S
Independent study on various topics to be arranged between student and instructor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Upper-Division Courses

192. Directed Student Teaching, F,W,S
Teaching a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): upper-division standing in Oakes; a proposal supported by a faculty advisor willing to supervise. The Staff

193. Field Study, F,W,S
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by upper-division students doing part-time off-campus study. Prerequisite(s): approval of student's advisor, certification of adequate preparation, approval of provost. If taking two or more such courses in any one quarter, must obtain approval of academic advisor. The Staff

Senior thesis related to college-sponsored individual major. Students submit petition to sponsoring agency. Sponsoring faculty must be member of individual major committee. May be repeated for credit. The Staff

198. Independent Field Study, F,W,S
College-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Prerequisite(s): approval of the student's advisor, certification of adequate preparation, and approval by provost. May be repeated for credit. The Staff

199. Tutorial, F,W,S
Individual study for junior and senior members of Oakes College directed by a fellow of Oakes. Students submit petition to sponsoring agency. The Staff

199F. Independent Study (2 credits). F,W,S
Independent study on various topics to be arranged between student and instructor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Ocean Sciences

A312 Earth and Marine Sciences Building (831) 459-4730 http://oceansci.ucsc.edu/

Faculty and Professional Interests

Professor

KENNETH W. BRULAND
Chemical oceanography, biogeochemistry of trace metals and radionuclides, aquatic chemistry, geochemistry

MARGARET L. (PEGGY) DELANEY
Paleoceanography, marine geochemistry

ROBERT E. GARRISON (Emeritus)

MARY W. SILVER
Biological oceanography, marine plankton, midwater ecology

JONATHAN P. ZEHR
Aquatice microbial ecology, biological oceanography

Associate Professor

A. CHRISTINA RAVELLO
Stable isotope geochemistry and chemical oceanography, paleoecology

Assistant Professor

CHRISTOPHER A. EDWARDS
Physical oceanography, numerical modeling of coastal- and basin-scale dynamics

Raphael M. KUDELA
Ecological modeling and remote sensing, satellite oceanography, phytoplankton ecology and harmful algal blooms

MATTHEW D. MCCARTHY
Organic geochemistry, marine organic geochemistry, global biogeochemical cycles

Associate Adjunct Professor

JEFFREY D. PADUAN
Coastal ocean dynamics, surface currents, wave/heights, wind and tidal forcing from high-frequency radar data

Assistant Adjunct Professor

JOHN CARLOS GARZA
Population and ecological genetics of marine organisms

Lecturer

EDWARD F. DELONG
Marine microbial ecology, diversity, and phylogeny

JOEL GOLDMAN
Phytoplankton ecology, microbial food chain dynamics

MARCIA GOWING
Marine plankton ecology, polar biology

THOMAS GUILDESON
Paleoceanography, tracer chemistry, carbon cycle, climate change

BALDO MARINOVIC
Plankton biology, Euphausiid (krill) population biology, zooplankton ecology, pteridic food web dynamics, climate change potential impacts on zooplankton and fisheries

CARRIE POMEROY
Marine policy and fisheries management

• • •

Professor

DANIEL R. COSTA (Biological Sciences)
Physiological ecology of marine mammals and birds

PHILIP CREWS (Chemistry)
Marine natural products chemistry, biogenic chemistry, organic structural analysis by NMR, natural products of marine macro- and microorganisms

STANLEY M. FLATTE (Physics)
Wave propagation in random media, geophysics

A. RUSSELL FLEGAL (Environmental Toxicology)
Anthropogenic perturbations of biogeochemical cycles

LAUREL R. FOX (Biological Sciences)
Terrestrial population and community ecology, plant-animal interactions

JAMES B. GILL (Earth Sciences)
Igneous petrology, geochemistry of island arcs

LYNDA J. GOFF (Biological Sciences)
Algal symbioses, host-parasite relationships, molecular evolution

GARY B. GRIGGS (Earth Sciences)
Coastal processes, hazards and engineering

BURNET J. LEBOUEF (Emeritus, Biological Sciences)

MARC S. MANGEL (Engineering (Applied Mathematics and Statistics))
Mathematical modeling of biological phenomena, especially the evolutionary ecology of growth, aging, and longevity, quantitative issues in fisheries management, mathematical and computational aspects of disease

J. CASEY MORE (Earth Sciences)
Geofluids, structural geology, tectonic hydrology, marine geology

A. TODD NEWBERRY (Emeritus, Biological Sciences)

CHARLES L. (LEO) ORTIZ (Biological Sciences)
Physiology of marine mammals, physiological integration, physiology of secretion

JOHN S. PEARSE (Emeritus, Biological Sciences)

DONALD C. POTTS (Biological Sciences)
Coral reef ecology, genetics, evolution, and geological history, marine biodiversity, tropical biology, global change, and remote sensing

PETER RAIMONDI (Biological Sciences)
Marine ecology, evolutionary ecology, experimental design, applied ecology
Eli A. Silver (Earth Sciences)  
Marine geology and geophysics, active tectonics, remote sensing

Lisa Sloan (Earth Sciences)  
Paleoclimatology, climate change, Earth system science, surficial processes

Lincoln Taiz (Biological Sciences)  
Plant development, light regulation of stomatal opening

Terrie M. Williams (Biological Sciences)  
Vertebrate locomotor and thermoregulatory physiology, marine biodiversity, comparative vertebrate energetics, exercise physiology

James C. Zachos (Earth Sciences)  
Paleoceanography, marine stratigraphy, geochemistry

Associate Professor

Giacomod Bernardi (Biological Sciences)  
Fish biology, phylogenetics, evolution

Mark Carr (Biological Sciences)  
M. marine ecology, applied marine ecology

Grant H. Posdon (Biological Sciences)  
Molecular population genetics, ecological genetics, marine invertebrates and fishes

Donald R. Smith (Environmental Toxicology)  
Organisinal responses and therapeutic treatment of toxins

Assistant Professor

Dan Croll (Biological Sciences)  
Foraging ecology of marine birds and mammals, island conservation/lektogy

Adjunct Professor

James Estes  
M. Marine sciences, community ecology

Roland W. Garwood  
Air-sea interaction, ocean turbulence dynamics

Ronald J. Schusterman  
Psychology and sociology of marine mammals, animal cognition and communication

Program Description

The Ocean Sciences Department includes faculty and students involved in oceanography and other marine sciences and sponsors undergraduate and graduate courses in these disciplines. Through faculty sponsors, students have access to a wide variety of research facilities and equipment, including on-campus analytical chemistry, geology, and molecular biology laboratories for marine research; computing and imaging facilities; an ombore marine laboratory two miles from campus (Long Marine Laboratory), with aquariums and holding tanks that are supplied with running sea water; and a unique field station on Año Nuevo Island (19 miles north of Santa Cruz), especially suited for studies on pinnipeds and marine birds. The department supports collaborative studies utilizing the innovative technologies of the nearby Monterey Bay Aquarium Research Institute, the Naval Postgraduate School, Stanford University’s Hopkins Marine Station, CSU Monterey Bay, and others. Students may also work at other University of California facilities, including the Bodega Marine Laboratories and Scripps Institute of Oceanography. In addition to research and instructional activities along the California coast, interns of the core faculty and their students include biological, chemical, and physical oceanography; plus sediment, marine, organic, and trace metal biogeochemistry; marine plankton, phyto- plankton ecology, paleoceanography, and marine microbiology, ecological modeling, and remote sensing (satellite oceanography); coastal circulation processes and the development of software applications for real-time data acquisition and data visualization; and midwater ecology, climatology, and many more.

Ocean sciences affiliated faculty in other departments represent a deep resource of research interests and methodologies including those pertaining to coral reef and kelp forest ecology, plate tectonics and continental margins, marine mammal behavior and physiology, and natural products from marine organisms. Student research projects have included participation in major scientific expeditions to various marine environments ranging from polar regions to the tropics.

Undergraduate Programs

Although offering a range of undergraduate courses, the Ocean Sciences Department presently offers only graduate degrees. The undergraduate major in marine biology, sponsored by the Biological Sciences Department, includes required and elective courses in ocean sciences; and there is an ocean sciences concentration in Earth Sciences for undergraduates. Students interested in ocean sciences should major in a discipline such as biology, marine biology, chemistry, Earth sciences, physics, or mathematics and take ocean sciences-related electives. Students with a bachelor's degree in one of these disciplines or equivalent course work may apply directly for admission to the graduate program through the Division of Graduate Studies.

Graduate Programs

The graduate programs in ocean sciences are designed to prepare students for careers in research, teaching, and other environmentally related endeavors. The fundamental requirement for admission to the program is substantial evidence of superior scholarship and aptitude for original research. Preparation in any of the basic natural science disciplines, equivalent to requirements for a bachelor's degree, is expected.

Ocean Sciences Ph.D. Degree Program

The program leading to a doctorate in ocean sciences is designed with a core training in oceanography for all students, supplemented and focused by advanced training in oceanography and in the traditional disciplines (biology, chemistry, Earth sciences, and physics) as chosen by the student and her or his advisers. The core training is provided through core courses in ocean sciences, a subset of which is taken by all students in the first two years and reinforced by the student's seminars throughout the program. In addition to core courses in ocean sciences, preparation includes upper-division graduate courses in ocean sciences and in the specialty discipline, graduate seminars, independent research credits, participation in departmental student seminar series, and a minimum requirement of two quarters as a teaching assistant. There is no formal language requirement. The results of a scheduling meeting in the first quarter of enrollment are used to map out the course program in the first year. The course program is determined by a faculty advisory committee in consultation with the student, and courses are drawn from ocean sciences and other science departments (e.g., biology, chemistry, Earth sciences, physics). No later than fall quarter of their second year, students must take a departmental oral exam that tests knowledge of ocean sciences and general expertise in the parent discipline. An oral and written qualifying examination are required, generally in the second or third year of graduate study. A dissertation based on original research is required, and the final examination is a public oral defense of the dissertation. Students are encouraged to prepare their dissertation, or certain chapters of it, in a form suitable for publication.

Sample Pathways

The pathways within the ocean sciences Ph.D. program are differentiated from related degrees in the traditional disciplines by their focus on global-scale problems and interactions, a focus on the ocean, and their inherently interdisciplinary approach. Interdisciplinary projects across and between pathways are encouraged, as are interactions with faculty in related departments.

• Biological Oceanography  

This pathway involves the interactions of organisms with their chemical and physical environments. It includes research on the physiology and ecology of organisms, but differs from marine biology in the focus on the oceanographic setting of the organism in relationship to, for example, biogeochemical cycling and the effects of ocean currents on distributions of organisms. The focus is mainly on small oceanic life-forms (plankton and bacteria, molecular ecology) and their roles in biogeochemical cycles of marine systems.

• Chemical Oceanography  

Chemical interactions of trace metals and radionuclides in the sea are the focus of this group. Research includes development of analytical techniques and measurement of trace species in seawater and investigation of the effects and interactions of trace elements on biological processes using analytical and isotopic approaches.

• Geological Oceanography  

Paleoceanography, palaeoclimatology, and sediment geochemistry are the focus of this pathway. Research areas include the history of global oceanic and composition of the ocean on various timescales, the fate and dispersal of materials in sediments and their contribution to the paleoceanographic record, understanding ocean and climate history by the use of records of stable isotopes and trace elements, and palaeoclimate modeling.

• Physical Oceanography  

The physics and dynamics of the ocean and atmosphere are the main aspects of this program. Research includes observational, computational, theoretical, and experimental physical oceanography, geophysical fluid dynamics, ocean acoustics, dynamical meteorology, climate, and global change.

Requirements for Ph.D. Students in the Ocean Sciences Department

To introduce students to the breadth and depth of the field of ocean sciences, students will be required to complete the following:

1. Four core courses. These courses are expected to be completed in the first year of the program (and prior to taking the departmental exam) in the sequence listed below:
   - Fall: 200, Physical Oceanography
   - Winter: 280, Marine Geology
   - Spring: 230, Biological Oceanography

2. A minimum of three graduate-level or upper-division elective courses to provide depth in the
chosen area of emphasis or supporting disciplines. These courses are chosen in consultation with your adviser and department graduate advising committee (a maximum of one can be a graduate level seminar (290); at least two must be graduate or upper-division undergraduate lecture courses).

3. Course 296, Teaching in Ocean Sciences, to be taken prior or concurrent to being a teaching assistant.

4. Teaching experience satisfied by two quarters of teaching assistant experience in Ocean Sciences or supporting departments.

5. Course 293, a 2-credit Graduate Research Seminar, required to be taken each spring quarter by all Ph.D. students.

6. Course 292, attendance at the Ocean Sciences Seminar series each quarter of enrollment.

7. A minimum of three courses in the thesis Research coursework (299) under direction of a sponsor. Each quarter in residence a student should take 15 credits of classes; students beyond their first year will usually take 10 or 15 credits of their thesis each quarter.

8. Comprehensive departmental exam. This oral exam, covering material from the core courses, is usually taken at the beginning of a student's second year in the program. This exam must be completed successfully within two years of entering the program.

9. Pass the Qualifying Exam to Advance to Candidacy. This exam requires a written research proposal to be defended orally in front of the student's dissertation committee and is normally taken at the beginning of the third year of the program. This exam is expected to be completed successfully within three years of entering the program.

10. Ph.D. dissertation. The Ph.D. dissertation, demonstrating original thought and research, must be written, presented in an open seminar, and defended to the student's thesis committee. Chapters of the dissertation may be written in publication format, but must conform to university publication guidelines for submission.

Ocean Sciences Master's Degree Program

The Ocean Sciences Department offers a master of science degree in ocean sciences. The degree combines core courses and electives to provide depth in ocean sciences, with a focused thesis to provide experience in original research. Graduates from the program are excellently prepared to take research or management positions in organizations concerned with the marine environment, become educators, or enter doctoral programs in ocean sciences or related fields.

In addition to undergraduate courses required for entry into the master program, students matriculated in the program must complete at least three of the ocean sciences core courses, 15 credits of independent research, and three graduate or upper-division courses in their specific field of interest; participate for two quarters in an ocean science seminar; and complete a master's thesis, which is presented in an open seminar. Where the doctoral program has an oceanographic orientation, the marine sciences master's program is even more broad and has traditionally attracted many students in marine biology and ecology. As with the doctoral program, students are encouraged to select a course of study and a research program that draws on the expertise of the core ocean sciences faculty and any of the affiliated faculty in other departments. Customized programs of study that combine related disciplines are supported in the master's program.

Course Requirements for the Ocean Sciences Master's Degree

To introduce students to the breadth and depth of the field of ocean sciences, students will be required to complete the following:

1. Complete three of the four core courses (one of which must be course 200, Physical Oceanography). Students are expected to complete all three of these courses in the first year of the program, and they should be taken in the order listed below. All four core courses are recommended. If taken, the fourth course counts as an elective.

   - Fall 200, Physical Oceanography
   - Winter 220, Chemical Oceanography
   - Spring 230, Biological Oceanography

2. A minimum of three graduate-level or upper-division elective courses to provide depth in the chosen area of emphasis. These courses are chosen in consultation with an adviser and department graduate advising committee (only one of these can be a graduate seminar (290); at least two must be lecture courses).

3. A minimum of three courses in the thesis Research coursework (299) under direction of a sponsor. Each quarter a student should take 15 credits of classes. Students beyond their first year will usually take 10 or 15 credits of their thesis each quarter.

4. Course 296, Teaching in Ocean Sciences, to be taken prior or concurrent to being a teaching assistant.

5. Teaching experience satisfied by one quarter of teaching assistant experience.

6. Attendance at the Ocean Sciences Seminar series (course 292) each quarter of enrollment.

7. Complete a master's thesis, and present it at an open seminar.

8. Chapters of the dissertation may be written in publication format, but must conform to university publication guidelines for submission.

9. A minimum of three courses in the thesis Research coursework (299) under direction of a sponsor. Each quarter a student should take 15 credits of classes. Students beyond their first year will usually take 10 or 15 credits of their thesis each quarter.

10. Course 296, Teaching in Ocean Sciences, to be taken prior or concurrent to being a teaching assistant.

11. Teaching experience satisfied by one quarter of teaching assistant experience.

Lower-Division Courses

1. The Oceans, F,W,S

An interdisciplinary introduction to oceanography focusing on physical, chemical, and biological processes. Covers topics such as origins and structure of planet Earth and its oceans, co-evolution of Earth and life, global change, nutrient cycling, plankton and nekton, life on the sea floor, and near shore and estuarine communities, future environmental problems, and the relationships between chemical, physical, and biological processes, with a focus on the role of science and technology in understanding these processes. Prerequisite(s): Earth Sciences 1. (Note: General Education credit will not be granted for this course and Biology 100D.) Prerequisite(s): General Education Code(s): IN, Q. M. Dairyman, M. McCarthy.

2. Aquatic Marine Ecology, S

Introduction to marine biology and their role in the marine ecosystem. Emphasis on biochemistry and physiology in relation to metabolic activity and elemental cycles, trophic interactions, and the role of marine food webs. Prerequisite(s): Biology 20C or 21C, and Chemistry 1C. J. Zehr.

80A. Life in the Sea, F,W,S

The ecology of plants and animals in oceans and coastal areas. Consideration of life in various marine habitats, including the open ocean, rocky shores, estuaries, and the sea. Includes field trips. High school biology and chemistry courses are recommended prior to taking this course. (General Education Code(s): T-2 Natural Sciences.) J. Zehr

80B. Our Changing Planet, W

Interdisciplinary scientific perspective on Earth system, focusing on human impacts on global environment. Introduces concepts of Earth system science and explores topics such as global warming, ozone depletion, pollution, desertification, and future climate change. Prerequisite(s): high school chemistry course recommended. (General Education Code(s): T-2 Natural Sciences.) A. Ravelo

80C. Introduction to Marine Policy, S

Introduction to marine policy, its historical, legal, and social-political foundations, processes, and role of science therein, using comparative case studies (e.g., fishery management, offshore oil and gas and including recent changes in California maritime policy). (General Education Code(s): T-2 Natural Sciences. C. Pomroy

Upper-Division Courses

101. The Marine Environment, W

An introduction to the marine environment stressing the interaction of physical, chemical, and geological factors in the ocean. Provides an oceanographic background needed for studies in marine biology. Students taking the prerequisite math courses concurrently may enroll in the course with permission from instructor. Prerequisite(s): Chemistry 1C and Mathematics 118 or 198. Students taking the prerequisite math courses concurrently may enroll in the course with permission from instructor. R. Kudela


An introduction to Earth's environment, particularly its oceanic and climatic components. Emphasizes interactions between chemical, physical, biological, and geological processes, and fundamental processes of past, present, and future global environmental change. Provides background for the marine sciences. Prerequisite(s): Chemistry 1C. A. Ravelo

118. Marine Microbial Ecology, S

The study of marine bacteria and their role in marine ecosystems. Emphasis on biochemistry and physiology in relation to metabolic activity and elemental cycles, trophic interactions, and the role of marine food webs. Prerequisite(s): General Education Code(s): IN, Q. M. Dairyman, M. McCarthy.

125. Aquatic Chemistry: Principles and Applications, S

An introduction to the chemical behavior of natural waters with an emphasis on both principles and applications. Topics include chemical equilibrium, kinetics, acids/bases, oxidation/reduction, complexation, solid solution and precipitation, and reactions on solid surfaces. Prerequisite(s): Chemistry 108B or 112C. K. Bruland.

124. Aquatic Organic Geochemistry, W

Introduction to organic geochemistry with emphasis on aquatic environments. Explores how non-living organic matter shapes biogeochemical cycles by carrying and se-
quist ering reduced carbon and major nutrients and ex-
amines influence of chemical structure and environmen-
tal factors on transport and fate of organic molecules.
Provides an introduction to organic biomarkers. Students
cannot receive credit for this course and course 224. Pre-
required: basic college chemistry (Chemistry 1B, 1C); at
least one quarter of college level organic chemistry re-
quired (e.g., Chemistry 7). M. M. McCarthy

130. Biological Oceanography. S
Biological description of sea, with emphasis on processes
and patterns. Topics include microbial dynamics, phyto-
plankton and zooplankton production, and ecology of
marine food webs. Emphasis placed on understanding
how physical, chemical, and geological environment
shapes biology and ecology of oceans, including such top-
ics as harmful algal blooms, global estimates of produc-
tivity, and effects of humans on environment. (Formerly
Ocean Process and Ecology.) Students may not receive
credit for this course and course 230. Prerequisite(s):
previous course in ocean sciences recommended. Enrollment
restricted to juniors (with instructor approval), seniors,
graduate students. R. Kudela

142. Ocean Ecosystems. W
Discussion of selected topics in animal ecology of the open
sea zooplankton production, variability of pelagic popula-
tions, food webs, deep-sea pelagic and bentthic ecology,
fisheries oceanography, and human effects on the open
ocean biota. Students cannot receive credit for this course
and course 242. (Also offered as Biology 142. Students
cannot receive credit for both courses.) Prerequisite(s):
Bi ology 20A-B-C and 20L or an equivalent introductory bi-
ology sequence with lab; one ocean sciences course rec-
ommended. M. Silver

156. Marine Plankton. *
Review of morphology, systematics, and natural history of
major marine planktonic taxa and evaluation of local
plankton forms. Two lecture/lab sessions of three and one-
half hours each, and two field trips during the quarter.
Recommended for upper-division and graduate students.
Prerequisite(s): one of the following recommended as
preparation: course 118, 142, or 242; or Biology 136, 146,
or 170. Recommended for upper-division and grad-
uate students. M. Silver

156L. Marine Plankton Laboratory (2 credits), *
Two lab meetings weekly. Concerned primarily with eval-
uation of local plankton forms. Must be taken concur-
rently with course 156. Prerequisite(s): one of the
following recommended as preparation: course 118, 140,
or 240 or Biology 136, 146, or 170. Must be taken concur-
rently with course 156. M. Silver

157. Ecology of Reefs, Mangroves, and
Seagrasses. S
Integrated treatment of coral reefs, sea grasses, and man-
groves emphasizing interactions and processes through
time. Major topics: biological and geological history, bio-
geography, evolution and ecology of dominant organisms,
biodiversity, community and ecosystem ecology, geology,
biogeochemistry, global change, human impacts. (Also of-
fered as Biology 158. Students cannot receive credit for
both courses.) Prerequisite(s): Biology 20A-B-C and one
relevant upper-division course in biology, Earth sciences,
or ocean sciences, such as Biology 150 or 175; Earth Sci-
ences 101, 102, or 105; or course 101. The Staff

199. Independent Study. F, W, S
Students submit petition to sponsoring agency. The Staff

Graduate Courses

200. Physical Oceanography. F
Introduction to the physics of the ocean-atmosphere sys-
tem. Structure of the ocean and atmosphere. Energy bal-
bance and radiative transfer. Atmospheric circulation;
weather and climate. Physical properties of seawater, air-
sea interaction, mixing, water masses, ocean circulation,
waves, CO2 and global change. Designed for beginning
graduate students in ocean sciences and upper-division
science majors. Calculus and physics recommended as
preparation. C. Edwards

218. Marine Microbial Ecology. S
Recent developments in the study of marine bacteria and
their role in the marine ecosystem. Emphasis on bio-
chemistry and physiology in relation to metabolic activity
and elemental cycles, trophic interactions and flows of ma-
terial and energy in marine food webs. Exams and research
paper required. Students cannot receive credit for this
course, course 118, and Biology 171. Biology 20C and
Chemistry 1C recommended. J. Zehr

220. Chemical Oceanography. W
A chemical description of the sea, emphasis on the chem-
ic interactions of the oceans with the biosphere, atmos-
phere, and lithosphere. Topics include biogeochemical
cycles and the use of chemical tracers to study oceanic and
tidal processes. Course designed for graduate students;
available to upper-division science majors. K. Bruland

224. Aquatic Organic Geochemistry. W
Introduction to organic geochemistry with emphasis on
aquatic environments. Explores how non-living organic
matter shapes biogeochemical cycles by carrying and se-
questering reduced carbon and major nutrients and ex-
amines influence of chemical structure and environmental
factors on transport and fate of organic molecules. Pro-
vides an introduction to organic biomarkers. Students
cannot receive credit for this course and course 124.
Prerequisite(s): permission of instructor. Enrollment re-
stricted to graduate students. M. M. McCarthy

230. Biological Oceanography. S
Biological description of sea, with emphasis on processes
and patterns. Topics include microbial dynamics, phyto-
plankton and zooplankton production, and ecology of
marine food webs. Emphasis placed on understanding
how physical, chemical, and geological environment
shapes biology and ecology of oceans, including such top-
ics as harmful algal blooms, global estimates of produc-
tivity, and effects of humans on environment. (Formerly
Ocean Process and Ecology.) Students may not receive
credit for this course and course 130. Prerequisite(s): pre-
vious course in ocean sciences recommended. Enrollment
restricted to graduate students. M. M. McCarthy

280. Marine Geology. F
Geology of the marine environment. Topics include con-
trols on the type, origin, and distribution of marine sed-
iments; geology of oceanic crust; evolution of continental
margins and plate boundaries; introduction to paleo-
oceanography. Students cannot receive credit for this
course and Earth Sciences 102. Enrollment restricted to graduate
students. M. D. Delany

290. Proseminar.
Special topics in marine sciences to be offered form time
to time by professors and staff members. The Staff

290A. Topics in Chemical Oceanography. *
A weekly seminar series covering recent developments
in chemical oceanography. Different topics and ap-
proaches will be stressed from year to year. May be re-
peated for credit. K. Bruland

290B. Topics in Biological Oceanography. *
Explores different problems of special interest in bio-
logical oceanography. Different topics and approaches
will be stressed from year to year. May be repeated for
credit. M. Silver

290C. Topics in Marine Geochemistry. W
Selected topics in geochemistry. Discussion of theor et-
ical models, different approaches, and recent research.
Topics vary from year to year. May be repeated for
credit. M. D. Delany

290D. Topics in Marine Microbiology. W
A weekly seminar series covering topics in environ-
mental microbiology. Topics vary from year to year,
and will include research in ecology, methodology, bio-
chemistry and physiology of bacteria. Emphasis on the
role of bacteria in biogeochemical cycling from micro-
zone to global scales, with particular focus in marine
systems. May be repeated for credit. J. Zehr

290E. Topics in Climatic and Oceanic
Change. S
Weekly seminar series covering recent developments in
climatic and oceanic change. Different topics and ap-
proaches stressed from year to year. Prerequisite(s):
interview with instructor prior to first class meeting. May
be repeated for credit. A. Ravelo

290H. Topics in Ocean Optics. *
Examines recent developments and application of bio-
Optics to the marine environment, including theory, in-
strumentation, and remote sensing. Different topics and
approaches emphasized from year to year. Prereq-
usites: previous course in marine sciences recom-
ended. Enrollment restricted to graduate students;
senior undergraduates with permission of instructor.
May be repeated for credit. R. Kudela

290J. Topics in Marine Organic
Geochemistry. *
Examines recent developments in use of organic geo-
chemistry to trace oceanographic and biogeochemical
processes. Focuses on introduction to organic bio-
markers, current literature, and evolving applications.
Different topics and approaches emphasized from year to
year. Prerequisite(s): previous course in marine (ocean)
sciences and organic chemistry are recom-
manded. Enrollment restricted to graduate students;
seniors with instructor’s permission. May be repeated
for credit. M. M. McCarthy

292. Seminar (no credit). F, W, S
Weekly seminar on various topics attended by faculty,
graduate, and upper-division undergraduate students. The Staff

293. Graduate Research Seminar (2 credits). S
Weekly seminar series covering a spectrum of topics in
oceanography. Designed for Ph.D. program graduate stu-
Philosophy

234 Stevenson College
(831) 459-4578
http://philosophy.ucsc.edu

Faculty and Professional Interests

Professor

W. Emmanuel Abraham, Emeritus
David C. Hoy
Contemporary French and German philosophy
S. Paul Kaspar, Emeritus
Carlos G. Norera, Emeritus
Richard E. Otte
Philosophy of science, philosophy of religion, philosophical logic, epistemology
Paul A. Roth, Professor
Philosophy of social science, philosophy and sociology of science, epistemology, history of analytic philosophy
Ellen Kappy Suckiel
Ethics, William James, American philosophy, philosophy of religion
Richard A. Wasserstrom, Emeritus

Associate Professor

John M. Doris
Ethics, moral psychology, cognitive science, philosophy of social science
Robert A. Goff
Philosophy of religion, religious philosophy, philosophy in and as literature, Kierkegaard, Wittgenstein
Daniel Guevara
Kant, moral philosophy, social and political philosophy, history of modern philosophy

Assistant Professor

Jonathan Ellis
Philosophy of mind, epistemology, metaphysics, philosophy of language, Hume, Wittgenstein
Julie Tannenbaum
Ethical theory, applied ethics, metaethics, moral psychology, philosophy of mind

Lecturer

Jocelyn Hoy
Feminist philosophy, 19th- and 20th-century continental philosophy

Professor

Sandra Chung (Linguistics)
Syntax, semantics, Austronesian languages
Jerome Neu (Humanities)
Philosophy of mind, emotions and culture, philosophy of law, psychoanalytic theory
Geoffrey Pullum (Linguistics)
Syntax, English grammar, mathematical and computational linguistics, philosophy of linguistics

Faculty Fellow

Christopher Hom
Philosophy of language, philosophy of mind, philosophical logic, metaphysics

Program Description

Philosophy studies many of life's most significant questions. It investigates issues about the fundamental nature of reality, the relation of the mind to the body, the existence of a divine being, and the basis of our most fundamental values: moral, aesthetic, and spiritual. In addition, philosophy is concerned with problems concerning the possibility of knowledge, including questions arising from the role of reason and experience in justifying claims to know and from the challenges raised by various types of skepticism. Therefore, the student of philosophy can pursue a broad range of topics that make a careful study of the classic texts in philosophy, ancient and modern. Moreover, the curriculum covers all the dominant contemporary schools of philosophy in the Anglo-American and European traditions. Students who anticipate graduate work in philosophy are encouraged to study logic at both the introductory and intermediate levels and any languages that are necessary for advanced scholarship in the different historical eras of philosophy.

Major Requirements

Courses

Eleven courses are required: two at the introductory level, three in the history of philosophy sequence (91–113), and six additional courses (including one advanced seminar). These courses must meet the following distribution requirements:

Introductory
Course 9 and at least one of courses 11, 22, 24, and 26;

History of philosophy: Two of 91, 93, or 94, plus any third course numbered between 91 and 113 (with all three—91, 93, and 94—strongly recommended for students who anticipate graduate work in philosophy)

History of philosophy courses taken at other institutions may be substituted by petition, provided that such courses have included intensive study of primary sources;

At least six additional courses numbered 91 and above, one of which must be an advanced seminar numbered 190.

Note that the courses counted toward fulfilling the history of philosophy requirement cannot be counted among these six additional courses. Courses 195A, 195B, and 199 also cannot be counted among these six additional courses.

All upper-division courses except those in the history of philosophy sequence must be completed at UCSC.

Normal progress for a philosophy major is as follows:

First year, take the introductory courses; second year, complete the required three courses in the history of philosophy; third and fourth years, upper-division course work, plus work in advanced seminars. Students are advised to complete lower-division and history of philosophy requirements by their third year at the latest.

Transfer students are particularly advised that completion of one or more courses in the history of philosophy is assumed as background for most other upper-division courses in philosophy.

Comprehensive Requirement

In the fourth year, students satisfy the comprehensive (exit) requirement by taking one course numbered 190. This advanced seminar involves a major coherent project that meets the standards of the senior-year level of achievement in philosophy. Students who do superior work in an advanced seminar can be awarded a notation of H on the evaluation for that course. In addition to H on honors in an advanced seminar, graduating seniors with a distinguished record of achievement in their philosophy courses may be awarded H on honors in the philosophy major.
Minor Requirements
A minor in philosophy consists of any nine of the 11 courses required for the major. There is no senior exit requirement for the minor.

Philosophy Major Planners
Getting started in the right way is important in the study of philosophy. The following are two recommended academic plans for students to complete during their first two years as preparation for the philosophy major. Plan One is a guideline for students who are committed to the major early in their academic career. Plan Two is for students who are considering the philosophy major, but who are interested in other possible majors as well.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Phil 9</td>
<td>Phil 11 or 22</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Phil 91</td>
<td>Phil 93</td>
<td>Phil 106</td>
</tr>
<tr>
<td>(soph)</td>
<td>Phil 117</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Phil 9</td>
<td>Phil 11 or 22</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Phil 91</td>
<td>Phil 93</td>
<td></td>
</tr>
<tr>
<td>(soph)</td>
<td>Phil 117</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Program Planning Notes
Although not as a substitute for the advanced seminar requirement, a student may be given the option of writing a senior essay (course 195A) when a faculty member thinks that the student has already done exceptional work that could be carried to a more advanced level. Normally, the senior essay is completed in one quarter; in unusual circumstances, it can be continued for a second quarter (course 195B), but only if the writing requirements for course 195A are completed successfully and on time. The senior essay, like individual studies more generally, does not count toward the 11 courses required for the major.

After undergraduates have taken the requisite introductory courses, they have a wide range of upper-division courses from which to choose. Those who are considering advanced study are encouraged to consult regularly with any member of the philosophy faculty about the courses that would best prepare them for graduate work.

Philosophy Major with Concentration in Religious Thought

This program is for students who wish to use the discipline of philosophical studies as a basis for pursuing an interest in religion. It consists of an individually planned sequence of at least five courses dealing with religious thought, supplementing a core of courses in philosophy.

A student enters the concentration by petitioning the Department of Philosophy and by proposing, in consultation with a member of the philosophy faculty, a sequence of upper-division courses to fulfill the religious thought concentration. The current adviser is Professor Robert Goff, and prospective philosophy majors who are interested in this concentration are encouraged to consult with him in advance.

Course Requirements
Fourteen courses are required: two introductory philosophy courses, two in the history of philosophy sequence, five additional upper-division philosophy courses, and five upper-division courses in the area of religious thought. For the lower-division courses and for some history of philosophy courses, students may petition to substitute courses taken at other institutions. These 14 courses must meet the following distribution requirements:

- Introductory. Two of courses 11, 22, 24, or 26;
- History of philosophy. Course 91 and one of courses 93 or 94;
- Upper-division. Five courses, including course 170 or 171, one advanced seminar (190 series), and any three additional upper-division philosophy courses (excluding 195A and 195B; course 108 is recommended);
- Concentration in religious thought. At least five upper-division courses in the area of religious thought from programs on campus such as anthropology, literature, history, and history of art and visual culture. One of these five courses can be an upper-division philosophy course with a focus on religious topics or figures; however, this course must be in addition to course 170 or 171 and the required two courses in the history of philosophy. The upper-division concentration courses may include individual study courses (199). A current list of UCSC courses focusing upon religious history, figures, and texts is maintained by the Philosophy Department Office. All courses from other departments to be used toward the major requirements must be approved in advance by the department adviser for the concentration.

Graduate Program

The Department of Philosophy conceives of philosophy as a broad and inherently cross-disciplinary enterprise. Graduate students are able to take advantage of this broad range of courses in the history of philosophy, including ancient, early modern, Kantian, nineteenth-century American, and early analytic philosophy. Faculty research has focused on such conceptual clusters as mind, brain, and body; consciousness, perception, and action; understanding, interpretation, and language; religion, reason, and probability; moral motivation; practical reason, and virtue; ethics the emotions, psychoanalytic theory, and the will; science and technology; and society and the law.

Both the M.A. and the Ph.D. programs encourage interaction with other fields, and the curriculum includes graduate and undergraduate courses cross-listed with departments such as Psychology, Linguistics, Anthropology, Environmental Studies, History of Consciousness, Legal Studies, Politics, and Women's Studies. Furthermore, the programs allow for graduate-level study of phenomenology, hermeneutics, critical theory, and poststructuralism.

Graduate Program Requirements

Breadth Requirements in the First Year

During their first year, all graduate students are expected to fulfill a set of breadth requirements. These requirements are designed to provide both a common experience on which students can build their individual projects and a shared framework within which they can exchange ideas. In addition to Philosophy 217, 218, Intermediate Logic, and Philosophy 201, First Year Seminar, students must take at least one course in the area of metaphysics and epistemology and one course in the area of value theory according to a list determined annually by the graduate committee.

Ph.D. Program

The Ph.D. program provides students with closely monitored training in philosophy. The program is designed to be completed in six years or less. Graduate work in philosophy can lead to careers both inside and outside academia. Because most doctoral students will be preparing for a career that involves teaching philosophy, they are encouraged to be teaching assistants for at least three quarters.

Courses: a minimum of 12 graduate courses. Up to two courses may be taken from the offerings of other departments, and up to two courses may be independent studies.

Language requirement: knowledge of foreign languages will be individually determined based on the relevance of such linguistic skills to the research interests of the student. Proficiency can be demonstrated either by passing a written exam administered by the department or by successfully completing a language course approved by the graduate director.

Qualifying examination: near the end of the required coursework, doctoral students will develop a research prospectus, writing a detailed dissertation prospectus. The qualifying examination, normally taken during the third year of enrollment, is a qualifying essay that demonstrates the candidate’s ability to do extended, dissertation-level research and analysis relevant to the proposed thesis topic and dissertation plan. The exam focuses on the student’s research project and on the fields of scholarship it presupposes.

Dissertation: the final requirement for the Ph.D. degree is a dissertation representing a contribution to philosophical research. An oral defense is normally expected.

M.A. Program

Applications to the M.A. program are welcomed from talented students with diverse academic backgrounds. The program is open not only to applicants who majored in philosophy as undergraduates, but also to applicants who majored in other disciplines and who now want to study philosophy more intensively. The program is designed to be completed in one or two years.

Courses: a minimum of nine graduate courses. Up to two courses may be taken from the offerings of other departments, and up to two courses may be independent studies.

Languages: there is no foreign language requirement for M.A. students.

M.A. student’s paper: by the end of the second year of study and the completion of 45 credits, M.A. students will submit a master’s paper, which will normally be defended orally before a committee of two faculty members.

Relationship of the M.A. and Ph.D. Programs

Students in the M.A. and Ph.D. programs will be in the same classes and work on the same course distribution requirements. Enrollment in the M.A. program confers no advantage for admission to the Ph.D. program.

Applications and Admissions

Requests for application forms should be directed to the Department of Philosophy, 234 Stevenson College, (831) 459-4578, philgrad@uuc.edu. Further information regarding the program may be requested from the Department of Philosophy at (831) 459-4578, fax: 459-4579.
Lower-Division Courses

9. Introduction to Logic, W
A study of correct reasoning, concentrating on developing the skills necessary to distinguish logically correct from logically incorrect arguments. The emphasis is on modern symbolic logic, although the traditional theory of the syllogism is also covered. (General Education Code(s): IH.) J. N. Neu, J. Hoy

11. Introduction to Philosophy, FS
An introduction to the main areas of philosophy using both classic and contemporary sources. Focuses on central and enduring problems in philosophy such as skepticism about the external world, the mind-body problem, and the nature of morality. (General Education Code(s): IH.) S. Chung

20. Wilderness Studies, S
Through hiking in the writings of Abbey, Peacock, and others, attempts to understand the interaction of human beings and the wilderness—especially as this interaction has developed in the U.S. Concern to understand the spiritual conditions under which this interaction might become less destructive to non-human organisms and ecosystems. J. E. Doris

22. Introduction to Ethical Theory, *
A consideration of ethical issues and theories focusing on the nature of moral value and the principles governing character and behavior. Designed to extend and develop the student’s abilities in philosophical reasoning about ethics. (General Education Code(s): IH.) J. Tannenbaum

24. Introduction to Ethics Contemporary Moral Issues, W
An examination of the conceptual and moral issues that arise in connection with such topics as abortion, racism and war and violence, world hunger, humans and their interactions with the nonhuman environment. The readings are drawn from recent philosophical articles on these topics. (General Education Code(s): IH.) J. J. Tannenbaum

26. Existentialism and After, W
A survey of recent movements in European thought, such as phenomenology, existentialism, hermeneutics, critical theory, continental feminism, and poststructuralism, with some attention to their nineteenth-century precursors. Selections from major philosophical treatises are supplemented with literary works. (General Education Code(s): IH.) J. R. Goff

28. Environmental Ethics, *
This course is an introduction to the moral issues raised by our interactions with nonhuman animals and with the rest of the natural environment. The course will relate traditions of moral theories to contemporary literature on the ethics of nature conservation and environmental protection. The course is intended as a first course in philosophy as well as a first course in ethics; therefore, questions concerning the nature of philosophical inquiry and the ways in which philosophical inquiry is different from inquiries conducted within other disciplines will also be addressed. (General Education Code(s): IH.) J. D. Guevara

80G. Bioethics in the Twenty-First Century: Science, Business, and Society, F
Serves science and non-science majors interested in bioethics. Guest speakers and instructors lead discussions of major ethical questions arising from research in genetics, medicine, and industries supported by this knowledge. (Also offered as Biomolecular Engineering 80G and Chemistry 80G.) (General Education Code(s): T2-Natural Sciences.) J. D. Deamer, E. Suckiel

80H. The Rationality of Belief in God, *
An investigation into whether it is rational to believe that God exists. Study of arguments for and against the existence of God, as well as whether arguments or proofs are necessary for belief in God to be rational. (General Education Code(s): T4-Humanities and Arts.) R. Otte

80L. Language and Mind: Chomsky’s Program.
A critical overview of the research program initiated by Noam Chomsky and its implications for theories of the human mind and brain. (Offered as Linguistics 80D. Students cannot receive credit for both courses.) (General Education Code(s): T5-Humanities and Arts or Social Sciences.) T. The Staff

80M. The Nature of Science, F
A survey of what philosophers have said about the nature of science and scientific change. Emphasis is placed on whether science is best characterized as the gradual accumulation of truth or whether truth is irrelevant to scientific change. (General Education Code(s): T6-Natural Sciences or Humanities and Arts.) R. Otte

80T. Introduction to Feminist Philosophy, *
A study of key authors, texts, and issues constituting recent feminist philosophy. Authors such as Wolfstonecraft, Beauvoir, Firestone, and Gilligan provide a background for more contemporary feminist explorations of rights, justice, autonomy, and responsibility. Questions about the relation of mind and body, emotions and belief, knowledge and situation, self and identity are also explored from various feminist perspectives. (General Education Code(s): T4-Humanities and Arts.) J. Hoy

81. Critical Thinking, F
Study of classical American philosophers, specifically Emerson, Pierce, James, and Dewey, with emphasis on their views of metaphysics, epistemology, ethics, and philosophy of religion. Some attention is also paid to recent pragmatic tendencies in American philosophy. (General Education Code(s): IH.) R. Otte

91. Ancient Greek Philosophy, F
A study of Socratic method, Platonic metaphysics, epistemology, and ethical theories, and of Aristotle’s moral and political views through intensive reading of selected Platonic dialogues and Aristotelian texts. (General Education Code(s): IH.) J. Doris

93. The Rationalists, W
A study of the historical background and the present relevance of Descartes, Spinoza, and Leibniz. (General Education Code(s): IH.) J. Tannenbaum

94. The Empiricists, S
A critical study (based on original texts) of Locke, Berkeley, and especially Hume on the nature of knowledge, perception, causation, morality, religion, and political society. (General Education Code(s): IH.) J. Doris

95. Tutorial, F,W,S
The Staff

Upper-Division Courses

100. Vienna Circle and American Philosophy, S
Study of philosophical movement called the Vienna Circle, named so chiefly for intellectual excellence of its members, but also for external historical reasons. Course pays careful attention to intercultural aspects of ideas of the Vienna Circle: intellectual climate under which these ideas were formed, how thoughts of its members found an echo outside of Austria, and how they made a lasting influence on philosophical thinking in England and in U.S. The Staff

104. Kant, F
Intensive study of Kant’s philosophy, particularly his epistemology and metaphysics developed in his Critique of Pure Reason. (General Education Code(s): IH.) R. Goff

105. Nineteenth-Century Philosophy, W
A study of some European philosophers of the nineteenth century, with particular attention to Hegel, Schopenhauer, and Nietzsche. (General Education Code(s): IH.) J. Hoy

109. Contemporary French Philosophy, W
A study of the French philosophical movements of existentialist phenomenology, structuralism, and poststructuralism, with close critical analysis of original texts by Sartre, Merleau-Ponty, Derrida, Foucault, and others, showing changes in conceptions of a human being, consciousness, language, the body, other minds, freedom, power, and history. (General Education Code(s): IH.) J. Hoy

110. Heidegger, *
A close study of early and late texts by M.artin Heidegger, especially Being and Time. (General Education Code(s): IH.) J. Hoy

112. American Philosophy, *
Study of classical American philosophers, specifically Emerson, Peirce, James, and Dewey, with emphasis on their views of metaphysics, epistemology, ethics, and philosophy of religion. Some attention is also paid to recent pragmatic tendencies in American philosophy. (General Education Code(s): IH.) R. Otte

117. Intermediate Logic, *
Natural deduction and semantics of first order predicate logic. Metatheory, including completeness theorems for propositional and predicate logic. Students cannot receive credit for both courses. (General Education Code(s): IH.) R. Otte

119. Advanced Logic, *
Review of propositional and predicate logic, and an investigation of topics such as the completeness and consistency of logical systems, the nature of computation, and the incompleteness of various theories, and non-standard logics such as modal logic. Course 9 or equivalent is recommended prior to taking this course. R. Otte

120. Philosophical Writing, W
Training in philosophical thinking and its expression in written form. (General Education Code(s): IH.) J. Hoy

http://humanities.ucsc.edu/phil/home.html.
isfaction of Subject A and Composition requirements. En-
rollment restricted to philosophy majors. Enrollment lim-
ited to 30. (General Education Code(s): W) D. Guerva

121. Knowledge and Rationality. F
An investigation of modern theories of knowledge, justi-
fication, and rationality. One course in philosophy is
strongly recommended prior to taking this course. J. Doris

122. Metaphysics. W
Focuses on one or two topics selected from among the
central issues in metaphysics. Topics may include causals
ity; possibility and necessity; universals and particulars;
time, change, and identity over time. Prerequisite(s): one
course in philosophy. C. Hom

123. Philosophy of Language. S
Current theories of the nature and preconditions of lan-
guage, the nature of meaning, and the nature of truth.
(Also offered as Linguistics 123. Students cannot receive
credit for both courses.) Prerequisite(s): one course in phi-
losophy, psychology, or linguistics. C. Hom

125. Philosophy of Science. *
An examination of various topics that arise in thinking
about science. Different philosophical problems, such as
realism, instrumentalism, confirmation, explanation, explana-
tion, space, and time, and rational decision making are exten-
sively discussed and criticized. R. Otte

133. Philosophy of Mind. F
An exploration of the mind-body problem. What is the rela-
tionship between mind and brain? Can consciousness be
explained in physical terms? Prerequisite(s): one course in
philosophy. C. Hom

135. Philosophy of Psychology. *
Looks at philosophical issues raised by current research on
the nature of perception, cognition, and consciousness in
psychology and cognitive science. Can there be a science
of the mind? Could machines be conscious? Do animals have
minds? How did the mind evolve? These and a host of related
questions form the subject matter of this course. Students
cannot receive credit for this course and course 235. Prerequisite(s): one course in philosophy, psychology,
or linguistics. Enrollment restricted to sophomores, jun-
ior, and seniors. The Staff

139. Freud. *
The development of Freud's concept of mind. Extensive
reading tracing the origins and development of Freud's theories and concepts (e.g., abreaction, psychic energy, de-
fense, wish-fulfillment, unconscious fantasy, dreams,
symptoms, transference, cure, sexuality) and emphasizing
the underlying model of the mind and mental function-
ing. (Also offered as Psychology 163. Students cannot re-
ceive credit for both courses.) Offered in alternate academic years. J. Nau

140. History of Ethics. *
A careful study of any one or a number of select primary
texts in the history of moral philosophy, with some em-
phasis on the relation to contemporary issues. D. Guerva

141. Epistemology and Cognition. *
Epistemology is preoccupied with skepticism, the view
that knowledge is unobtainable. Recently, there has been
skepticism voiced about the status of epistemology itself;
philosophers conversant in cognitive science suggest that
epistemology is beset with dubious presuppositions. We
survey epistemology, cognitive science, and their interface.
Students cannot receive credit for this course and course
241. Enrollment restricted to junior and senior philoso-
phy majors. J. Doris

142. Advanced Ethics. *
An examination of central issues in ethical theory includ-
ing the nature of and justification for the moral point of
view, the place of reason in ethics, the status of moral prin-
cipals, and the nature of moral experience. Prerequisite(s):
two philosophy courses including course 22, 24, or 28: E. Suckiel

143. Philosophy and Personal Relations. *
Analysis of the nature of personal relationships, their
structure, moral expectations, and requirements. Love,
friendship, family relationships, and others are explored.
Prerequisite(s): two philosophy courses. E. Suckiel

144. Social and Political Philosophy. *
A study of selected classical and contemporary writings
dealing with topics such as the nature and legitimacy of the
liberal state, the limits of political obligation, and the the-
ories of distributive justice and rights. (Also offered as
Legislation 144. Students cannot receive credit for both
courses.) Prerequisite(s): one course in philosophy. Of-
fered in alternate academic years. J. Doris

145. Brave New World: Ethical Issues in
Genetics. F
Study of ethical issues involved in recent and upcoming
advances in genetic research and technology such as ge-
netic engineering, cloning, human embryo research, ge-
netic experimentation, use of an individual's genetic infor-
mation, and the manipulation of human evolution. Also
discusses fundamental issues such as the moral re-
ponsibility of scientists, our obligations to future gener-
ations, and the notion of human perfectability. Prerequisite(s): one philosophy course. The Staff

146. Philosophy of Law. W
Selection of explored problems in jurisprudence: "legal
reasoning" and social policy, rules and individual cases, the
mental element in the law, punishment and responsibility,
causation and fault, liberty and paternalism, etc. (Also of-
fered as Legal Studies 146. Students cannot receive credit
for both courses.) J. Nau

147. Women: The Philosophical Issues. W
Study of philosophical issues regarding women, includ-
ing women's roles and women's rights. Such notions as op-
pression, liberation, sexuality, equality, and autonomy are
explored, along with questions concerning the relationship
between biological and social facts and moral values. (Also
offered as Women's Studies 168. Students cannot receive
credit for both courses.) J. Hovy

152. Aesthetics. S
Problems about form, meaning, and interpretation in art,
as found in major aesthetic theories from the philosophi-
 cal tradition, and also in a variety of encounters between
recent philosophy and the arts. One course in philosophy
is strongly recommended prior to taking this course. (General Education Code(s): A.) R. Goff

154. Philosophy in Literature. *
Story, drama, and poetry considered as sources of philo-
sophical perspective or as particular challenges to philo-
sophical interpretation. Also, discussion of literary and
imaginative elements in philosophical writing. One course
in philosophy is strongly recommended prior to
taking this course. R. Goff

170. The Interpretation of Religion. *
A study of different philosophical responses to religious
belief and practice, from the classical "proofs" of religion,
to skeptical critiques of religious experience, to conceptual
issues in the interpretation of religious texts. R. Goff

171. Faith and Reason. F
Recent work in analytic philosophy of religion, concen-
trating on traditional theism. Topics include arguments
for and against the existence of God, religious experience,
miracles, the relation of faith and reason, and problems
such as freedom and divine foreknowledge. Prerequisite(s):
course 9. R. Otte

174. Spirituality and the Sacred. *
An examination of the personal, moral, and aesthetic ele-
ments of spirituality, their relationship to the individual's
idea of the sacred, and to philosophical and rational as-
sessments of religion. Prerequisite(s): one philosophy
course. E. Suckiel

180H. Philosophy Colloquia (2 credits). F, W, S
A colloquia series that sponsors four speakers each quar-
ter. Students required to attend all colloquia and class
meetings and encouraged to form discussion groups after
each lecture. Enrollment restricted to philosophy majors.
May be repeated for credit. R. Otte

190A. Metaphor. F
Advanced seminar on the theory of metaphor. De-
signed to be of interest to those wishing to pursue liter-
ary studies, as well as linguistically and philosophically minded students. The fact that the phenomenon of metaphor is at the crossroads of liter-
atures, linguistics, and philosophy is reflected in the
choice of authors to be discussed, starting with Aristo-
tole, then focusing on twentieth-century views repre-
sented by literary critics, by linguists, and by philos-
ophers. Students cannot receive credit for this
course and course 290A. Enrollment limited to 18. The Staff

190B. Nietzsche. *
Intensive reading of not only Nietzsche's own texts, but
important contemporary interpretive works on Nietzsche. M ains covers nihilism and the aestheticization of exis-
tence, will-to-power, genealogy and interpreta-
tion, and Nietzsche's use or misuse of feminism. En-
rollment restricted to junior and senior philosophy majors. Enrollment limited to 20. J. Hovy

190C. Advanced Topics in Contemporary
Ethics. *
Examines one or more leading ethical theories, such as
Kantianism, Virtue Theory, Consequentialism, and
Humean ethical theory. Examines different founda-
tional ethical principles and arguments for those prin-
ciples, contrasting accounts of moral action and moral
motivation, as well as epistemological and motivational
roles of emotions in ethical theory. Students cannot re-
ceive credit for this course and course 290C. Prerequi-
site(s): course 140 or 142 and one other upper-division
philosophy course. Enrollment restricted to junior and
senior philosophy majors. Enrollment limited to 22. M ay be repeated for credit. J. Tannenbaum

190D. Kant's Moral Theory. *
A careful study of Kant's moral theory, with an em-
phasis on the Groundwork for the Metaphysics of Morals,
the Critique of Practical Reason, and the Metaphysics
of Morals. Recent secondary sources are considered as
well. Enrollment restricted to junior and senior philo-
sophy majors. Enrollment limited to 20. D. Guevara

190E. Kierkegaard. *
Close study and discussion of major works by Soren
Kierkegaard. Assessment of his influence on twenti-
eth-century philosophy, literature, psychology, and religious thought. Enrollment restricted to junior and senior philosophy majors. R. Goff

190G. Hegel. *  
Intensive introduction to Hegel’s philosophy, particularly to the Phenomenology of Spirit, with its account of the dialectical method, its critique of Kantian epistemology and moral philosophy, its master-slave dialectic, and its social ethics as derived from an interpretation of Antigone. Supplementary readings on the nature of morality are drawn from The Philosophy of Right, and readings from Kant’s and Hegel’s philosophies of history. Prerequisite(s): two courses in philosophy. Enrollment restricted to senior philosophy majors. D. Hoy

190I. Studies in Religious Philosophy. *  
Philosophy authorship and self-understanding from Plato and Augustine, Montaigne and Descartes, and Kierkegaard and Wittgenstein to recent Continental figures including Levinas, Foucault, Derrida, Lyotard, and Agamben. Prerequisite(s): two philosophy courses. Enrollment restricted to juniors and seniors. Enrollment limited to 20. R. Goff

190J. Advanced Topics in the History of Ethics. *  
A careful study of any one of the main moral theories in the history of philosophy, with some emphasis on the relation to contemporary moral philosophy. Enrollment restricted to junior and senior philosophy majors. Enrollment limited to 20. D. Guevara

190K. The Phenomenology of Perception. *  
The study of perception is an important and flourishing area of research within contemporary philosophy of mind and cognitive science. This seminar examines recent approaches to perception and considers the significance for the study of perception in the phenomenological tradition. Among authors read: Ayer, Evans, Gibson, Gurwitsch, Husserl, Mair, Merleau-Ponty, Peacocke, and Strawson. Students cannot receive credit for this course and course 290K. Prerequisite(s): two philosophy courses. Enrollment restricted to junior and senior philosophy majors. Enrollment limited to 20. The Staff

190M. William James. *  
Intensive study of James’s philosophy, including his philosophical psychology and pragmatic method. Covers James’s epistemology, metaphysics, ethics, and philosophy of religion. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to junior and senior philosophy majors. Enrollment limited to 20. (General Education Code(s): W. J. E. Suckiel

190N. Philosophy of Religion. *  
An examination of recent work in philosophy of religion. The approach may vary between an analytic and continental approach in different years. Topics might include the rationality of belief in God, religious epistemology, hermeneutics, and religious experience. Enrollment restricted to junior and senior philosophy majors. R. Otte

190P. Epistemology. *  
An examination of recent work in epistemology. May focus on topics such as perception, naturalized epistemology, probabilistic epistemology, theories of justification, a priori knowledge, and memory. Enrollment restricted to junior and senior philosophy majors. R. Otte

190S. Philosophy of Science. *  
An examination of a topic in current philosophy of science. The material for the course is chosen from topics such as realism and instrumentalism, scientific explanation, space and time, and the confirmation of theories. Enrollment restricted to junior and senior philosophy majors. May be repeated for credit. R. Otte

190T. Advanced Feminist Philosophy. *  
Focuses on issues in epistemology and ontology: the construction of knowledge and objectivity, rationality and emotions, subjectivity and personal identity, and the body and sexuality. (Also offered as Women’s Studies 194). Students cannot receive credit for both courses. Prerequisite(s): course 147 or Women’s Studies 130. Enrollment limited to 20. J. Neu

190W. History of Consciousness. *  
Historical study of philosophical theories of consciousness and self-consciousness. Problems include the relation of self and other, consciousness and body, and self-consciousness and ethical agency. Readings are from Kant, Hegel, Nietzsche, and Heidegger, followed by phenomenologists, poststructuralists, and analytic philosophers. Enrollment restricted to junior and senior philosophy majors. Enrollment limited to 10. D. Hoy

190X. The Good Life. *  
Study of alternative conceptions of the elements of a good life, including topics such as courage, loyalty, devotion to ideals, personal flourishing, commitment to a community or tradition, spiritual enlightenment, integrity, compassion, and intellectual understanding. Also covered are fundamental questions such as the meaning of life, the relationship of “living right” to “living well,” and the role of feelings in the justification of action. Enrollment restricted to junior and senior philosophy majors. Enrollment limited to 20. E. Suckiel

190Y. The Good Life. *  
Study of alternative conceptions of the elements of a good life, including topics such as courage, loyalty, devotion to ideals, personal flourishing, commitment to a community or tradition, spiritual enlightenment, integrity, compassion, and intellectual understanding. Also covered are fundamental questions such as the meaning of life, the relationship of “living right” to “living well,” and the role of feelings in the justification of action. Enrollment restricted to junior and senior philosophy majors. Enrollment limited to 20. E. Suckiel

200A. Political and Social Thought Core Seminar: Politics of Recognition. *  
Investigates issues about identity and recognition as basic for claims about institutional legitimacy and social struggle. Paradigm is Hegel’s account of relation of master and slave in Phenomenology of Spirit. Contemporary political philosophy examines differing accounts of reason, power, resistance, liberation, morality, difference, and the other. Concludes with discussion of identity and interest politics, multiculturalism and assimilation, and moral bases of struggle, reconciliation, and compromise in the political arena. (Also offered as Politics 200A. Students cannot receive credit for both courses.) Enrollment restricted to politics and philosophy graduate students. Enrollment limited to 15. The Staff

201. First Quarter Seminar, F  
First quarter required course for philosophy graduate students. Introduces the work of the philosophy faculty members to the new graduate students. Helps new students form a cohort. Each week different faculty members will visit the class and discuss materials of their own as well as materials or topics that they study. Enrollment restricted to graduate philosophy majors. D. Guevara

217. Intermediate Logic, W  
Naturale deduction and semantics of first order predicate logic. Metatheory, including completeness theorems for propositional and predicate logic. Students cannot receive credit for this course and course 117. Prerequisite(s): course 9. Enrollment restricted to graduate students. Enrollment limited to 40. The Staff

222. Metaphysics. *  
Advanced introduction to topics in twentieth century and contemporary analytic metaphysics. Divided into five main parts dealing, respectively, with issues about the nature of existence, properties, time, change and persistence, and material constitution. Students cannot receive credit for this course and course 122. Enrollment restricted to graduate philosophy majors. Enrollment limited to 10. The Staff

223. Recent European Philosophy. *  
Seminar on recent developments in European philosophy, with particular attention to contemporary philosophers such as Derrida, Lyotard, and Agamben. Theorists such as Sartre, Merleau-Ponty, Derrida, Foucault, Bourdieu, Levinas, Laclau, or Vattimo may be read as well. (Also offered as History of Consciousness 223. Students cannot receive credit for both courses.) Enrollment restricted to graduate philosophy majors. Enrollment limited to 15. Offered in alternate academic years. May be repeated for credit. D. Hoy

195A. Senior Essay, F,W,S  
Preparation of senior essay (approximately 25 pages) during one quarter. Students submit petition to sponsoring agency. The Staff

195B. Senior Essay, F,W,S  
Under exceptional circumstances, a second senior essay continuing the work of the first essay is permitted but only when the first senior essay has been completed. Students submit petition to sponsoring agency. The Staff

199. Tutorial. F,W,S  
The Staff

199F. Independent Study (2 credits), F,W,S  
Students submit petition to sponsoring agency. The Staff

Graduate Courses

200A. Political and Social Thought Core Seminar: Politics of Recognition. *  
Investigates issues about identity and recognition as basic for claims about institutional legitimacy and social struggle. Paradigm is Hegel’s account of relation of master and slave in Phenomenology of Spirit. Contemporary political philosophy examines differing accounts of reason, power, resistance, liberation, morality, difference, and the other. Concludes with discussion of identity and interest politics, multiculturalism and assimilation, and moral bases of struggle, reconciliation, and compromise in the political arena. (Also offered as Politics 200A. Students cannot receive credit for both courses.) Enrollment restricted to politics and philosophy graduate students. Enrollment limited to 15. The Staff

201. First Quarter Seminar. F  
First quarter required course for philosophy graduate students. Introduces the work of the philosophy faculty members to the new graduate students. Helps new students form a cohort. Each week different faculty members will visit the class and discuss materials of their own as well as materials or topics that they study. Enrollment restricted to graduate philosophy majors. D. Guevara

217. Intermediate Logic. W  
Naturale deduction and semantics of first order predicate logic. Metatheory, including completeness theorems for propositional and predicate logic. Students cannot receive credit for this course and course 117. Prerequisite(s): course 9. Enrollment restricted to graduate students. Enrollment limited to 40. The Staff

222. Metaphysics. *  
Advanced introduction to topics in twentieth century and contemporary analytic metaphysics. Divided into five main parts dealing, respectively, with issues about the nature of existence, properties, time, change and persistence, and material constitution. Students cannot receive credit for this course and course 122. Enrollment restricted to graduate philosophy majors. Enrollment limited to 10. The Staff

223. Recent European Philosophy. *  
Seminar on recent developments in European philosophy, with particular attention to contemporary philosophers such as Derrida, Lyotard, and Agamben. Theorists such as Sartre, Merleau-Ponty, Derrida, Foucault, Bourdieu, Levinas, Laclau, or Vattimo may be read as well. (Also offered as History of Consciousness 223. Students cannot receive credit for both courses.) Enrollment restricted to graduate philosophy majors. Enrollment limited to 15. Offered in alternate academic years. May be repeated for credit. D. Hoy
224. Philosophy of Language. *
Advanced introduction to issues in the philosophy of language—primarily concerning the nature of reference, meaning, and truth. Works from such twentieth-century figures as Russell, Wittgenstein, Kripke, Lewis, and Putnam discussed. Topics include what it is for a sign or a bit of language to be meaningful, or for it to identify or represent something; what it is for a statement to be true; what it is to be a language; and how reference works when attributed to beliefs. Cannot receive credit for this course and course 123. Enrollment restricted to graduate philosophy majors. Enrollment limited to 10. The Staff

231. Metaphysics and Epistemology. S
Focuses on topics or topics in metaphysics and/or epistemology. May focus on topics such as perception, naturalized epistemology, probabilistic epistemology, theories of justification, a priori knowledge, and memory. Topics might include one or more of causation, possible worlds, identity, necessity, time, realism, universals, and existence. Enrollment restricted to graduate philosophy majors. Enrollment limited to 22. P. Roth

232. Advanced Topics in Value Theory. W
Considers topics central to contemporary philosophy ethics justification, normativity, diversity, skepticism, relativism, rationality, motivation, obligation, responsibility, emotion, and so forth. In some instances, the investigation proceeds through readings by historical figures such as Wollaston and Cudworth. Enrollment restricted to graduate philosophy majors. Enrollment limited to 20. J. Tanenbaum

233. Seminar in Philosophy of Mind. *
Focuses on topics in the philosophy of mind. Topics may include consciousness, mental content, the mind-body problem, and mental causation. Enrollment restricted to graduate students. Enrollment limited to 15. M. Ay be repeated for credit. R. Ellis

235. Philosophy of Psychology. *
Looks at philosophical issues raised by current research on the nature of perception, cognition, and consciousness in psychology and cognitive science. Can there be a science of the mind? Could machines be conscious? Do animals have minds? How did the mind evolve? These and a host of related questions form the subject matter of this course. Students cannot receive credit for this course and course 135. Prerequisites: One course in philosophy, psychology, or linguistics. Enrollment restricted to graduate students. The Staff

236. On Insults. F
What is the role of insult in social and legal life (from playful jokes to ritual war and from blasphemy to defamation to hate speech)? Emphasizes philosophical, anthropological, psychoanalytic, and legal approaches to the issues. (Also offered as Anthropology 236. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. The Staff

240. The History of Ethics. *
Compares and contrasts two famous ethical works: Aristotelian Nicomachean Ethics and Kant's Groundwork for the Metaphysics of Morals. Traditionally, Aristotle and Kant are thought to offer opposing views of good action and good agents. Closely compare their ethical principles and arguments for these principles in order to understand each philosopher in his own terms, as well as to determine whether this traditional characterization is accurate. Students cannot receive credit for this course and course 140. Enrollment restricted to graduate philosophy majors. J. Tannenbaum

241. Epistemology and Cognition. *
Epistemology is preoccupied with skepticism, the view that knowledge is unobtainable. Recently, there has been skepticism about the status of epistemology itself; philosophers concerned in cognitive science suggest that epistemology is beset with dubious presuppositions. We survey epistemology, cognitive science, and their interface. Students cannot receive credit for this course and course 141. Enrollment restricted to graduate philosophy majors. J. Doris

245. Brave New World: Ethical Issues in Genetics. F
Ethical issues in genetic research and technology, including genetic engineering, cloning, stem cell research, uses of genetic information, and manipulation of human evolution. Also considers the moral responsibility of scientists, obligations to future generations, and the concept of human perfectibility. Students cannot receive credit for this course and course 145. Enrollment restricted to philosophy graduate students. E. Suckiel

252. Poststructuralism. *
French poststructuralism, with particular attention to the main philosophical texts of Jacques Derrida and Michel Foucault. Other representative theorists as well as critics of poststructuralism are studied as time permits. (Also offered as History of Consciousness 252. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Enrollment limited to 15. M. Ay be repeated for credit. The Staff

290A. Metaphor. F
Advanced seminar on the theory of metaphor. Designed to be of interest to those wishing to pursue literary studies, as well as linguistically and philosophically minded students. The fact that the phenomenon of metaphor is at the crossroads of literature, linguistics, and philosophy is reflected in the choice of authors to be discussed, starting with Aristotle, then focusing on twentieth-century views represented by literary critics, by linguists, and by philosophers. Students cannot receive credit for this course and course 190A. Enrollment restricted to graduate students. Enrollment limited to 10. The Staff

290C. Advanced Topics in Contemporary Ethics. *
Examines one or more leading ethical theories, such as Kantianism, Virtue Theory, Consequentialism, and Human ethical theory. Examines different foundational ethical principles and arguments for those principles, contrasting accounts of moral action and moral motivation, as well as as epistemological and motivational role of emotions in ethical theory. Students cannot receive credit for this course and course 190C. Enrollment restricted to graduate philosophy majors. Enrollment limited to 22. J. Tannenbaum

290J. Advanced Topics in the History of Ethics. *
Careful study of any one of the main moral theories in the history of philosophy, with some emphasis on the relation to contemporary moral philosophy. Students cannot receive credit for this course and course 190J. Enrollment restricted to graduate students. Enrollment limited to 10. D. Guevara

290M. Advanced Graduate Seminar: William James. *
Intensive study of James's philosophy, including his philosophical psychology and pragmatic method. Covers James's epistemology, metaphysics, ethics, and philosophy of religion. Recent critical analyses of the issues raised in James's philosophy will also be highlighted. Enrollment restricted to graduate students. Enrollment limited to 20. E. Suckiel

290W. History of Consciousness. *
Historical study of philosophical theories of consciousness and self-consciousness. Problems include the relation of self and other, consciousness and body, and self-consciousness and ethical agency. Readings are from Kant, Hegel, Nietzsche, and Heidegger, followed by phenomenologists, poststructuralists, and analytic philosophy. Students cannot receive credit for this course and course 190W. Enrollment restricted to graduate students. Enrollment limited to 10. D. Hoy

290X. The Good Life. *
Proposed elements of a good life, e.g., courage, loyalty, devotion to ideals, personal flourishing, integrity, compassion, and intellectual understanding. Also discusses fundamental questions such as the meaning of life, the relationship of “living right” to “living well.” Students cannot receive credit for this course and course 190X. Enrollment restricted to graduate philosophy majors. Enrollment limited to 20. E. Suckiel

294. Teaching-Related Independent Study, F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. May be repeated for credit. The Staff

295. Directed Reading, F, W, S
Directed reading which does not involve a term paper. The Staff

296. Special Student Seminar, F, W, S
A seminar for graduate students arranged between students and a faculty member. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

297. Independent Study, F, W, S
Students submit petition to sponsoring agency. The Staff

Physical and Biological Sciences

204 Natural Sciences 2 Annex
(831) 459-2931
http://natsci.ucsc.edu

A broad range of majors is offered through the physical and biological sciences. The intellectual rigor of these majors ensures that our graduates are well prepared for further studies in graduate and professional schools, as well as careers in scientific research, environmental research, medicine, law, engineering, technology, and business.

The Division of Physical and Biological Sciences interdisciplinary framework provides students with the opportunity to attend classes and pursue research that ranges from the study of atoms to the examination of distant galaxies. From abstract number theory to the development of new chemical compounds, from evolution to plate tectonics, we provide students not only with the skills to explore and discover the world but also to define and improve it.

Departments and programs affiliated with the Division of Physical and Biological Sciences include the Departments of Astronomy and Astrophysics; Chemistry and Biochemistry; Earth Sciences; Ecology and
Physical Education

East Field House
(831) 459-2531
http://www.ucsc.edu/opers

Faculty and Professional Interests

Executive Director
DANIEL T. WOOD

Associate Supervisor
RENA V. COCHLIN

Physical Education Instructor
RYAN ANDREWS
Weight training, wellness and physical conditioning

JOHN BARDO
Racquetball

COURTNEY BLACKBURN
Tai chi, dance, modern dance

ROBIN F. BUCK
Jazz dance, modern dance

TAMMY D. CHINN
Physical conditioning, aerobics, weight training

CHELSEA GEORGE
Racquetball

ROBERT W. HANSEN
Racquetball, tennis, basketball

PAUL HOLRICKER
Soccer

JULIE KIMBALL
Yoga, swimming

RUSSELL KINGON
Sailing, rowing

DANIELLE LEWIS
Weight training, fencing

JOAN R. MCCALLUM
Swimming, lifeguard training, water safety

CYNTHIA MORI
Weight training, physical conditioning, weight training

DAVID MULDAWER
Tennis, weight training

KIM MUSCH
Swimming, lifeguard training, water safety

LISA K. NORRIS
Jazz dance, ballet

MICHAEL RUNEARE
Soccer

YOSHIHITO SHIBATA
Aikido

CECILIA SHIN
Salsa

SOONHO SONG
Taekwondo (karate)

PHILIP C. VANDENBERG
Sailing

Program Description

Physical education offers students an opportunity to learn and improve skills in a variety of areas while gaining knowledge about the relationship between fitness and wellness. With this information, participants will be better prepared to make important choices leading to healthy lifestyles.

Physical education courses at UCSC, which are elective and without academic credit, are offered in a wide variety of activities. The courses consist of instruction, practice, and full participation consistent with each student’s ability. While many of the courses are for students at the beginning level, some are designed for the more advanced student. Most courses involve class meetings of one hour’s length, twice a week; but some consist of one and one-half hours twice a week or a single two-hour meeting per week. Students may enroll as they desire and are permitted to repeat any course.

Students desiring more activity are encouraged to participate in a sports or recreation club; the intramural, intercollegiate athletic team.

Lower-Division Courses

5A. Aquatics: Swimming Level I (no credit).
F,W,S
Coeducational. Water exploration and primary skills development. Course is designed to teach only “non-swimmers” how to swim. The following is taught: Red Cross swimming instruction in overcoming fears, water adjustment, floating, breath holding, and rhythmic breathing. Students desiring more activity are encouraged to participate in a sports or recreation club; the intramural, recreation, or wellness programs; or an intercollegiate athletic team.

5B. Aquatics: Swimming Level II (no credit).
F,W,S
Coeducational. Stroke readiness and development. Course is for those who have completed Swimming Level I or who can swim freestyle and demonstrate elementary back-stroke. Skills to be learned are underwater swimming, turns, improvement of freestyle and elementary back-stroke, beginning side stroke, backstroke, breaststroke, diving, personal safety skills, and basic rescue techniques. Prerequisite(s): Instructor determines skill level at first class meeting. Enrollment limited to 15. J. Kimball

5C. Aquatics: Swimming Level III (no credit).
F,W,S
Coeducational. Stroke refinement and skill proficiency. Course teaches refinement of basic strokes and introduces butterfly, plus backstroke, surface diving turns, endurance swimming, and survival techniques. Prerequisite(s): Instructor determines skill level at first class meeting: pass in Swimming Level II course or possess equivalent swimming skill requirements in freestyle, backstroke, side-stroke, or competitive swimming: instructor determines skill level. Enrollment limited to 30. J. McCallum

5E. Aquatics: Lifeguard Training (LT) (no credit).
F,S
Red Cross certified lifeguard training. Provides the necessary minimum skills training to qualify as a non-surf life guard. Certification includes CPR Pro, AED, PRT, D2, ADMI, and Title 22 First Aid. Candidates must successfully pass final skill tests and written final exam with 80 percent score. Students pay course fee. Prerequisite(s): must have ability to swim 500 yards in 10 minutes, tread water for one minute, strong swimming skills in free, back, breast, side, and elementary backstroke; must purchase Red Cross LT text book. Enrollment limited to 20. K. Mutsch, J. McCallum

5F. Water Safety Instructor (WSI) (no credit).
S
Coeducational. A Red Cross course designed to certify students who complete all required work as swimming instructors. Instruction in teaching techniques, stroke analysis, skilled swimming, class organization, pool safety, and pool maintenance. Practice teaching assignments outside of class with practical and written final exams. Screening test given at first class meeting. Prerequisite(s): must be 17 years old, possess valid ARC Instructor Candidate Training card (ICT), and ARC swimmers-level skills. (Emergency Water Safety (EWS), or Lifeguard Training (LT) certificate is highly recommended). Students pay a course fee. Enrollment limited to 12. K. Mutsch, J. McCallum

5G. Aquatics: Swimming/Conditioning (no credit).
F,W,S
Open to all students who wish to explore swimming as a conditioning and fitness exercise. Students should know three competitive strokes, and should be able to swim fifteen minutes without stopping. Short health and fitness lectures precede some classes. Prerequisite(s): instructor determination at first class meeting. Enrollment limited to 40. K. Mutsch, J. McCallum

5H. Aquatics: Competitive Swimming (no credit).
F,W,S
Emphasis on competitive swimming and conditioning techniques. For students who want instruction at the competitive level of swimming. Three hours per week. Prerequisite(s): instructor determination at first class meeting. Enrollment limited to 50. K. Mutsch

5R. Aquatics: Basic Scuba Diving (no credit).
F,W,S
Coeducational. Sections geared toward the successful completion of NAUI Scuba Diver Certification. The course is divided into three parts: lecture, pool lab, and open water experience. Four open water training dives are offered. Emphasis is on training for open water scuba diving, using the beach as a base of operation. Students pay a course fee. Prerequisite(s): passing swimming tests and medical clearance. It is strongly recommended that students enroll in course 55. Enrollment limited to 24. C. Shin

5S. Aquatics: Boat Scuba Diving (no credit).
S
Coeducational. A minimum of two days of boat diving is offered. Emphasis is on training for open water scuba diving using a boat as the base of operation. There is a charge
for the boat charter which varies from quarter to quarter. Prerequisite(s): basic SCUBA certification and receive medical clearance. Enrollment limited to 20. C. Shin

5T. Aquatics: Advanced Scuba Diving (no credit), F,S Coeducational. Sections are offered to facilitate the development of the basic scuba diver’s open water techniques. A minimum of six open water experiences is offered. Course is geared toward successful completion of NAUI Advanced Scuba Diver Certification. Students pay a course fee. Prerequisite(s): basic swimming skills test and medical clearance. Enrollment limited to 25. C. Shin

5U. Aquatics: Scuba Instruction (no credit), F,W,S Coeducational. A course designed for the experienced scuba student who wishes to assist with the scuba instruction program at UCSC. Topics covered include teaching techniques, skin and scuba techniques, rescue techniques, and safety procedures. Specialty labs also offered in conjunction with course which cover a variety of diving skills. Students are required to enroll in one lab section per quarter. Supervised teaching experience is also provided. Prerequisite(s): Basic Scuba Certification and special prerequisite checking by instructor. Enrollment limited to 30. C. Shin

9B. Boating: Basic Sailing (no credit), F,W,S Coeducational. Introductory course in practical boating safety using 15-foot, two-person sailboats. Satisfactory completion meets prerequisites for intermediate-level sailing courses (dinghy or keelboat). Includes an introduction to rigging, nomenclature, seamanship, proper boat handling techniques, and general boating and aquatic safety. Students pay a course fee. Prerequisite(s): swimming ability. Enrollment limited to 16. P. Vandenberg, R. Kingon

9C. Boating: Intermediate Sailing (no credit), F,W,S Coeducational. Offered for both dinghy and keelboat. Dinghy section includes a review of basic sailing with an emphasis on the further development and refinement of small boat sailing techniques. Fifteen-foot, two-person sailboats are used. Keelboat section includes an introduction to rigging, handling, and sailing of the heavier displacement Moore-24 sloops. Boating safety and seamanship topics pay a course fee. Prerequisite(s): course 9B or equivalent skills. Enrollment limited to 16. P. Vandenberg, R. Kingon

9D. Boating: Advanced Sailing (no credit), F,S Coeducational. Offered for both dinghy and keelboat. The dinghy sections are designed for students interested in high performance sailing using single-handed boats (Lasers and Coronado 15’s). These courses include special techniques used in racing conditions. The keelboat section includes a further development and refinement of boat handling techniques, including advanced maneuvering, anchoring, racing, with an introduction to the use of spinnakers. Students pay a course fee. Prerequisite(s): course 9C or equivalent skills. Enrollment limited to 12. P. Vandenberg

9E. Boating: Competitive Sailing (no credit), F Coeducational. Instruction and coaching at the advanced sailing level in racing dinghies and keelboats. Emphasis on the physical and mental requirements for racing sailboats and the technical aspects of sail racing. Students will be involved in intercollegiate competition. Prerequisite(s): advanced sailing ability. P. Vandenberg

9H. Boating: Intermediate Rowing (no credit), F,W,S Coeducational intermediate course designed to cover more advanced rowing techniques and the skills needed for safe open water rowing. Students pay a course fee. Prerequisite(s): basic rowing or permission of instructor. Enrollment limited to 11. R. Kingon

9J. Boating: Basic (no credit), F,W,S Coeducational. Course designed to cover types of rowing boats, nomenclature, fundamental skills, and specific safety and rescue aspects related to the activity. Students will row singly as well as in groups using 15-foot to 22-foot rowing dories. Students pay a course fee. Prerequisite(s): swimming ability. Enrollment limited to 12. R. Kingon

15B. Court Sports: Basketball (no credit), F,W,S Coeducational. Instruction in fundamentals, offensive and defensive strategies, rules, and conditioning designed primarily for beginning and intermediate level players. Enrollment limited to 20. R. Hansen

15H. Court Sports: Racquetball (no credit), F,W,S Coeducational. The beginning section provides an introduction to the basic knowledge and skills involved in this indoor racquet sport. The advanced beginning section continues the development of the basic skills emphasizing increased shot variety and advanced strategy. The intermediate section offers the opportunity for further skill development and introduces more advanced offensive skills. Enrollment limited to 18. J. Barros, C. George, R. Hansen

15N. Court Sports: Tennis (no credit), F,W,S Coeducational. The beginning section introduces the basics of forehand, backhand, and serve. Advanced beginner section reviews these basics and introduces the volley, overhead, and lob. The intermediate section reviews all stroke mechanics and covers basic singles and doubles strategy. The advanced section includes use of spins, practice principles, detailed stroke analysis, and advanced play situations. Competitive Tennis is a year-long program for members of the intercollegiate tennis teams. Students pay a course fee. Enrollment limited to 24. D. Mulfadawr, R. Hansen

15T. Court Sports: Volleyball (no credit), F,W,S Coeducational. Beginning/intermediate, intermediate, and advanced sections are offered for students who desire to learn and improve the basic skills, as well as to understand the rules. Competitive section is open to students interested in participation in the UCSC N CCAA Women’s Volleyball team. It covers information and practice in all aspects of the competitive volleyball season. Enrollment limited to 25. The Staff

20A. Dance: Ballet (no credit), F,W,S Coeducational. Sections offered at various technical levels graded from I to III. Emphasis on principles of movement, style, and execution of ballet technique. Section in ballet repertoire where advanced students have the opportunity to perform is offered in the spring quarter. Students pay a course fee. L. Norris

20B. Dance: Folk (no credit), F,W,S Coeducational. International folk dance with an emphasis on Balkan and Israeli dances. Sections are also offered periodically in Mexican dance. R. Cochlin

20C. Dance: Jazz (no credit), F,W,S Coeducational. Sections offered at various technical levels graded from I to III. Exploration of jazz dance emphasizing basic technique, styling, rhythm, and isolations. Jazz and contemporary music is used as accompaniment. Some background in ballet strongly recommended before continuing to Jazz I or II. Section in jazz dance repertoire where advanced students have the opportunity to perform is offered in the spring quarter. Students pay a course fee. Enrollment limited to 40. L. Norris, R. Buck

20D. Dance: Modern (no credit), F,W,S Coeducational. Sections offered at various technical levels graded from I to III. Emphasis on basic techniques and building phrases of movement. Section in choreography and improvisation offered in spring quarter. Section in dance repertoire offered periodically. Students pay a course fee. R. Cochlin, R. Buck

20F. Dance: Individual Studies in Dance (no credit), F,W,S Coeducational. Designed to give students the opportunity of pursuing their particular interests in the field of dance with the support and direction of a faculty member. Prerequisite(s): instructor determination at first class meeting. R. Cochlin

25A. Fencing: Épée (no credit), F,W,S Coeducational. Basic instruction in the techniques, strategy, and general methodology of modern épée fencing. Emphasis on épée fencing as a development from the traditional French and Italian dueling sword styles as they have evolved to form the modern electrical épée game. Students pay a course fee. C. Blackburn

25B. Fencing: Foil (no credit), F,W,S Coeducational. Instruction in modern competitive French-Italian foil techniques for beginning, intermediate, and advanced levels. Emphasis on physical and mental conditioning leading to improved skill in recreational and competitive areas of involvement. Students pay a course fee. C. Blackburn

25C. Fencing: Sabre (no credit), F,W,S Coeducational. Instruction and practice in basic offensive and defensive skills of modern Hungarian sabre technique. Emphasis on physical and mental conditioning as a foundation for more advanced levels of instruction. Preparation for recreational and competitive involvement. Students pay a course fee. C. Blackburn

25D. Fencing: Intermediate Sabre (no credit), F,W,S Coeducational. Instruction and practice in intermediate offensive and defensive skills of modern Hungarian sabre technique. Emphasis on physical and mental conditioning. Preparation for recreational competitive involvement. Students pay a course fee. Enrollment limited to 30. C. Blackburn

28J. Field Sports: Rugby Football (no credit). F Coeducational. Instruction and drills for persons with little or no playing experience. Course covers physical conditioning, basic fundamentals, rules, strategy, and preparatory development for sports clubs. The Staff

28K. Field Sports: Soccer (no credit), F,W,S Coeducational/Women’s Sections are offered in field soccer and indoor soccer. Instruction in the basic techniques, tactics, laws of the game, and injury prevention for beginners and advanced players. Prerequisite(s): determination at first class meeting. M. Ruane, P. H. O’loker

30G. Fitness Activities: Physical Conditioning (no credit), F,W,S Coeducational. An exercise course designed to increase the participants’ strength, flexibility, coordination, and car-
30H. Fitness Activities: T'ai Chi Ch'uan (no credit). F,W,S
Through balanced movement and breath control, T'ai Chi Ch'uan attempts to forestall many processes of aging by cultivating greater strength of body, mind, and spirit.
C. Blackburn

30J. Fitness Activities: Weight Training (no credit). F,W,S
Coeducational. An introduction to safe and effective methods of using weight training and other personal conditioning activities. Topics covered include proper weight training techniques, care of body and equipment, and elementary exercise physiology.
D. Muldawer, T. Chinn, R. Andrews, C. Mori, D. Lewis

30L. Fitness Activities: Yoga Exercises (no credit). F,W,S
Coeducational. Sections offered at beginning, continuing beginning, and advanced beginning levels of hatha yoga.
J. Kimball, R. Cochlin

43A. Martial Arts: Aikido (no credit). F,W,S
Coeducational. A nonviolent, noncompetitive Japanese martial art emphasizing mind-body harmony, balance, relaxation, and the understanding of vital energy. Aikido self-defense techniques aim toward the creative resolution of conflict and the growth of the individual.
Sections offered at beginning and experienced levels.
Y. Shibata

43G. Martial Arts: Tae Kwon Do (Karate) (no credit). F,W,S
Coeducational. Sections offered at the beginning and intermediate/advanced levels. Covering basic skills, knowledge, and philosophy of Tae Kwon Do and providing instruction in the following aspects of martial arts studies: fundamental techniques of self-defense, physical conditioning, emotional control, self-discipline, and self-confidence.
Enrollment limited to 35.
S. Song

50. Personal Fitness and Wellness (no credit). F,W,S
Designed to improve the overall health of each participant. Course material will touch on all the major components of wellness: physical, emotional, social, spiritual, and intellectual health. Topics include cardiovascular training, strength training, flexibility, fitness testing, stress reduction, nutrition, and recreation.
Enrollment limited to 20.
R. Andrews, D. Lewis, C. Mori

Physics

211 Interdisciplinary Sciences Building
(831) 459-2329
http://physcs.ucr.edu

Faculty and Professional Interests

Professor

THOMAS BANKS
String and particle theory, quantum gravity and cosmology

DAVID P. BELANGER
Experimental condensed matter physics, phase transitions

FRANK G. BRIDGES
Experimental condensed matter physics, microwave spectroscopy, synchrotron radiation, absorption spectroscopy, planar physics

GEORGE BROWN
Experimental condensed matter physics

JOSHUA M. DEUTCH
Condensed matter theory

MICHAEL DINE
Theory of elementary particles

DAVID E. DORFAN
Experimental high-energy physics, astroparticle physics

STANLEY M. FLATTE, Emeritus

GEORGE D. GASPARI, Emeritus

HOWARD E. HABER
Theory and phenomenology of fundamental particles and their interactions

CLEMENTS A. HEUSCH
Experimental high-energy physics

ROBERT P. JOHNSON
Experimental high-energy physics, astrophysics

MICHAEL NAuENBERg, Emeritus

JOEL R. PRIMACK
Theory of fundamental particles, cosmology, astrophysics

BRUCE ROSENBLUM, Emeritus

MATTHEW SANDS, Emeritus

ZACK SCHLESINGER
Experimental condensed matter physics, correlated electron systems, novel materials

BRUCE SCHUM
Experimental particle physics

ABRAHAM SEIDEN
Experimental high-energy physics

B. SHIRAM SHAHRY
Condensed matter physics, strongly correlated matter, Mott Hubbard physics, high Tc superconductivity, quantum magnetism, exactly integrable systems, exactly solvable models of many-body systems and in statistical mechanics, quantum chaos, geometric frustration

A. PETER YOUNG
Condensed matter theory, statistical mechanics

Associate Professor

SUE A. CARTER
Experimental condensed matter physics, polymer physics, molecular electronics, phase transitions, electronic and optical properties of materials

ONUTTOM NARAYAN
Theoretical condensed matter physics

PETER L. SCOTT, Emeritus

Assistant Professor

ANTHONY AGUIRRE
Cosmology of the early and late universe inflation and the global structure of cosmological models; the intergalactic medium and its enrichment with heavy elements; galaxy formation, evolution, and feedback processes; dark matter; theories of modified gravity

DAVID M. SMITH
High-energy astrophysics, X-ray and gamma-ray detectors and instrumentation; solar, terrestrial, and planetary sources of gamma radiation

Lecturer

FRED KUTTNER
Foundations of quantum mechanics, physics education

Professor

GEORGE R. BLUMENTHAL (Astrophysics)
Cosmology, galaxy formation, high-energy astrophysics

WILLIAM G. MATTHEWS (Astrophysics)
Galaxies, high-energy astrophysics, gas and nebulae, cosmology (music)

Adjunct Professor

WILLIAM ATWOOD
DONALD COYNE
ALAN LITKE
MICHAEL RIGORAN
HARTMUT F.W. SADROZINSKI
TERRY L. SCHALK
JEROME D. SWALEN
DAVID A. WILLIAMS

Research Physicist

ALEXANDER GRILLO
WILLIAM LOCKMAN

Assistant Research Physicist

LINDA KELLEY

Postgraduate Research Physicist

PATRICK FOX
JUERGEN KLOSEBERG
JENNIFER LOTZ
GAVIN NESOM
DUMITRU PETRUSCA
PABLO SAZ PARKINSON
ALEXANDER SHER
ASSAF SHOMER
MU TSUMI SUGIZAKI
DAVID C. WILLIAMS
MARCUS ZIEGLER

Program Description

Physics seeks to discover the fundamental regularities or "laws" that govern our universe and to apply these laws to explain the behavior of fundamental and complex systems. The same underlying principles describe the behavior of atoms, lasers, living cells, and galaxies. Physics, therefore, is one of the foundations of modern science and technology, and, even at an elementary level, this fundamental nature can be appreciated.

The Physics Department offers majors in physics (astrophysics), referred to subsequently as astrophysics, and applied physics. These programs prepare students for graduate work in physics, astrophysics, and astronomy, for engineering and other technical positions in industry, and for careers in education. With appropri-
ate courses in other disciplines, these majors provide excellent preparation for advanced study in technical subjects such as biology, chemistry, engineering, geophysics, and the philosophy of science. The applied physics major is excellent preparation for positions in industry directly upon graduation.

Physics students and faculty often interact closely in both formal and informal settings. All undergraduate physics majors have the opportunity to work individually with a faculty member in completing the senior thesis requirement.

The main areas of physics research at UC Santa Cruz are the study of fundamental particles and interactions (high-energy physics), the study of condensed matter physics, and astrophysics/cosmology.

Efforts in high-energy physics are aided by the presence of an organized research unit, the Santa Cruz Institute for Particle Physics (SCIPP). The SCIPP experimentalists play significant roles in experiments at some of the major accelerator laboratories in the world, including SLAC at Stanford University and the European centers at CERN and DESY. The SCIPP theorists are active in the phenomenology of high-energy particle interactions; the theory of strong and electroweak interactions; electroweak symmetry breaking and Higgs bosons; and theories of supersymmetry, superstrings, and gravity. SCIPP also maintains a vigorous program in particle astrophysics. SCIPP experimentalists are involved in research in high-energy astrophysics, dark matter, formation of galaxies and large-scale structure in the universe; and theories of cosmology. SCIPP experimentalists are playing an important role in creating the next major satellite for gamma-ray astronomy, the Gamma Large Area Space Telescope (GLAST). In addition, SCIPP experimentalists, working with colleagues at Los Alamos, conduct a thriving particle astrophysics program detecting TeV gamma rays.

The presence of the strong astrophysics group from the Astronomy and Astrophysics Department in the same building provides a healthy symbiosis in this area. Note that the Astronomy and Astrophysics Department does not offer an undergraduate major. U.C.S.C. is the headquarters for the University of California Observatories, which include Lick Observatory near San Jose and the Keck Observatory in Hawaii; these provide additional opportunities for collaboration between researchers in physics and astronomy.

Condensed matter physics research at UCSC covers a range of topics including the behavior of exotic many-electron systems (for example, superconductors); the study of magnetic phase transitions; the organization of complex systems (proteins, DNA, and polymers); the development of new electronic devices using novel materials (e.g., polymer-based LEDs); and research in biophysics.

The experimental program uses X-ray and synchrotron radiation techniques at facilities such as the Stanford Synchrotron Radiation Laboratory (SSRL); neutron scattering techniques at national laboratories; and microwave, optical, X-ray, and specific heat techniques at UCSC. Topics include phase transitions, crystal defects, correlated electron systems, negative thermal expansion materials, polymer LEDs, and thermoelectric materials. Research topics in theoretical condensed matter physics include the behavior of high temperature superconductors, phase transitions, and dynamics of polymers such as DNA. Undergraduate students are actively involved in several condensed matter physics laboratories.

Courses
An undergraduate physics education is broad and basic. Undergraduate students, even in introductory classes, are exposed to new ideas associated with explorations at the boundaries of human knowledge. Course 10 is a 2-credit survey course that provides an overview of the research activities of the physics faculty. It is recommended for all beginning physics majors and those considering the major.

The lower-division introductory courses in the major programs (Physics 5A, 5B, 5C, and 5D sequence) are well suited to students in the physical sciences and engineering. The 6A, 6B, 6C sequence, which also provides a calculus-based introduction to the basic concepts in physics, is better suited to students in the life sciences. The Physics 6 sequence is also appropriate for nonscience students who have a calculus background. Students who take course 6A instead of course 5A, and do very well in it, may contact the department chair for permission to enter the major. The Physics 7A, 7B sequence is an algebra- and trigonometry-based sequence covering the basic ideas and applications of physics. The laboratory courses, SL-5M-5N, 6L-6M-6N, and 7L-7M, should be taken concurrently with the corresponding lecture courses. Finally, courses 1 and 2 are conceptual introductions to physics for nonscience majors.

Major Program
The physics, astrophysics, and applied physics major programs provide a comprehensive coverage of the field and the background necessary for graduate school or industrial careers. Students earn a bachelor of science (B.S.) degree. The U.C.S.C. physics, astrophysics, and applied physics programs begin with a four-quarter presentation of the introductory concepts of the subject. Introduction to Physics. Note the applied physics program also requires completion of a beginning programming course and a general chemistry course. This is followed by courses, which provide an introduction to relativity and quantum physics. The programs continue with three-quarter sequence in mathematical methods of physics designed to provide the mathematics preparation necessary for most of the upper-division physics courses required for the majors included in the upper-division programs. These include laboratory courses designed to illustrate both historical experiments in the development of physics, astrophysics, applied physics, and modern experimental methods. Advanced and especially motivated students may enroll in some graduate courses with the approval of the instructor.

The senior thesis, required of all physics, astrophysics, and applied physics majors at U.C.S.C., provides the opportunity for students to apply their skills to problems of interest to them, either theoretical or experimental, usually with technical advice from a faculty member. It may be based on work undertaken in a faculty research laboratory. Topics include fundamental particle physics, condensed matter physics, astrophysics, biophysics, and various applied technologies. The senior thesis is a distinctive part of the U.C. Santa Cruz physics major program and entails a substantial investment of both student and faculty time. The learning experience involved in the thesis, as well as the thesis itself, has proven extremely valuable to students in enhancing employment opportunities upon graduation or in gaining admission to graduate school.

Course Requirements

Physics
The requirements for the major include courses 5A/L, 5B/M, 5C/N, and 5D; Mathematics 19A or 20A, 19B or 20B, 23A, and 23B or Physics 14; plus the following upper-division courses: 101A, 101B, 105, 110A-B, 112, 116A-B-C; 133, 135, and 139A. In addition, students must pass at least two upper-division electives chosen from Physics or the following Astronomy and Astrophysics courses: 112, 113, 117, or 118. At least one of the two electives must be from the following Physics courses: 129, 139B, 155, or 171. In some cases, the second elective requirement may be satisfied by an approved upper-division science or engineering course.

Physics (Astrophysics)
The requirements for the major include courses 5A/L, 5B/M, 5C/N, and 5D; Mathematics 19A or 20A, 19B or 20B, 23A, and 23B or Physics 14; plus the following upper-division courses: 101A, 101B, 105, 110A-B, 112, 116A-B-C, 133, 135, and 139A. In addition, students must pass at least three upper-division electives selected from the following upper-division courses: Astronomy and Astrophysics 112, 113, 117, 118, or 171 (cross-listed with Physics 171).

Applied Physics
The requirements for the major include courses 5A/L, 5B/M, 5C/N, and 5D; Mathematics 19A or 20A, 19B or 20B, 23A, and 23B or Physics 14; Computer Science 60N or Chemistry 1B; plus the following upper-division Physics courses: 101A, 101B, 105, 110A-B, 112, 116A-B-C, 133, and 134. In addition, students must pass at least three upper-division applied physics electives selected from the following approved list of courses: Biology 21A, Electrical Engineering 103, 127, 128, 145, Physics 109, 115, 152, 155, 156, and 160.

Comprehensive Requirement
Finally, to satisfy the comprehensive requirement (see below) via a thesis, courses 195A and 195B are required. Note that successful completion of 195A and 195B satisfies the "W" or Writing Intensive general education requirement.

In special cases, minor modifications of these requirements may be granted to suit the specific program of a particular student. Before embarking on a program needing such waivers, students should discuss their plans with a physics adviser and seek approval by petition from the Physics Department Office.

Physics Major Planner
The following is a recommended academic plan for students to complete during their four years to fulfill requirements for the physics major.

Sample Physics Major Planner

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A or 20A&lt;br&gt;Phys 5A/L&lt;br&gt;Phys 10 (recommended)</td>
<td>Math 19B or 20B&lt;br&gt;Phys 5B/M</td>
<td>Math 23A&lt;br&gt;Phys 5C/N</td>
</tr>
<tr>
<td>2nd</td>
<td>Phys 101A&lt;br&gt;(ophys)&lt;br&gt;Phys SD 2 units&lt;br&gt;Math 23B</td>
<td>Phys 101B&lt;br&gt;Phys 116A</td>
<td>Phys 116B&lt;br&gt;Phys 133*</td>
</tr>
<tr>
<td>3rd</td>
<td>Phys 110G&lt;br&gt;Phys 116C&lt;br&gt;Phys 134*</td>
<td>Phys 110A&lt;br&gt;Phys 112</td>
<td>Phys 110B&lt;br&gt;Phys 139A</td>
</tr>
<tr>
<td>4th</td>
<td>Phys 195A&lt;br&gt;(soph)&lt;br&gt;Phys elective</td>
<td>Phys 195B&lt;br&gt;Phys elective</td>
<td></td>
</tr>
</tbody>
</table>

* Course 133 is offered winter and spring quarters. Course 134 is offered fall and winter quarters and may be taken junior or senior year after completing course 133.
Sample Physics (Astrophysics) Major Planner

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A or 20A</td>
<td>Math 19B or 20B</td>
<td>Math 23A</td>
</tr>
<tr>
<td>(fish)</td>
<td>Phy 5A/L</td>
<td>Phy 5B/M</td>
<td>Phy 5C/N</td>
</tr>
<tr>
<td></td>
<td>Phy 10 (recommended)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Phy 101A (soph)</td>
<td>Phy 101B</td>
<td>Phy 116B</td>
</tr>
<tr>
<td></td>
<td>Phy 50 (2 units)</td>
<td>Phy 116A</td>
<td>Phy 132*</td>
</tr>
<tr>
<td></td>
<td>Math 208 D units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>Phy 105 (g)</td>
<td>Phy 110A</td>
<td>Phy 110B</td>
</tr>
<tr>
<td></td>
<td>Phy 116C</td>
<td>Phy 112</td>
<td>Phy 139A</td>
</tr>
<tr>
<td></td>
<td>Phy 134*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>Phy 195A (s/r)</td>
<td>Phy 195B</td>
<td>Ast elective</td>
</tr>
<tr>
<td></td>
<td>Astr elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Course 133 is offered winter and spring quarters. Course 135 is offered some academic years as a multiple-term course 135A in fall and 135B in winter, depending on astronomical conditions.

Sample Applied Physics Major Planner

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A or 20A</td>
<td>Math 19B or 20B</td>
<td>Math 23A</td>
</tr>
<tr>
<td>(fish)</td>
<td>Phy 5A/L</td>
<td>Phy 5B/M</td>
<td>Phy 5C/N</td>
</tr>
<tr>
<td></td>
<td>Phy 10 (recommended)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Phy 101A (soph)</td>
<td>Phy 101B</td>
<td>Phy 116B</td>
</tr>
<tr>
<td></td>
<td>Phy 50 (2 units)</td>
<td>Phy 116A</td>
<td>Phy 132*</td>
</tr>
<tr>
<td></td>
<td>Math 238</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>Phy 105 (g)</td>
<td>Phy 110A</td>
<td>Phy 110B</td>
</tr>
<tr>
<td></td>
<td>Phy 116B</td>
<td>Phy 112</td>
<td>Phy 139A</td>
</tr>
<tr>
<td></td>
<td>Phy 134*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>Phy 195A (s/r)</td>
<td>Phy 195B</td>
<td>Ast elective</td>
</tr>
<tr>
<td></td>
<td>Astr elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Course 133 is offered winter and spring quarters. Course 134 is offered fall and winter quarters and may be taken junior or senior year after completing course 133.

Students who take course 6A instead of course 5A, and do very well in it, may contact the department chair for permission to enter the major.

Depending on the student's interests, further preparation for graduate school in physics, astrophysics, applied physics, or for other careers is obtained by electing more specialized or applied courses (see the descriptions of courses below). In addition, again depending on the student's academic focus, elective courses may be selected in mathematics, astronomy and astrophysics, and/or other areas of physical science.

For further information on the physics program, please request the undergraduate handbook, A Physics Major's Guide, from the Physics Department Office.

Comprehensive Requirement

The comprehensive exit requirement is normally satisfied by the submission and approval of a thesis (In conjunction with course 195). For physics majors completing either a major or a minor in another field within the Physical and Biological Sciences Division or the Baskin School of Engineering, the comprehensive requirement may be satisfied by scoring at or above the 50th percentile on the Graduate Record Examination Physics Subject Test.

Minor Requirements

Requirements for the minor in physics include physics 5A/L, 5B/M SC/N, 5D (or physics 5A/L, 6B/M, 6C/N with minimum GPA of 3.5); math 19A or 20A, 19B or 20B, 23A, 23B or physics 14; physics 101A, 101B, 133, and one upper division elective and (any prerequisites) from physics or a list of courses from other departments approved by the Physics Undergraduate Committee. See Physics Department for the listing.

Advising and Preparation for the Major

Because of the sequential nature of the courses for the physics major, it is strongly advised that students declare their major in physics, physics (astrophysics), or applied physics as early as possible (either at initial registration or by the end of the first year). Advising can be arranged through the Physics Department Office.

High school students coming directly to UCSC should emphasize their mathematics preparation with the expectation that they will take calculus in their first quarter at UC Santa Cruz.

Students transferring to UCSC as junior physics, physics (astrophysics), or applied physics majors should have completed three quarters of introductory calculus-based physics with laboratory and three quarters of calculus. It is also desirable to have an introductory course in modern physics as well as mathematics courses in linear algebra, vector calculus, and differential equations. The Physics Department advises each junior transfer student individually upon their arrival.

Graduate Programs

The Physics Department offers graduate programs leading to the M.S. and/or the Ph.D. degrees. In the first year of study, Ph.D. students are expected to take two core graduate-level courses per quarter, including the courses required for the Ph.D. degree (210, 212, 213 or 214, 215, 216, 219) and other courses specific to the student's field of interest. All first-year students also take 205, Introduction to Research. All graduate students also attend a weekly colloquium, 292. Each student has a faculty adviser who helps to determine which courses are most appropriate, taking into account the student's background and interest. The student-faculty ratio is low so that M.S. and Ph.D. students can work closely with faculty and pursue programs that fit their individual needs.

Research is currently conducted in theoretical and experimental particle physics, theoretical and experimental condensed matter physics, materials physics, biophysics, synchrotron radiation, cosmic rays, particle astrophysics, and cosmology. After passing a written qualifying examination, Ph.D. students pursue independent research leading to an oral examination and completion of a doctoral dissertation.

Students may obtain a master's degree through course work (eight physics graduate courses and submission of an approved thesis). The thesis may be written and defended in any of the research fields in the program, thereby developing laboratory and computational skills in areas such as electronics design, computer simulation and visualization, cryogenics, X-ray scattering, complex novel materials and devices, or materials science. Each M.S. student is assigned a faculty adviser who helps to design a course work plan suited to the interests of the student.

Physics students and faculty use a number of UCSC research facilities (described at the beginning of this section and elsewhere in this catalog): the Santa Cruz Institute for Particle Physics (SCIPP), Lick Observatory (headquartered at UCSC), the Institute of Marine Sciences, and the Institute of Tectonics. There is strong interaction with other disciplines, especially astronomy and astrophysics, biology, chemistry. Earth sciences, electrical engineering, and mathematics. Proximity to the Sanford Linear Accelerator Center and the Stanford Synchrotron Radiation Laboratory provides additional local research opportunities. UCSC faculty and graduate students also participate in research projects at CERN in Geneva, DESY in Hamburg, Los Alamos, Oak Ridge National Laboratory, NASA, Ames, NREL, Lucant, Xerox, IBM, Bell Labs, and other national and international laboratories.

Application materials and brochures describing the physics M.S. and Ph.D. graduate programs in more detail may be obtained by visiting our web site at http://physics.ucsc.edu/ or by contacting the Division of Graduate Studies at http://graddiv.ucsc.edu.

Lower-Division Courses

1. Conceptual Physics. W

Addressed to majors in non-science disciplines. Topics in classical and modern physics and the relation to physical phenomena in the world around us. Concepts are stressed, but some calculation techniques are developed. Knowledge of high school algebra is desirable. (General Education Code(s): IN, Q.) T. Schalk

2. The Quantum Enigma. *

Addressed to non-science majors but may be of interest to science majors as well, since material is largely not covered in the regular physics program. Focus is the bizarre view of physical reality and connectedness demanded by quantum mechanics, the basis of modern physics. A brief overview of classical physics and relativity is included. Concepts are stressed, but some calculation techniques are developed. (General Education Code(s): IN, Q.) F. Kuttner

5A. Introduction to Physics I. F

Elementary mechanics. Vectors, Newton's laws, inverse square force laws, work and energy, conservation of momentum and energy, and oscillations. Corequisite(s): concurrent enrollment in course 5L and Mathematics 19A or 20A is required. (General Education Code(s): IN, Q.) D. Smith

5B. Introduction to Physics II. W

A continuation of 5A. Wave motion in matter, including sound waves. Geometrical optics, interference and polarization, statics and dynamics of fluids. Prerequisite(s): courses 5A/L and Mathematics 19A or 20A; concurrent enrollment in course 5M is required. Corequisite(s): concurrent enrollment in course 5L and Mathematics 19B or 20B. (General Education Code(s): IN, Q.) A. Aguirre

5C. Introduction to Physics III. S

Introduction to electricity and magnetism. Electromagnetic radiation, Maxwell's equations. Prerequisite(s): courses 5A/L and Mathematics 19B or 20B. Concurrent enrollment in 5N is required. Corequisite(s): Mathematics 22 or 23A. Courses 5B/M recommended. (General Education Code(s): IN, Q.) A. Aguirre

5D. H. EAT. Thermodynamics, and Kinetics (2 credits). F

Introduction to temperature, heat, and thermal conductivity, ideal gases, the first and second laws of thermodynamics, and an introduction to kinetic theory. Prerequisite(s): courses 5A/L and Mathematics 19B or 20B. C. Hsu

5L. Introduction to Physics Laboratory (1 credit). F

Laboratory sequence illustrating topics covered in 5A-5B-5C, respectively. One three-hour laboratory session per week. Prerequisite(s): concurrent enrollment in course 5A is required. T. Staff
5M. Introduction to Physics Laboratory (1 credit). W
Laboratory sequence illustrating topics covered in 5A-5B-5C, respectively. One three-hour-laboratory session per week. Prerequisite(s): courses 5A/L; concurrent enrollment in course 5B is required. The Staff

5N. Introduction to Physics Laboratory (1 credit). S
Laboratory sequence illustrating topics covered in 5A-5B-5C, respectively. One three-hour-laboratory session per week. Prerequisite(s): courses 5A/L; Concurrent enrollment in course 5C is required. Courses 5B/M recommended. The Staff

6A. Introductory Physics I. F, W
Elementary mechanics. Vectors, Newton's laws, inverse square force laws, work and energy, conservation of momentum and energy, and oscillations. Prerequisite(s): Concurrent enrollment in course 6L required. Corequisite: Mathematics 11A or 19A or 20A. (General Education Code(s): IN, Q.) F. Kuttner, D. Dorfan, Z. Schlesinger

6B. Introductory Physics II. W, S
A continuation of 6A. Wave motion in matter, including sound waves. Geometrical optics, interference and polarization, statics and dynamics of fluids. Introduction to thermodynamics, including temperature, heat, thermal conductivity, and kinetic energy. Prerequisite(s): courses 5A/L or 6A/L, and Mathematics 11A or 19A or 20A; concurrent enrollment in course 6M required. Corequisite: Mathematics 11B or 19B or 20B. (General Education Code(s): IN, Q.) D. Williams, D. Belanger

6C. Introductory Physics III. F, S
Introduction to electricity and magnetism. Electromagnetic radiation, Maxwell's equations. Prerequisite(s): courses 6A/L or 5A/L and Mathematics 11B or 19B or 20B; concurrent enrollment in course 6N required. Corequisite: Mathematics 22 or 23A. Courses 6B/M are suggested. (General Education Code(s): IN, Q.) J. F. Bridges, B. Schumma

6L. Introductory Physics Laboratory (1 credit). F, W
Laboratory sequence illustrating topics covered in 6A-6B-6C, respectively. One three-hour-laboratory session per week. 6L is offered in fall and winter; 6M is offered in spring and winter; 6N is offered in spring and fall. Prerequisite(s): Concurrent enrollment in course 6A required. The Staff

6M. Introductory Physics Laboratory (1 credit). W, S
Laboratory sequence illustrating topics covered in 6A-6B-6C, respectively. One three-hour-laboratory session per week. 6L is offered in fall and winter; 6M is offered in spring and winter; 6N is offered in spring and fall. Prerequisite(s): courses 5A/L or 6A/L; concurrent enrollment in course 6B is required. The Staff

6N. Introductory Physics Laboratory (1 credit). F, S
Laboratory sequence illustrating topics covered in 6A-6B-6C, respectively. One three-hour-laboratory session per week. 6L is offered in fall and winter; 6M is offered in winter and spring; 6N is offered in spring and fall. Prerequisite(s): courses 5A/L or 6A/L; concurrent enrollment in course 6C required; courses 6B/M are suggested. The Staff

7A. Elementary Physics I. W
The physics of mechanics, wave motion, temperature, pressure, and fluids. A lecture and discussion course that provides a basic foundation of physics for students whose major interest is in biology, a premedical program, or another science. Concurrent enrollment in course 7L is required. High school algebra, geometry, and trigonometry are recommended. (General Education Code(s): IN, Q.) S. Carter

7B. Elementary Physics II. S
A continuation of course 7A. The physics of electricity and magnetism, optics, special relativity, quantum theory and the atom. Concurrent enrollment in course 7M is required. Prerequisite(s): course 7A. Concurrent enrollment in course 7M is required. (General Education Code(s): IN, Q.) J. F. Kuttner

7L. Elementary Physics Laboratory (1 credit), W
Laboratory sequence illustrating topics covered in course 7A-B, respectively. One three-hour-laboratory session per week. Concurrent enrollment in 7A is required. The Staff

7M. Elementary Physics Laboratory (1 credit).
Laboratory sequence illustrating topics covered in course 7A-B, respectively. One three-hour-laboratory session per week. Concurrent enrollment in 7B is required. The Staff

10. Oerview of Physics (2 credits), F
One lecture per week providing a descriptive overview of major areas in the discipline. These include fundamental particles, solid state, fluids, nonlinear dynamics, biophysics, and cosmology. Lectures by various faculty with research interests in these fields. The course is suggested for prospective physics majors or others, before they enroll in the Physics 7 sequence. J. Primmack

11. The Physicist in Industry (2 credits). S
One two-hour meeting per week. Subjects include roles of the physicist in industry, the business environment in a technical company, economic considerations, job hunting, and discussions with physicists with industrial experience. Strongly recommended for applied physics majors, but open to all. Enrollment limited to 15. F. Kuttner, B. Rosenbloom

14. Introduction to Vector Calculus with Applications (2 credits). *
Partial differentiation, the chain rule, multiple integrals, Jacobians, surface integrals and the divergence, line integrals and the curl, Stokes theorem, gradients and directional derivatives. Prerequisite(s): Mathematics 22 or 23A. The Staff

42. Student-Directed Seminar. 
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80A. Physics and Psychophysics of Music. *

80C. Cosmology and Culture. *
Introduction to scientific cosmology. Examination of cultural roles of creation myths and cosmologies; examples include Zuni, Mayan, and ancient, medieval, and modern Judeo-Christian cosmologies. Possible cultural and religious repercussions of Big Bang, Gaia, and other modern origin stories. (General Education Code(s): T7-Natural Sciences or Social Sciences.) J. Primmack

80D. The Quantum Century. *
Historical survey of twentieth-century physics, emphasizing quantum theory and its impact upon science and culture, relativity, atomic structure and applications in the laser, transistor, and nuclear weapons. Impact of World War II, cold war, and the growth of Big Science. (General Education Code(s): T6-Natural Sciences or Humanities and Arts.) M. Riordan

Students submit petition to sponsoring agency. The Staff

Upper Division Courses

101A. Introduction to Modern Physics I. F
Special theory of relativity. Early experiments and models in quantum physics. Introduction to concepts and calculations in quantum mechanics. Single-electron atoms. Prerequisite(s): courses 5A/L, 5B/M, and 5C/N or 6A/L, 6B/M, and 6C/N. Z. Schlesinger

101B. Introduction to Modern Physics II. W
Topics in quantum physics, including angular momentum and spin, the Pauli exclusion principle, and quantum statistics. Applications in multi-electron atoms, molecules, solid state physics, and nuclear and particle physics. Prerequisite(s): course 14 or Mathematics 23B; course 101A; 14 or Math 23B: 5A/L, 5B/M, and 5C/N or 6A/L, 6B/M, and 6C/N. M. Dine

105. Mechanics. F
Particle dynamics in one, two, and three dimensions. Conservation laws. Small oscillations, Fourier series and Fourier integral solutions. Phase diagrams and nonlinear motions. Lagrange's equations, and Hamiltonian dynamics. Prerequisite(s): courses 5A/L, 5B/M, 5C/N, and 116A-B. M. Dine

107. Fluid Dynamics. *
The convective derivative, the equation of continuity, and the Euler equation are introduced. Additional terms in the equations are provided as applications are introduced from Earth sciences, oceanography, meteorology, and astrophysics. Prerequisite(s): courses 5A/L, 5B/M, and 116A-B-C. The Staff

110A. Electricity, Magnetism, and Optics. W
Maxwell's equations, electrostatics, magnetostatics, induction, electromagnetic waves, physical optics, and circuit theory. Prerequisite(s): 116A-B-C. R. Johnson

110B. Electricity, Magnetism, and Optics. S
Maxwell's equations, electrostatics, magnetostatics, induction, electromagnetic waves, physical optics, and circuit theory. Prerequisite(s): course 110A, 114A, and 116A-B-C. M. Dine

112. Thermodynamics and Statistical Mechanics. W
Consequences of the first and second laws of thermodynamics, elementary statistical mechanics, thermodynamical irreversible processes. Prerequisite(s): courses 5B/M, 5C/N, 5D, 101A, 101B, 105, and 116A-B. D. Belanger

115. Computational Physics. S
This course will apply efficient numerical methods to the solutions of problems in the physical sciences which are otherwise intractable. Examples will be drawn from clas-
116A. Mathematical Methods in Physics. W

Probability, infinite series and power series, complex numbers, systems of differential equations, linear algebra, and matrix operations. Prerequisites: courses 5A/L, 5B/M, 5C/N; MATH 23A. 3.0 units

116B. Mathematical Methods in Physics. S

Linear vector spaces and coordinate transformations, tensor analysis, ordinary differential equations and boundary value problems, calculus of variations, special functions and asymptotic series, and Fourier series. (Formerly course 114A.). Prerequisites: courses 5A/L, 5B/M, 5C/N, 116A; and MATH 23A and 23B or equivalent. D. Dorfan, A. Young

116C. Mathematical Methods in Physics, F

Legendre polynomials and Bessel functions, partial differential equations and boundary value problems, functions of a complex variable including the residue theorem, integral transforms, Green function techniques and the delta function. (Formerly course 114B.). Prerequisites: courses 5A/L, 5B/M, 5C/N, 116A-B. D. Dorfan, A. Young

120. Polymer Physics. *

Statistical properties of polymers; scaling behavior, fractal dimensions, random walks; self avoidance, single chains and concentrated solutions; dynamics and topological effects in melts; polymer networks; sol-gel transitions; polymer blends; application to biological systems; computer simulations will demonstrate much of the above. Students cannot receive credit for this course and course 240. Prerequisites: courses 5A/L, 112, 116B-C. Offered in alternate academic years. J. Detho

129. Nuclear and Particle Physics, S

Properties and classification of the elementary particles, their weak and strong interactions, nuclear physics, high-energy phenomena analyzed by quantum mechanical methods, experimental methodology. Prerequisites: courses 101A-B-C and 139A; students with equivalent course work may contact instructor for permission to enroll. C. Heusch

133. Intermediate Laboratory, W, S

Demonstration of phenomena of classical and modern physics. Development of a familiarity with experimental methods. Special experimental projects may be undertaken by students in this laboratory. Prerequisites: course 101A. D. Smith

134. Physics Advanced Laboratory, F, W

Individual experimental investigations of basic phenomena in atomic, nuclear, and solid state physics. Prerequisites: courses 133 and 101B. May be repeated for credit. S. Carter, F. Kuttner

135. Astrophysics Advanced Laboratory. *

Introduction to the techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Offered in some academic years as a multiple-term course 135A in fall and 135B in winter, depending on astronomical conditions. (Also offered as Astronomy and Astrophysics 135). Students cannot receive credit for both courses.) Prerequisites: course 133 and at least one astronomy course. Intended primarily for juniors and seniors majoring or minoring in astrophysics. R. Dewey

135A. Astrophysics Advanced Laboratory (3 credits), F

Introduction to techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Intended primarily for juniors and seniors majoring or minoring in astrophysics. Offered in some academic years as a single-term course 135 in fall, depending on astronomical conditions. (Also offered as Astronomy and Astrophysics 135A. Students cannot receive credit for both courses.) Prerequisites: course 133 and at least one astronomy course. R. Dewey

135B. Astrophysics Advanced Laboratory (2 credits), W

Introduction to techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Intended primarily for juniors and seniors majoring or minoring in astrophysics. Offered in some academic years as a single-term course 135 in fall, depending on astronomical conditions. (Also offered as Astronomy and Astrophysics 135B. Students cannot receive credit for both courses.) Prerequisites: course 133 and at least one astronomy course. R. Dewey

139A. Quantum Mechanics, F, S

The principles and mathematical techniques of nonrelativistic quantum mechanics: the Schrödinger equation, Dirac notation, angular momentum, approximation methods, and scattering theory. Offered in spring. Prerequisites: courses 101A, 101B, 116B-C. T. Banks

139B. Quantum Mechanics, F

The principles and mathematical techniques of nonrelativistic quantum mechanics: the Schrödinger equation, Dirac notation, angular momentum, approximation methods, and scattering theory. Offered in fall. Prerequisites: courses 101A, 101B, 116B-C-A. Z. Schlesinger

143. Supervised Teaching (2 credits), F, W, S

Supervised tutoring in selected introductory courses. Students should have completed course 101A and 101B as preparation. Students submit petition to sponsoring agency. The Staff

152. Optoelectronics, *

The first half of the course covers the theory of optoelectronics including wave, electromagnetic, and photon optics, modulation of light by matter, and photons in semiconductors. The second half covers applications including displays, lasers, photodetectors, optical switches, fiber optics, and communication systems. Prerequisites: courses 101A, 101B, and 110A. S. Carter

155. Solid State Physics, W

Interatomic forces and crystal structure, diffraction, lattice vibrations, free electron model, energy bands, semiconduction theory and devices, optical properties, magnetism, magnetic resonance, superconductivity. Prerequisites: courses 112 and 139A; students with equivalent course work may contact instructor for permission to enroll. Z. Schlesinger

156. Applications of Solid State Physics, S

Emphasizes the application of condensed matter physics to a variety of situations. Examples drawn from subfields such as semiconductor physics, lasers, superconductivity, low-temperature physics, magnetism, and defects in crystals. Prerequisites: courses 101A and 101B. The Staff

205. Introduction to Research in Physics (2 credits), W

Lectures by UCSC faculty on current areas of physics research. Topics may be presented by faculty members from the physics department. Enrollment restricted to graduate students only, except by permission of instructor. D. Dorfan
210. Classical Mechanics. F  
Generalized coordinates, calculus of variations, Lagrange's equations with constraints, Hamilton's equations, applications to particle dynamics including charged particles in an electromagnetic field, applications to continuum mechanics, including fluids and electromagnetic fields, introduction to nonlinear dynamics. Enrollment restricted to graduate students only, except by permission of instructor.  
G. Haber, J. Deutsch

212. Electromagnetism I. F  
Electrostatics and magnetostatics, boundary value problems with spherical and cylindrical symmetry, multipole expansion, dielectric media, magnetic materials, electromagnetic properties of materials, time-varying electromagnetic fields, Maxwell's equations, conservation laws, plane electromagnetic waves and propagation, waveguides and resonant cavities. Enrollment restricted to graduate students only, except by permission of instructor. G. Brown

213. Electromagnetism and Plasma Physics. W  
Topics in classical radiation: multipole radiation, synchrotron and Cerenkov radiation, Compton scattering, bremsstrahlung, stimulated and coherent emission, diffraction and scattering. Topics in plasma physics: plasma waves, D-dot length, adiabatic invariants, wave propagation in plasma, Landau damping, two-stream instability (Also offered as Astronomy and Astrophysics 202. Students cannot receive credit for both courses.) Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. H. Haber

214. Electromagnetism II. *  
Lorentz covariant formulation of Maxwell's equations, dynamics of relativistic charged particles and electromagnetic fields, scattering and diffraction. Topics in classical radiation theory: simple radiating systems radiation by moving charges, multipole radiation, synchrotron radiation, Cerenkov radiation, bremsstrahlung and radiation damping. Prerequisite(s): course 212. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. B. Shastry

215. Introduction to Non-Relativistic Quantum Mechanics. W  
Mathematical introduction; fundamental postulates; time evolution operator, including the H eigenvalue and Schrodinger pictures; simple harmonic oscillator and coherent states; one-dimensional scattering theory, including S-matrix resonant phenomena; two-state systems, including magnetic resonance; symmetries, including rotation group, spin, and the Wigner-Eckart theorem; rotationally invariant problems, including the hydrogen atom; gauge invariance, including Landau levels; introduction to path integral. Enrollment restricted to graduate students only, except by permission of instructor. B. Shastry

216. Advanced Topics in Non-Relativistic Quantum Mechanics. S  
Approximate methods: time-independent perturbation theory, variational principle, time-dependent perturbation theory; three-dimensional scattering theory; identical particles, permutation symmetry and exchange degeneracy, anti-symmetric and symmetric states; many-body systems and self-consistent fields; variational calculations; second quantized formalism, including Fock space; number representation, field operators and Green functions; applications electromagnetic field and interaction of radiation with matter: absorption, emission, scattering, photodetector effect, and lifetimes.

217. Quantum Field Theory I. F  
Lorentz invariance in quantum theory, Dirac and Klein-Gordon equations, the relativistic hydrogen atom, Green functions and canonical approach to field theory, quantum electrodynamics, Feynman diagrams for scattering processes, symmetries and Ward identities. Students learn to perform calculations of scattering and decay of particles in field theory. Prerequisite(s): course 216. Enrollment restricted to graduate students only, except by permission of instructor. H. Haber

218. Quantum Field Theory II. W  
Path integral approach to quantum field theory. Theory of renormalization and the renormalization group, introduction to gauge theories and spontaneously broken field theories. Applications to the standard model of strong, weak, and electromagnetic interactions. Prerequisite(s): course 217. Enrollment restricted to graduate students only, except by permission of instructor. T. Banks

219. Statistical Physics. S  
The basic laws of thermodynamics, entropy, thermodynamic potentials, kinetic theory of gases, quantum and classical statistical mechanics, virial expansion, linear response theory. Applications in condensed matter physics. Enrollment restricted to graduate students only, except by permission of instructor. J. Deutsch

220. Theory of Many-Body Physics. *  
Finite temperature Green functions, Feynman diagrams, Dyson equation, linked cluster theorem, Kubo formula for electrical conductivity, electron gas, random phase approximation, Fermi surfaces, Landau fermi liquid theory, electron phonon coupling, Migdal's theorem, superconductivity. Prerequisite(s): courses 216 and 219. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. B. Shastry

221A. Introduction to Particle Physics I. F  
First quarter of a two-quarter graduate level introduction to particle physics, including the following topics: discrete symmetries, quark model, particle classification, masses and magnetic moments, passage of radiation through matter, detector technology, accelerator physics, Feynman calculus, and electron-positron annihilation. Prerequisite(s): course 217 or concurrent enrollment. Enrollment restricted to graduate students only, except by permission of instructor. B. Schumm

221B. Introduction to Particle Physics II. W  
Second quarter of a two-quarter graduate level introduction to particle physics, including the following topics: nuclear structure, weak interactions and the Standard Model, neutrino oscillation, quantum chromodynamics, CP violation, and a tour of the Stanford Linear Accelerator Center. Prerequisite(s): course 221A; course 2217 or concurrent enrollment. Enrollment restricted to graduate students only, except by permission of instructor. A. Selden

222. Quantum Field Theory III. S  
Focuses on the theoretical underpinnings of the standard model, including the spontaneous symmetry breaking, the renormalization group, the operator product expansion, and precision tests of the Standard Model. Prerequisite(s): courses 218 and 221B. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. H. Haber

224. Origin and Evolution of the Universe. *  
Introduction to the particle physics and cosmology of the very early universe: relativistic cosmology, initial conditions, inflation and grand unified theories, baryogenesis, nucleosynthesis, gravitational collapse, hypotheses regarding the dark matter and consequences for formation of galaxies and large scale structure. (Also offered as Astronomy and Astrophysics 224. Students cannot receive credit for both courses.) Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. J. Primack

226. General Relativity. *  
Develops the formalism of Einstein's general relativity, including solar system tests, gravitational waves, cosmology, and black holes. (Also offered as Astronomy and Astrophysics 226. Students cannot receive credit for both courses.) Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. A. Aguirre

231. Introduction to Condensed Matter Physics. F  
Crystal structures, reciprocal lattice, crystal bonding, phonons (including specific heat), band theory of electrons, free electron model, electron-electron and electron-phonon interactions, transport theory. Prerequisite(s): course 216. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. J. Deutsch

232. Condensed Matter Physics. W  
Magnets (para, ferro, anti-ferro, ferril), spin waves, superconductivity, introduction to semiconductors. Prerequisite(s): course 231. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. J. Deutsch

240. Polymer Physics. *  
Statistical properties polymers. Scaling behavior, fractal dimensions. Random walks, self-avoidance. Single chains and concentrated solutions. Dynamics and topological effects in melts. Polymer networks. Sol-gel transitions. Polymer blends. Application to biological systems. Computer simulations demonstrating much of the above. Students cannot receive credit for this course and course 120. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. T. Staff

242. Computational Physics. S  
This course will apply efficient numerical methods to the solution of problems in the physical sciences which are otherwise intractable. Examples will be drawn from classical mechanics, quantum mechanics, statistical mechanics, and electrodynamics. Students will apply a high-level programming language such as Mathematica to the solution of physical problems and will develop appropriate error and stability estimates. Prerequisite(s): basic programming experience in C or Fortran. No previous experience with Mathematica is required. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. A. Young
251. Group Theory and Modern Physics. S
Finite and continuous groups, group representation theory, the symmetric group and Young tableaux, Lie groups and Lie algebras, irreducible representations of Lie algebras by tensor methods, unitary groups in particle physics, Dynkin diagrams, Lorentz and Poincare groups. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. J. Primack

290. Special Topics. *
A series of lectures on various topics of current interest in physics at U.C. Santa Cruz. Enrollment restricted to graduate students only, except by permission of instructor. May be repeated for credit. T. Banks

291A. Cosmology (2 credits). F,W,S
Intensive research seminar on cosmology and related topics in astrophysics: nature of dark matter; origin of cosmological inhomogeneities and other initial conditions of the big bang; origin and evolution of galaxies and large scale structure in the universe. Enrollment restricted to graduate students only, except by permission of instructor. J. Primack

291C. Developments in Theoretical Particle Physics (2 credits). F,W,S
Seminar on the current literature of elementary particle physics, ranging from strong and weak interaction phenomenology to Higgs physics, supersymmetry, and superstring theory. Students may present their own research results. Enrollment restricted to graduate students only, except by permission of instructor. May be repeated for credit. H. Haber, M. Dine

292. Seminar (no credit). F,W,S
Weekly seminar attended by faculty and graduate students. Directed at all physics graduate students who have not taken and passed the qualifying examination for the Ph.D. program. Enrollment restricted to graduate students only, except by permission of instructor. May be repeated for credit. D. S. orfan

292F. Seminar (2 credits). Seminar T. The Staff

297. Independent Study. F,W,S
Enrollment restricted to graduate students only, except by permission of instructor. T. The Staff

298. Theoretical and Experimental Research Project. F,W,S
Enrollment restricted to graduate students only, except by permission of instructor. T. The Staff

Enrollment restricted to graduate students only, except by permission of instructor. T. The Staff

Plant Sciences
See Biological Sciences, page 136.

Politics

Faculty and Professional Interests

Professor
SONIA E. ALVAREZ
Latin American politics, the politics of gender, comparative political development, feminist theory, social movements, democratization, contemporary democratic theory, civil society

MICHAEL K. BROWN, Chair
Inequality, race and African American politics, political economy, political development of welfare states, theories and methods of historical social science

J. PETER EUBEN, Emeritus

ISEBILL V. GRUNN, Emerita

BRUCE D. LARKIN, Emeritus

RONNIE D. LIPSCUTZ
International relations, international political economy, foreign policy, resource-environmental politics, global political networks, global civil society, film, fiction, and politics, technology and society, states of terror

JOHN A. MARCUS, Emeritus

ROBERT L. MEISER
Political and moral philosophy, law and social theory, Marxist theory, institutional analysis, antidiscrimination law

JOHN H. SCARL, Emeritus

DAVID J. THOMAS, Emeritus

MICHAEL E. URBAN
Russian politics, post-communist transitions, U.S.-Russian relations, political language and ideology, revolution

GEORGE E. VON DER MUELLER, Emeritus

DANIEL J. WILDS
American politics, American society, the American state, public policy (military and foreign policy), political parties, political institutions, political culture and identity, comparative politics, globalization, policy processes, political systems, institutions

Assistant Professor

ANNETTE CLEAR
Comparative democratization, transnationalism, global political economy, global governance

DAVID MATTHOWETZ
Political theory, political economy, political science, political power, public policy, political institutions, comparative politics

ELENOARA PASSOTTI
European politics, comparative politics, democratization, public policy, political economy, methodology

VARSHA SETH
Moral politics, political theory, moral philosophy, political economy, political culture, political institutions, comparative politics, global governance, global politics, political economy, political analysis

MEGAN THOMAS
Political theory, political economy, political institutions, comparative politics, global governance, political economy, public policy, political institutions, comparative politics

Acting Assistant Professor

EVA BERTRAM
American politics, including the welfare state and social policy, political economy and the politics of work, civil society and non-governmental organizations, public policy, including drug control policy

Affiliated Graduate Faculty

Professor
EDMUND BURKE (History)
BARBARA EPSTEIN (History)

JONATHAN A. FOX (Latin American and Latino Studies)

WALTER L. GOLDFRANK (Sociology)

DAVID E. GOODMAN (Environmental Studies)

DAVID C. HOY (Philosophy)

PAUL M. LUBECK (Sociology)

DANIEL M. PRESS (Environmental Studies)

CRAY REINA (Sociology)

ALAN RICHARDS (Environmental Studies)

DAVID WELLMAN (Community Studies)

DONALD A. WITT (Economics)

Associate Professor

ANDREW SEASZ (Sociology)

Lecturer

SUZANNE JONES (Latin American and Latino Studies)

Program Description

In describing the department and major at UCSC, the term politics (rather than political science or government) is used because the study of political life requires a far more inclusive approach than that which is associated with conventional social science methods and because politics happen in places other than governments. Courses address issues central to public life, such as democracy, power, freedom, political economy, social movements, institutional reforms, and how public life, as distinct from private life, is constituted. Materials and approaches that seem fruitful for illuminating the issues are applied. Thus, the program is program oriented, less concerned with observing the boundaries of subfields or academic disciplines than with making sense of our lives as citizens.

More specifically, the study of politics is the study of the way human communities shape and share a common life by their institutional practices, ideas, interests, and expectations. It looks at the way collective decisions are made and the obstacles citizens meet as they try to forge a shared and just life. It is concerned with maintaining the integrity of diverse points of view about how we ought to live and with the need for defining some shared language in order to deliberate about the question. Politics faculty at UCSC emphasize the need for larger perspectives, whether they be drawn from studying the politics and cultures of other societies or of earlier periods. They also link the study of domestic to international politics and bring theoretical concerns to bear on the current and recurrent issues that mark the modern polity.

The study of politics is a critical part of a liberal arts education. Since political issues and practices are embedded in and reflective of the whole experience of a community, the study of politics can constitute the center of such an education drawing on history, sociology, anthropology, philosophy, economics, literature, and law.
The programs offered by the UCSC Politics Department are designed to acquaint students with a broad range of issues studied by those in the field. The department offers an undergraduate major, a minor, a combined Latin American and Latino studies/politics major, and a doctoral degree. The Politics Department also administers a program in legal studies; see the Legal Studies section, page 283, for details.

A major in politics is appropriate background for students interested in careers in law, journalism, or teaching; in political and governmental work from local to international settings; and in corporations dealing with global issues. Many UCSC politics graduates have also gone on to do advanced work in distinguished graduate and professional schools. Others have found active and challenging careers in business and community organizing. Still others have turned to scholarship and writing. But regardless of career direction, the most significant purpose of the politics major is to help educate a reflective and activist citizenry capable of sharing power and responsibility in a contemporary democracy.

There are many opportunities provided to UCSC politics students for field work and for internship placements. Students are encouraged to develop their own extensive independent research projects.

Students are given individual attention from politics faculty members to help them in their studies. The members of the faculty are firmly committed to the value of a liberal arts education, but they are also actively engaged in programs of research and writing. The research interests of the faculty range from the theory of justice to the problem of war, from campaign strategy to relations between the rich and the poor countries of the world.

Any upper-division politics courses can serve as supplements to the work of students majoring in other disciplines of the social sciences and humanities.

No specific courses at the high school level are required for admission to the major in politics at UCSC. Courses in history, literature, philosophy, and the social sciences, whether taken at the high school or college level, are appropriate background and preparation for the politics major.

Major Requirements

Eleven courses are required for the major in politics. Students must select the following courses as part of the study of politics. It emphasizes the study of broad theoretical issues through a variety of analytical and methodological approaches. Topics include class, political language, nationalism, state power, imperialism, equality, revolution, and political change. The core seminar is required of all majors during the sophomore or junior year. Those students intending to participate in the UC Education Abroad Program are advised to take the core seminar by the end of the sophomore year. Course 100 is also a prerequisite to the Politics 190 senior comprehensive seminar. Because it is writing intensive, the core seminar provides the opportunity for students to develop writing abilities by working closely with the instructor and a writing tutor. Because there are discussions, the seminar provides the opportunity for students to develop skills in stating a position, offering interpretation, and presenting arguments in front of their peers.

Four upper-division politics core courses. This course line includes four groups of courses that serve as the core of the politics major. Four courses are required: two courses from one group, one course from a second group, and one course from a third group. In general, upper-division courses are not recommended for freshmen.

**Course 100**

- **Theory**
  - 105A Ancient Political Thought
  - 105B Early Modern Political Thought
  - 105C Modern Political Thought

**U.S. Politics**

- 120A Congress, President, and the Court in American Politics
- 120B Society and Democracy in American Political Development
- 120C State and Capitalism in American Political Development

**Comparative**

- 140A Politics of Advanced Industrialized Societies
- 140B Comparative Post-Communist Politics
- 140C Latin American Politics
- 140D Politics of East Asia

**International**

- 160A International Politics
- 160B Global Organization
- 160C Security, Conflict, Violence, War

Course 160A, offered fall quarter, is very strongly recommended prior to taking the other international core courses.

**Five upper-division politics electives.** Five additional politics courses are to be selected from courses numbered 101–199. One of these courses may satisfy the senior comprehensive requirement.

**Course 160**

**Politics of Global Organization**

- 160A International Politics
- 160B Global Organization
- 160C Security, Conflict, Violence, War

Course 160A, offered fall quarter, is very strongly recommended prior to taking the other international core courses.

**Five upper-division politics electives.** Five additional politics courses are to be selected from courses numbered 101–199. One of these courses may satisfy the senior comprehensive requirement.

**Comprehensive Requirements**

The comprehensive requirement in the Politics Department can be satisfied in any of the following methods:

**Course Credit Options**

- Successful completion of a politics senior seminar (190-series) that includes the writing of an extensive paper (no less than 15 pages) with a substantial research content. To enroll in a specific 190 seminar, students must have successfully completed the Politics 100 core seminar and one of the prerequisite courses listed in the seminar's catalog course description;

- Successful completion of a politics graduate core seminar (enrollment in which is contingent on the written recommendation of two politics faculty that includes the writing of an extensive paper (no less than 15 pages) with a substantial research content;

- Successful completion of a senior thesis (courses 195A-B-C) of approximately 30 pages with a substantial research content, supervised by a politics faculty member with a second reader;

- Successful completion of one additional politics upper-division course, beyond the requirements of the major, in which the content is linked to another such course in any of the departments major "pathways" (see below for details), provided that the additional course itself contains a substantial writing component (e.g., a term paper of no less than 15 pages in length);

**Non-Course Credit Options**

- Passing an oral comprehensive examination. The initial subjects of the exam shall be given by a list of four topics submitted by the student, each topic defined by (approximately) four books (or equivalent articles), subject to prior approval by a regular member of the faculty in politics by a date fixed by the department. Two examiners shall be designated by the chair of politics. As the scope of the exam is comprehensive, the examiners will be free to ask questions which take the exam beyond the topics and titles submitted. Permission to meet the comprehensive requirement by an oral exam shall be subject to selection by lot if applicants exceed spaces (this option carries no course credit);

- Completion of a satisfactory bibliographic essay, of no less than 15 pages, identifying those books and articles which have most influenced the student's understanding of politics and explaining how they have contributed to that understanding. The paper will adduce authors' interpretations and arguments as part of a narrative whole, through which the student will identify and develop what the student considers most central to his or her sense of politics; it must not be merely a summative report of the texts. The list of at least five books (or books and articles) equivalent shall be subject to prior approval by a regular member of the faculty in politics by a date fixed by the department. A reader, and a second reader in the case of doubtful papers, will independently judge the candidates of Honors, shall be designated by the chair of politics. (This option carries no course credit.)

**Minor Requirements**

To complete a minor in politics, a student must take five upper-division politics courses. Of these, four are to be selected from the core courses, two from one subject (groups listed above) and two from another subject. The fifth course is to be selected from courses numbered 101–199. The lower-division prerequisite, the Politics 100 core seminar, and the senior comprehensive seminar are not required for the minor.

**General Undergraduate Information**

The new politics major is open to all students interested in the law and legal issues of society, and political science. Law and government pathway offers courses in both U.S. and international law, providing students a solid foundation in such areas as constitutional law, family law, civil rights, and human rights. Students who hope to attend law school or pursue law-related careers can best prepare themselves for their future academic and professional work in a liberal arts major such as politics, which strongly emphasizes the development of analytic and writing skills.

Combined major. The Politics Department offers a combined major with the Latin American and Latino Studies Department. Requirements may be reviewed in the Latin American and Latino Studies section of the catalog (page 279).

Double majors. The department accepts proposals for double majors. A student pursuing a double major meets the full requirements of the politics major as well as the full requirements of the other major subject.

Peace and security studies. A faculty member is designated to advise students on how to meet the politics major requirements through courses in politics and other disciplines which are focused on peace and security studies.
Advising. Declaring the major in politics is a three-step process: (1) attend a declaration orientation workshop, (2) meet with your faculty adviser, and (3) meet with the politics undergraduate adviser. Each student meets with an assigned faculty adviser to discuss an intended program of study, including its breadth and purpose. The faculty adviser may suggest additional courses so that the student can achieve greater breadth or concentration. Students are encouraged to select related courses from other departments which complement their interests in politics.

Pathways. The following pathways are suggested to help students choose courses in their area of interest. The pathways do not constitute tracks within the politics major.

(Note: in the Politics 100-series courses, topics vary by instructor.)

Conflict and security: courses 70, 107, 129, 160, 173, 190B, 190C, 190G, 190W

Markets and politics: courses 43, 70, 100, Globalization and Cultural Politics 100, Power and Participation; 105C. 111, 120C, 124, 141, 142, 160, 174, 190K, 190S

Race, class, and gender: courses 5, 10, 100, Race and Gender Matters 100, Race Law; 100, Feminism and Politics 100, Power and Participation; 101, 105C, 110, 111, 112, 120B, 120C, 124, 127, 140C, 146, 150, 190Q, 190T, 190W

Culture and power: courses 5, 80T, 100, Political Discourse 100, Language and Politics 100, Revolution; 100, Power and Participation; 100, Love and Justice 101, 105A, 105B, 105C, 107, 109, 114, 141, 142, 146, 150, 190W, 190W

Citizenship and democracy: courses 5, 10, 20, 100, Is Justice Possible 100, Feminism and Politics 100, Power and Participation; 100, Love and Justice 101, 105A, 105B, 105C, 107, 110, 111, 112, 114, 120A, 120B, 142, 146, 150, 190N, 190Q, 190W


States and regions: courses 43, 70, 107, 140C, 140D, 140E, 140E, 146, 150, 160, 175, 190S

Global governance: courses 70, 107, 111, 140E, 160, 173, 174, 175, 179, 190B, 190E, 190S, 190W

Course credit from other institutions. Courses from another institution may be considered only if they appear on the student's Transfer Credit Summary. Students who wish to substitute courses taken elsewhere for the Politics Department's requirements should discuss the procedure with the department assistant.

Senior thesis. Students interested in working on original research and writing under the supervision of a faculty member may pursue an independent study, Politics 195A-B-C. Completion of the senior thesis satisfies the comprehensive requirement.

Graduate Program

The organization and character of the graduate program issue from a fundamental rethinking of what it means to study politics in the twenty-first century. Sensitive to concerns historically associated with this enterprise, the program is committed to restoring the relevance of contemporary political life to research and teaching. With equal regard for the future, the program has been designed to supersede the conventional subfield boundaries of political science and even disciplinary divisions that too often serve to fragment, tame, and quarantine political phenomena, thus diminishing the very relevance that we seek. Impressed by the fact that much of the best work in political science today embraces the conventional boundaries of the discipline's subfields, the Politics Department has structured its graduate program in a new way. It reconnects themes central to political inquiry by reorganizing the field into three related areas of emphasis.

Political and Social Thought brings together the study of traditional political thought, modern social and critical theory, and the contributions of legal and institutional analysis of various kinds. The emphasis in this area is on both the tradition of political theory and the more recent literatures that challenge the distinctions between political and nonpolitical modes of critique and analysis. Many of the courses offered also address the theoretical and methodological questions underlying social and institutional research.

Social Forces and Political Change concerns the transformation of social forces into political ones. Accordingly, it focuses on the formation, articulation, mobilization, and organization of political interests and identities; their mutual interaction; and their effects on state structures and policies, as well as the effects of these same structures and policies on them. The politics of social movements unites substantive and theoretical concerns from comparative and American politics in addition to some concerns from international politics as well. This emphasis also draws upon social historians, community studies scholars focused on social mobilization, and sociologists interested in the relationship between social movements and public policy.

States, Political Institutions, and the Global Political Economy emphasizes the study of political institutions as instruments of collective decision making and action, both comparatively and internationally. It focuses principally on the state but includes analysis of transnational, subnational, and regional political institutions as well. This emphasis includes the study of state responses to domestic conflict and to the changing contours of the international economy, analysis of the role of the state in shaping domestic and international politics, and the role of transnational and subnational political institutions.

What unites these three areas of emphasis is that each focuses in a different way on the relations among material life, institutional authority, collective mobilization, and political vision at all levels of politics. Our program has been designed to capture the intellectual synergy among these elements. Although the best recent scholarship in political studies is already achieving this level of integration, no other graduate program in the United States has such an explicit, integrated focus and organization. It thus provides a rich and unique graduate experience for those interested in thinking beyond the conventional boundaries of politics and international relations.

The organization and character of the graduate program issue from a fundamental rethinking of what it means to study politics in the twenty-first century. Sensitive to concerns historically associated with this enterprise, the program is committed to restoring the relevance of contemporary political life to research and teaching. With equal regard for the future, the program has been designed to supersede the conventional subfield boundaries of political science and even disciplinary divisions that too often serve to fragment, tame, and quarantine political phenomena, thus diminishing the very relevance that we seek. Impressed by the fact that much of the best work in political science today embraces the conventional boundaries of the discipline's subfields, the Politics Department has structured its graduate program in a new way. It reconnects themes central to political inquiry by reorganizing the field into three related areas of emphasis.

Political and Social Thought brings together the study of traditional political thought, modern social and critical theory, and the contributions of legal and institutional analysis of various kinds. The emphasis in this area is on both the tradition of political theory and the more recent literatures that challenge the distinctions between political and nonpolitical modes of critique and analysis. Many of the courses offered also address the theoretical and methodological questions underlying social and institutional research.

Social Forces and Political Change concerns the transformation of social forces into political ones. Accordingly, it focuses on the formation, articulation, mobilization, and organization of political interests and identities; their mutual interaction; and their effects on state structures and policies, as well as the effects of these same structures and policies on them. The politics of social movements unites substantive and theoretical concerns from comparative and American politics in addition to some concerns from international politics as well. This emphasis also draws upon social historians, community studies scholars focused on social mobilization, and sociologists interested in the relationship between social movements and public policy.

States, Political Institutions, and the Global Political Economy emphasizes the study of political institutions as instruments of collective decision making and action, both comparatively and internationally. It focuses principally on the state but includes analysis of transnational, subnational, and regional political institutions as well. This emphasis includes the study of state responses to domestic conflict and to the changing contours of the international economy, analysis of the role of the state in shaping domestic and international politics, and the role of transnational and subnational political institutions.

What unites these three areas of emphasis is that each focuses in a different way on the relations among material life, institutional authority, collective mobilization, and political vision at all levels of politics. Our program has been designed to capture the intellectual synergy among these elements. Although the best recent scholarship in political studies is already achieving this level of integration, no other graduate program in the United States has such an explicit, integrated focus and organization. It thus provides a rich and unique graduate experience for those interested in thinking beyond the state-centered policies and conflicts that still form the center of our discipline as it is conventionally taught.

Additional range and diversity are brought to the program by including graduate faculty scholars working in related disciplines in both the social sciences and the humanities: community studies, economics, history of consciousness, Latin American and Latino studies, philosophy, sociology, and women's studies. The graduate faculty coheres around thematic as well as methodological interests and commitments. Across area specialties and disciplinary boundaries, a strong complementary interest in the social foundations of democratic politics and democratization is shared by those whose research addresses comparative and American politics, the sociology of social movements, and area and gender studies. Democracy and democratization are also central to the work of the program's political and social theorists as well as to those focusing on international relations and political economy.

Moreover, the graduate faculty, although exceptionally diverse with respect to the substantive questions engaging its members, is uniformly committed to an integrated and theoretically informed approach to issues of political analysis.

Finally, the program places particular emphasis on teaching. Developed by a faculty member always strongly oriented toward—and with a considerable record of excellence in—undergraduate teaching, the program's design incorporates "the teaching of teaching" for its students and stresses the component of civic education in undergraduate instruction.

Details of the policies for admission to graduate standing as well as the program brochure, application, and information on financial support opportunities are available through our web site http://politics.ucsc.edu. For more information, refer to the Graduate Studies section.

Ph.D. Program

The graduate curriculum in politics includes six stages: (1) four core seminars; (2) eight other graduate level courses, three of which must be Politics Department courses along with further training as appropriate in language and methodology; (3) teaching assistant seminars and graduate colloquium; (4) a qualifying examination consisting of written and oral parts; (5) the research and writing of the dissertation; and (6) its oral defense.

Note: Please check with the department office for updated listings of course offerings and the appropriate year in which to undertake specific electives.

M.A. Degree

Our program is intended to lead to a Ph.D. in politics; there is no separate M.A. program. All curriculum requirements are aimed at preparing students for timely and successful completion of a doctoral dissertation. However, all students will be eligible to receive an M.A. upon successful passing the course work requirements and completing an acceptable 30-page journal-quality paper, either within the context of a course or independently, although not the field examination. Students will be advanced to candidacy only upon successful completion of the qualifying examination.

Lower-Division Courses

1. Politics: Power and Principle.* Systematic introduction to the nature and study of politics and government, organized around the dynamic relationship between power and principle. Provides historic and contemporary overview; explores the interactions among government, law, and society at the national and international levels. (General Education Code(s): 15S.) D. Wirs

4. Citizenship and Action. F What does it mean to be a citizen? What is the role of the political community? How do political institutions work? How do we become engaged in political life? (General Education Code(s): 15S.) D. M. Athowetz
5. Political Freedom. *
Deals with themes of citizenship and exile, equality and slavery, liberty and liberation using classical and contemporary theoretical materials, institutional studies (of slavery and the concentration camps), and historical examples (immigration). (General Education Code(s): IS.) The Staff

73. Sovereignty and Intervention. S
Beginning with the basic concept of state sovereignty, explores ways in which different types of intervention problematize and compromise state sovereignty, particularly in the Third World. Examines the incentives behind military, economic, humanitarian and cultural interventions, their unintended consequences, and their ethical controversies. (General Education Code(s): IS.) A. Clear

807. The Cold War in Film and Fiction. *
Examines the history of the cold war and U.S. foreign policy issues, and some of the major questions of politics, such as power and justice, as addressed through films and fiction in the past 50 years. (General Education Code(s): T; Social Sciences) R. Lipschutz

Upper-Division Courses

100. Core Seminar in Politics. F, W, S
Focuses on the divergent theoretical and methodological approaches to the study of politics. Considers central concepts and issues in historical and contemporary analysis of political life. Specific readings within general topics are assigned by each instructor. Required of all politics majors in the sophomore or junior year. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to sophomore, junior, and senior legal studies, politics, and Latin American and Latino studies/politics combined majors during priority enrollment only. Enrollment limited to 20. (General Education Code(s): W.) The Staff

103. Feminist Interventions. S
Studies ongoing debates around feminist theory and practice within the context of political theory. The role of the state, and the position of women in contemporary (pre-dominantly Western) society. Engages with classical political theory, second wave feminism, and the role of the state on matters pertaining to pornography and prostitution. Enrollment restricted to politics, legal studies, and Latin American and Latino studies/politics combined majors during priority enrollment only. V. Seth

104A. American Political Thought. *
Basic problems of political theory within the American setting. The course explores both the mainstream tradition and some branches of the counter tradition of political ideas in America, focusing on the themes of authority, community, equality, and liberty. Enrollment restricted to politics, legal studies, and Latin American and Latino studies/politics combined majors during priority enrollment only. Satisfies American History and Institutions Requirement. J. Schaar

104B. American Political Thought. *
Basic problems of political theory within the American setting. The course explores both the mainstream tradition and some branches of the counter tradition of political ideas in America, focusing on the themes of authority, community, equality, and liberty. Enrollment restricted to politics, legal studies, and Latin American and Latino studies/politics combined majors during priority enrollment only. Satisfies American History and Institutions Requirement. J. Schaar

105A. Ancient Political Thought. W
Ancient political ideas in context of tension between democracy and empire, emergence of the psyche, and shift from oral to written culture. Emphasis on Athens, with Jewish, Roman, and Christian interventions. Includes Sophocles, Thucydides, Socrates, Plato, Aristotle, Stoics, the Bible, and Augustine. (Formerly Classical Political Thought). (Also offered as Legal Studies 105A. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. D. Mathiews

105B. Early Modern Political Thought. F
A study of the republican and liberal traditions of political thought and politics. Authors studied include Machiavelli, Hobbes, Locke, and Rousseau. Examination of issues such as political corruption, community, authority, "scientific" politics, property, equality, and justice. (Formerly offered as M odern Political Theory. (Also offered as Legal Studies 105B. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. V. Seth

105C. Modern Political Thought. S
Studies in nineteenth- and early twentieth-century theory, centering on the themes of capitalism, labor, alienation, culture, freedom, and morality. Authors studied include S. Mill, W. Marx, Nietzsche, Foucault, H. egel, and Weber. (Formerly Recent and Contemporary Political Thought.) (Also offered as Legal Studies 105C. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. M. Thomas

107. After Evil: Political Morality of Survivorship and Recovery. *
What are the continuing relationships between victims, perpetrators, and beneficiaries of a past that is recognized as evil? Focus on contrast between the competing moral logics of struggle and reconciliation, and various rationales for allowing beneficiaries to keep their gains in order to bring closure to the past. Topics include post-slavery U.S., post-apartheid South Africa, post-genocide Rwanda, post-Holocaust Germany/Israel, post-authoritarian Latin America, and post-Soviet Eastern Europe. Theoretical perspectives drawn from law, philosophy, theology, and psychoanalysis. (Also offered as Legal Studies 107. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. R. Meister

109. Orientalism. F
Studies "Orientalism" as a concept of political theory and as a historical practice. Considers political, intellectual, and aesthetic projects of eighteenth- and nineteenth-century Orientalists. Considers contemporary themes of Orientalism and uses these concepts to examine current political discourse. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. M. Thomas

110. Law and Social Issues. *
Examines the current problems in politics and law. Readings are drawn from legal and political philosophy, social science, and judicial opinions. (Also offered as Legal Studies 110. Students cannot receive credit for both courses.) The Staff

111. Problems in Constitutional Law. S
A study of selected problems in constitutional law through the use of various common law models (e.g., from contracts, torts, property, etc.) for understanding the structure of claims to legal rights. Focuses on shifting
boundaries between public and private law doctrine in constitutional cases. (Also offered as Legal Studies 111. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

112. Women and the Law. F
Interdisciplinary approach to study of law in its relation to category “women” and production of gender. Considers various materials including critical race theory, domestic case law, international instruments, representations of law, and writings by and on behalf of women living under different forms of legal control. Examines how law structures rights, offers protections, produces hierarchies, and sexual as power relations in both public and intimate life. (Also offered as Women’s Studies 112. Students cannot receive credit for both courses.) Enrollment restricted to politics, women’s studies, legal studies, and Latin American and Latino studies/politics combined majors during priority enrollment only. G. Dent

114. Thinking Green: Politics, Ethics, Political Economy. S
A course on Green political thought and practice, the origins and content of ecological politics, ethics, and political economy. Asks whether they offer a “realistic” alternative to neo-liberalism and other political ideologies. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. R. Lipschutz

120A. Congress, President, and the Court in American Politics. F
Study of political development, behavior, performance, and significance of central governmental institutions of the U.S. While focus is on historical development of Congress and the presidency and relationship between the two branches, attention is also given to the judiciary branch and bureaucracy. (Also offered as Legal Studies 120A. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. Satisfies American History and Institutions Requirement. D. Wirls

120B. Society and Democracy in American Political Development. W
Examines origins of the American political system (e.g., race, class, and gender) in development of the American democratic processes and in the changing relationship between citizen and state. Course materials address ideas, social tensions, and economic pressures bearing on social movements, interest groups, and political parties. (Also offered as Legal Studies 120B. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment period only. Satisfies American History and Institutions Requirement. D. Wirls

120C. State and Capitalism in American Political Development. S
Examines expansion of the American state, its relation to the development of capitalism, and changing contours of policy intervention in economy and society. Includes regulation of capitalism, origins and growth of welfare state, and implications of state intervention for economic and political inequalities in America. (Also offered as Legal Studies 120C. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. Satisfies American History and Institutions Requirement. E. Bertram

124. Politics, Poverty, and Inequality in America. *
Investigation of the causes and consequences of poverty and income inequality in the U.S., including racial and gender inequality. Consideration of the origins of contemporary anti-poverty policies and evaluation of current policy alternatives. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

Examination of changes in the political and economic status of black Americans in the twentieth century; particular focus on the role of national policies since 1933 and the significance of racism in twentieth-century U.S. political development. (Also offered as Legal Studies 127. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

Examines evolution of policy and politics of American national security, especially following WW II. Content of conventional nuclear defense policies explored with analytic focus on formation of policy and interactions between military policies and domestic policies. Enrollment restricted to politics, legal studies, and Latin American and Latino studies/politics combined majors during priority enrollment only. D. Wirls

132. California Water Law and Policy. W
Explores the rich history and fundamental legal concepts surrounding water in California. Students identify, evaluate, and debate some critical water policy questions faced by Californians today and in the future. R. Langridge

140A. Politics of Advanced Industrialized Societies. S
Explores the political and economic systems of advanced industrialized societies. In addition to specific comparisons between the countries of Western Europe, Japan, and the United States, covers important themes and challenges, including immigration, globalization, and social movements. Enrollment restricted to politics, and Latin American and Latino studies/politics combined majors during priority period only. E. Paixão

140B. Comparative Post-Communist Politics. F
Comparative study of revolutionary transformations of East European, Soviet, and former Soviet nations to post-Communist political orders. Focus on reemergence of political society, social and economic problems of transition, and maintenance of many cultural norms and authority patterns associated with previous regime. M. Urban

140C. Latin American Politics. W
Overview of major approaches to the study of Latin American politics. Introductory survey of historical and contemporary democratic, populist, authoritarian, and revolutionary regimes. Special attention to local, national, and global forces shaping development strategies and public policies; changing institutional arrangements and shifting discourses of domination; and social movements and political transformations among subaltern social groups and classes. Students cannot receive credit for this course and course 241. Enrollment restricted to politics, Latin American and Latino studies and politics/Latin American and Latino studies combined majors during priority period. (General Education Code(s): E.) The Staff

140D. Politics of East Asia. S
Explores dynamics of political and economic development in Northeast and Southeast Asia following WWII. Students apply theories of comparative politics to empirical case studies, integrating statist, social, and cultural factors into their understanding of development. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. (General Education Code(s): E.) A. Clear

140E. Postcolonial States and Societies. *
Explores key contemporary issues and conflicts in postcolonial states and societies from a range of methodological and theoretical perspectives. While readings focus on South Asia, Middle East, and Southeast Asia, they reflect issues of broad theoretical and comparative significance, emphasizing constitutive role of colonialism, modernist projects, and social movements in shaping both postcolonial politics and scholarship. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. (General Education Code(s): E.) The Staff

141. China. *
Politics and foreign policy of the Peoples Republic of China since 1949. Emphasis on unification, political movements, and decision; social policy; collectivization, decollectivization, and economic reform; foreign and military policy. Democratization, suppression of the Tiananmen demonstrations, and post-Tiananmen political and cultural policy. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. (General Education Code(s): E.) The Staff

150. Democratization, Citizenship, and Human Rights in South America. *
Examines military regimes, transitions to civilian rule, and politics of democratization in contemporary Brazil, Argentina, and Chile. Focus on the contradictions and legacies of transition politics, the challenges of democratizing political institutions, and the political and social consequences of neoliberalism. Emphasis on human rights, citizen movements, and post-transition and post-revolutionary periods. (Also offered as Legal Studies 150. Students cannot receive credit for both courses.) Satisfies American History and Institutions Requirement. M. Urban

154. Brazilian Politics. *
Analysis of interface of Brazilian politics and culture— with emphasis on contemporary struggles to deepen democracy, foster more equitable development, and promote social justice. Examination of dynamic interplay of state and opposition forces during Brazil’s twenty-first-century authoritarian regimes. Special attention to problems and prospects for furthering democratization in the twenty-first century. Prerequisite(s): course 140C or permission of instructor. S. Alvarez

156. Asian Women in Politics. *
Uses major theoretical themes from Asian comparative politics considered through the lens of gender politics. Each week introduces the basic comparative politics of a different Asian country and then examines women in pol-
itics in that particular country and how women challenge theories about Asian politics, integrating other countries and topics into current discussions (General Education Code(s): E.) A. Clear

160A. International Politics. F
Upper-division introduction to international relations, international organizations, international political economy, foreign policy, conflict, and war. Explores a range of theories, issues, and cases that are of interest to students of international affairs and are helpful in understanding recurring patterns of global conflict and cooperation. Addresses the nexus between domestic politics and the foreign policy of states. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. R. Lipshutz

160B. Global Organization. W
Addresses how global organizations are changing the international system. Examines multilateral institutions, regional organizations, and nongovernment actors. Aims to discern whether these global organizations are affecting the purported primacy of the state. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. A. Clear

160C. Security, Conflict, Violence, War. S
Genocide and theories of conflict and war and their avoidance (past, present, future); relationship between foreign policy and intra- and interstate conflict and violence. National security and the security dilemma. Nonviolent conflict as a normal part of politics; violent conflict as anti-political; transformation of conflict into social and interstate violence. Interrelationships among conduct of war, attainment of political objectives, and the end of hostilities. Civil and ethnic wars. Political economy of violence and war. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

163. How U.S. Foreign Policy Gets Made. F
Provides an overview of U.S. foreign policy formulation: considers how U.S. political culture shapes foreign policy; examines governmental actors involved: the president, executive branch agencies, and Congress; then considers non-governmental actors the media, interest groups, and public opinion. Enrollment restricted to politics and politics/Latin American and Latino studies combined majors J. Knopf

167. Chinese Foreign Policy. *
Foreign policy of the People's Republic of China, including U.S.-China relations, China's policies in Asia, and China's role as a permanent United Nations Security Council member and a nuclear-weapon state. Problems and approaches to foreign policy interpretation. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

168. Nonproliferation. *
Addresses nuclear, biological, chemical, and radiological weapons and global public policy measures to prevent their spread: safeguards, inspection, "counter-proliferation," and nonproliferation strategies. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

172. Politics of the Internet. *
Explores the Internet as a community of culture, practice, relationships, economics, governance, rules, claims, arguments, and decisions. It is a novel form of political which is explored from two directions. How are the new issues similar to, and different from, those which have been studied hitherto? Does the Internet lead to insights into politics as we have known it in the past? The Staff

173. International Law. W
Origins and development of international law: international law is examined both as a reflection of the present world order and as a basis for transformation. Topics include jurisdiction and sovereignty, treaties, use of force, commercial law, and human rights. (Also offered as Legal Studies 174. Students cannot receive credit for both courses.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment period. The Staff

174. Global Environment Politics. *
Focuses on global environmental "problematic" and how it is being played out in a variety of political arenas. Includes technical overview of global environmental movements; perspectives on alternative political approaches to environmental problems. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. R. Lipshutz

175. The New Europe. *
Examines causes and consequences of political and economic change in Europe including emergence of European Community as new power; end of cold war, breakup of Warsaw Pact, and new European security arrangements; German reunification; transition to market economies and representative democracies; and disintegration of Soviet Union, Yugoslavia, and nationalist potential for continuing political instability. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

176. International Political Economy. F
Surveys and critically examines long-standing theoretical debates within international political economy (liberalism, mercantilism, Marxism) with context of important historical and contemporary international political economy issues areas (international monetary systems, organization of international trade, regulation of foreign direct investment, development policies, etc.). Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. A. Schoenman

177. The United States and the World. *
Examines political, economic, and cultural relationships between the U.S. and the rest of the world, including historical background and foreign policy. Special focus on U.S. involvement in the Middle East and Persian Gulf and the politics of economics of that region. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. R. Lipshutz

178. U.S. Foreign Economic Policy. S
Theoretical and historical survey of U.S. foreign economic policy. First part explores theoretical frameworks and covers historical events in the U.S.'s relationship with world economy. The second part focuses on postwar foreign economic policy; surveys different theoretical approaches to U.S. foreign policy; and examines fundamental developments and issues in trade, monetary development, and investment policies. Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. R. Lipshutz

179. Negotiation. *
Negotiation presented as central practice of politics by parties in conflict, by parties seeking cooperative outcomes, and by which social expectations and institutions are constructed. Examines case studies in negotiation of international treaties. Explores how processes and institutions of law and economy can be understood as special cases of ongoing, regulated negotiation. Considers the special problem of negotiation between parties who are not "equal" but in some salient respect, are "strong" and "weak." Enrollment restricted to Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

190. Senior Comprehensive Seminar.
These courses, offered at different times by different instructors, focus on current problems of interest across the discipline. Courses offer a flexible framework within which students interested in specific issues can read, present papers, and develop their ideas. Students who do not meet the restrictions and prerequisites may contact the instructor for permission to enroll.

190A. State and Revolution. *
Investigates the process of rapid and fundamental political and social change from the standpoint of both the structures of states in which revolutions have occurred and the changes of states issuing from revolutions. A number of cases are examined, but particular emphasis is given to the "classic" revolutions in France (1789) and Russia (1917). Prerequisite(s): course 100 or 100A. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors; major restrictions lifted during open enrollment. Enrollment limited to 20. M. Urban

190B. Security and Disarmament. *
Examines global and regional arms control and disarmament initiatives, with attention to issues of definition, verification, compliance, phasing, and stability. Also examines these issues as objects of contemporary Chinese foreign and security policy. Prerequisite(s): course 100 or 100A. Enrollment restricted to senior politics and Lazengo/Politics combined majors during priority enrollment only; students who do not meet the restrictions and prerequisites may contact the instructor. Enrollment limited to 20. B. Larkin

190C. U.S.-Russian Relations. *
Examines the cold war and its aftermath. Focuses on interstate conflict and its roots in domestic politics. Topics include issues of national security, military competition, transnational movements, regional and global hegemony. Prerequisite(s): course 100 or 100A and one of the following: 140B, 140D, 141, or 142. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors during priority enrollment only. Enrollment limited to 20. M. Urban

190D. Early Anarchist and Socialist Thought. W
Studies in nineteenth- and early twentieth-century anarchist and socialist thought. Themes covered include Catholicism, Darwinism, property and the state, and organizing labor. Readings drawn from Bakunin, Chernyshevsky, Goldman, Fourier, Kropotkin, Proudhon, Saint-Simon, and Stirner. Prerequisite(s): course 100. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors during priority enrollment only. Enrollment limited to 20. M. Thomas
190E. European Integration. W
Focuses on the origins and development of the Euro-
pean Union. Addresses historical and contemporary is-
sues, including the political, economic, social, and
cultural dimensions of European integration and the im-
pending expansion to the East. Prerequisite(s): course 100 or 100A. Enrollment restricted to senior pol-
itics and Latin American and Latino studies/politics
combined majors during priority enrollment only. En-
rollment limited to 20. R. Schoenman

190F. Orientalism. *
Studies “Orientalism” as a concept of political theory and
and as a historical practice. Considers political, intel-
llectual, and aesthetic projects of eighteenth- and nine-
teenth-century Orientalists. Considers contemporary
themes of Orientalism and uses these concepts to ex-
amine current political discourse. Prerequisite(s):
course 100. Enrollment restricted to senior politics
and combined politics/Latin American and Latino studies
majors. Enrollment limited to 20. M. T. Thomas

190G. Issues in International Law. *
Examines the reality and theory of international law; how it
determines or modifies policies of govern-
ment. Emphasis on contemporary political and eco-
nomic forces and international law in nuclear age,
competing areas for new law, law of sea, human rights,
new international economic issues, the environment.
Prerequisite(s): course 100 or 100A. Enrollment
restricted to senior legal studies, politics, and Latin
American and Latino studies/politics combined
majors during priority enrollment only; major restrictions will
be lifted during open enrollment. Enrollment limited to 20.
The Staff

190H. The Substance of Democracy. F
What is democracy? Why do we care? How can we
identify it? Through political science, law, and phi-
losophy, the course explores these questions and the is-
sues of patronage, media manipulation, lobbying,
campaign finance reform, and voter turnout. Prerequi-
site(s): course 100. Enrollment restricted to senior pol-
itics and combined politics/Latin American and Latino
studies majors. Enrollment limited to 20. E. Paazti

190J. Politics and Inequality. *
Considers causes and consequences of inequality in
modern societies. Emphasizes empirical analysis of
contemporary forms of class, racial, and gender in-
equality and examination of normative theories of dis-
tributive justice. Major restrictions lifted during open
enrollment. Prerequisite(s): course 100 or 100A. En-
rollment restricted to senior politics and Latin Ameri-
can and Latino studies/politics combined majors
during priority enrollment only. Enrollment limited to 20.
M. Brown

190K. Recent Economic Development of Welfare States. S
Explores origins and development of contemporary
welfare states in Europe and the U.S. Considers welfare
state development and politics in relation to dynamics
of capital accumulation, class and racial conflict, and
patterns of party politics. Assesses distributional im-
acts of policies. Prerequisite(s): course 100 or 100A and
one of the following courses: 104A, 104B, 120A,
120B, or 120C. Enrollment restricted to senior pol-
itics and Latin American and Latino studies/politics
combined majors during priority enrollment only; major
restrict Enrollment limited to 20. M. Brown

190L. Welfare Policy and Politics. F
Examines theoretical, historical, and contemporary em-
pirical materials about the structure and impact of wel-
fare policy and the politics of welfare reform. Prerequi-
site(s): course 100. Enrollment restricted to senior
politics and Latin American and Latino studies/politics
combined majors during priority enrollment only; major
restrictions will be lifted during open en-
rollment. Enrollment limited to 20. E. Bertram

190M. American Politics Through American Literature. S
Most major American writers offer perspectives outside
“official” mainstream political culture; the raising of
counterpoints; concern about common, public lives,
not just personal experience; exploring persistent ten-
sions (dualisms) and deeper meanings, how we really live,
how it is concealed from understanding, and po-
itical/moral costs. Prerequisite(s): course 100 or 100A,
and one of the following courses: 101, 105A, 105B,
105C, 120B, or 120C. Enrollment restricted to senior pol-
itics and Latin American and Latino studies/politics
combined majors during priority enrollment only. En-
rollment limited to 20. J. Schaar

190N. Congress: The Politics of Representation and Legislation. F
Examination of U.S. Congress in theoretical, compar-
ative, and historical context. Examines changing re-
balances between representative and legislative processes,
partisan versus presidential systems, party organiza-
tion versus the new entrepreneurship. Special attention
given to nature and consequences of bicameralism. Prere-
quisite(s): courses 100 or 100A, and 120A. Enroll-
ment restricted to senior legal studies, politics, and
Latin American and Latino studies/politics combined
majors during priority enrollment only. Enrollment
limited to 20. D. Wirls

190P. Race: History of a Concept. S
Examines how we came, by the late nineteenth century,
to classify humanity into racial categories. In an effort
to trace emergence of this very modern phenomenon,
explorer historical shifts that informed Europe's repre-
sentation of cultural difference from the writings of an-
cient Greeks to the social Darwinism of nineteenth-century Britain. Prerequisite(s): course 100 or 100A. Enroll-
ment restricted to senior politics and Latin American and Latino studies/combined majors during priority enrollment only. Enrollment limited to 20. V. Seth

190S. International Relations and World Politics. S
Examines the problematic of world politics as focused
through the lens of classical, modern, contemporary,
and critical international relations theory. Prerequi-
site(s): course 100 or 100A, and one of the following:
160, 160A, 160B, 162, or 173. Enrollment restricted to senior politics and Latin American and Latino stud-
ies/combined majors during priority enrollment.
Enrollment limited to 20. R. Lipschutz

190T. Feminism, Transnational Cultural Politics, and Gender Policy. S
Comparative analyses of feminist movements and their
relationship to other local and global social move-
ments, transnational civil society, political parties,
states, and inter-governmental organizations in a wide
range of empirical cases. Emphasis on changing femi-
nist discourses and practices over the past three plus
decades and the dynamic interplay of cultural politics
and gender policy advocacy in contemporary national
and transnational feminist activism. Prerequisite(s):
course 100 or 100A. Enrollment restricted to senior
Latin American and Latino studies, politics, women's
studies, and Latin American and Latino studies/combined majors during priority enrollment only. En-
rollment limited to 20. S. Alvarez

190V. Problems in Latin American Politics. *
Research seminar allows advanced students to engage
in current scholarly debates in the sub-field of Latin
American politics. Topics and countries covered vary
from year to year but may include civil society, citi-
zension and cultural politics in Latin America, com-
parative perspectives on democratization, politics and
culture in Brazil, feminisms and women’s movements
in Latin America, the politics of race and ethnicity in
the Americas, and human rights and social justice in a
restricted to senior politics and Latin American and
Latino studies/combined majors during priority enroll-
ment only. Enrollment limited to 20. S. Alvarez

190W. Living in the Aftermath of Evil.
Draws on a variety of sources to understand metaphors
of war and peace as potentially appropriate attitudes to-
ward evil and as potentially rational compromises with
evil; investigates respects in which constitutional
regimes of post-traumatic societies can be understood
as “peace programs” that preserve and transcend
the identities of the victims and perpetrators of past atroc-
ties while creating a new identity based on their com-
mon survivorship; explores the constraints placed on “nation in recovery” by the public commitment to cre-
ate an official version of a past that must be remem-
bered so that it will not be repeated. Prerequisite(s):
course 100 or 100A, and one of the following: course
105A, 105C, 110, or 111. Enrollment restricted to
senior politics and Latin American and Latino stud-
ies/combined majors during priority enroll-
ment only. Enrollment limited to 20. R. M. Ether

190X. Global Civil Society—Theories, Debates, Practices. S
The process of globalization, the enormous growth in
numbers of transnational social movements and non-
governmental organizations, and the broad reach of
transnational capital and corporations has generated
considerable academic and policy interest in future of
global governance and role of “global civil society” in it.
This senior seminar provides broad view of theory and
debates behind global civil society and case studies of
specific transnational networks, movements, and coal-
tions. Prerequisite(s): course 100 or 100A, and one of
course 160, 160A, 160B, 162, or 173. Enrollment
restricted to senior politics and Latin American and
Latino studies/combined majors during priority enroll-
ment only. Enrollment limited to 20. R. Lipschutz

190Y. Politics of “Interest”. W
How did interest come to be so frequently associated
with politics and especially with somebody's political
motivation? What is interest? What does the word do
for study of politics and to us the subjects of that
study? (Formerly The language of Interest.). Prerequi-
site(s): course 100. Enrollment restricted to senior pol-
itics and combined politics/Latin American and Latino
studies majors. Enrollment limited to 20. D. M. ath-
rowetz

192. Directed Student Teaching. F, W, S
Teaching of a lower-division seminar. (See course 42.) Students submit petition to sponsoring agency. The Staff
193. Field Study in Politics, F,W,S
Individual studies undertaken off campus with direct faculty supervision. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

194. Group Tutorial, F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Various topics to be announced before each quarter. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

195A. Senior Thesis, F,W,S
Preparation of a senior thesis over two or three quarters, beginning in any quarter. The grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency. The Staff

195B. Senior Thesis
Preparation of a senior thesis over two or three quarters, beginning in any quarter. The grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency. The Staff

195C. Senior Thesis
Preparation of a senior thesis over two or three quarters, beginning in any quarter. The grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency. The Staff

198. Independent Field Study, F,W,S
Individual studies undertaken off-campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199. Tutorial, F,W,S
A student normally approaches a member of the staff and proposes to take a course 199 on a subject he or she has chosen which is not offered in other politics courses. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits), F,W,S
A student normally approaches a member of the faculty and proposes to take a course 199 on a subject he or she has chosen which is not offered in other politics courses. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

200A. Political and Social Thought Core Seminar: Politics of Recognition.*
Investigates issues about identity and recognition as basis for claims about institutional legitimacy and social struggle. Paradigm is Hegel's account of relation of master and slave in Phenomenology of Spirit. Contemporary political philosophy examines differing accounts of reason, power, resistance, liberation, morality, difference, and the other. Concludes with discussion of identity and interest politics, multiculturalism and assimilation, and moral bases of struggle, reconciliation, and compromise in the political arena. (Also offered as Philosophy 200A. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Enrollment limited to 15. R. M. Estar, D. Hey

200B. Social Forces and Political Change Core Seminar. F
Concerns transformation of social forces into political ones. Focuses on formation, articulation, mobilization, and organization of political interests and identities, their mutual interaction, and their effects on state structures and practices and vice versa. Major themes are 1) social bases of political action: class, gender, race, and other determinants of social division and political identity and 2) relevant forms of political agency and action, including development of political consciousness and representation of interests and identities in the public sphere. Enrollment restricted to graduate students. Enrollment limited to 15. S. Alvarez

200C. States and Political Institutions Core Seminar.*
Introduces study of political institutions as instruments of collective decision making and action. Explores alternative theoretical approaches to development of political institutions, states and political economy, and security dilemmas. (Formerly States, Political Institutions, and Global Political Economy Core Seminar.) Enrollment restricted to graduate students. Enrollment limited to 15. D. Wirls

200D. Political Economy Core Seminar.
Introduction to the theories and methodologies of political economy. Focuses on the relationship between states and markets and considers the politics of economic choices and institutions germane to both national and global political institutions. Addresses origins and development of markets and capitalism; historical evolution of states and their economies; relationship between labor, capital, production, and consumption; regulation of production; macroeconomics and management of economies; and issues of national and global social welfare. Enrollment restricted to graduate students. Enrollment limited to 15. R. Lipschutz

201. Logics of Inquiry, W
Investigates approaches to study of politics and to enterprise of social science in general. Works from positivist, interpretive, historical, and critical approaches provide examples held up to critical and epistemological reflection. Enrollment restricted to graduate students. Enrollment limited to 15. E. Patssi

202. Making of the Modern, W
Introduces, at the graduate level, some of the central conceptual categories and material implications that underwrite the world of the modern. Explores concepts including the individual, historicism, contract, and objectivity. Enrollment restricted to graduate students. Enrollment limited to 15. V. Seth

211. Marxism.*
Examines how Marx arrived at his substantive political standpoint through a critique of the modes of theory through which state and society are interpreted from within. Also considers how far it is possible to apply the methods Marx used, in learning from the sources available in our own contemporary material, and whether this process of interpretation will lead us to similar conclusions. Enrollment restricted to graduate students. Enrollment limited to 15. R. M. Estar

214. Thinking Green: Politics, Ethics, Political Economy.*
Green political thought, philosophy, debates, and practices; history of ecological thought and comparative study of competing ideas and proposals; Critical examination of neo-liberal environmentalism. Enrollment restricted to graduate students. Enrollment limited to 15. R. Lipschutz

221. Politics and Inequalities. S
Considers origins and consequences of inequality in modern societies, focusing on intersection between class, race, and gender inequality. Examines discourse of equality, in particular, the relationship between democratic politics and equality and role of political institutions in promoting or diminishing inequality. Enrollment restricted to graduate students. Enrollment limited to 15. M. Brown

232. United States Political History.*
Covers several important themes and sets of readings from the literature on American political development. Topics include the origins and development of American political institutions, the evolution of democratic mechanisms, the rise and fall of social movements, and debates about the sources of policy regimes and political change, including the role of war. Enrollment restricted to graduate students. Enrollment limited to 15. D. Wellman, M. Brown

241. Culture and Politics in Latin America.*
Interdisciplinary analysis of the relationship between culture and politics in Latin America, drawing on current critical debates in anthropology, history, cultural studies, feminist, and poststructuralist theories, as well as political science. Students cannot receive credit for this course and course 140C. Enrollment restricted to graduate politics majors. Enrollment limited to 15. S. Alvarez

251. Discourse.*
Utilizing a variety of approaches--discourse analysis, semiotics, critical theory, and linguistics--analyzes how language constructs the political world. Focuses on the symbolic mediation, normalization, and reproduction of power and subjugation present in the discourses through which they are apprehended and expressed. Enrollment restricted to graduate students. Enrollment limited to 15. M. Urban

271. Transnationalism. F
Focuses on basic comparative politics concepts—such as the state, regime transition, economic development, and social movements—and then considers how the global context challenges these very same political phenomena. Explores the ontological and methodological repercussions of the nexus between the global and the domestic. (Formerly Global Domestic Nexus.) Enrollment restricted to graduate students. Enrollment limited to 15. A. Clear

274. Global Environmental Politics.*
Focus on global environmental law, politics, and policy, supplemented by analysis of theories and practices of environmental action and activism at all levels of analysis. Requires attendance at course 174 lectures plus three-hour seminar each week. Enrollment restricted to graduate students. Enrollment limited to 15. R. Lipschutz

291. Teaching Assistant Seminar (2 credits), F,W,S
Two-hour weekly seminar required of teaching assistants in which pedagogic and substantive issues will be considered. The experience of performing teaching assistant duties constitutes subject matter for discussion. Students submit petition to sponsoring agency. May be repeated for credit. The Staff
293. Field Study, F,W,S
Individual study undertaken off campus with direct faculty supervision. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

297. Independent Study, F,W,S
A student approaches a member of the staff and proposes to take a course 297 on a subject he or she has chosen that is not covered in other politics graduate courses or plans a graduate independent study that includes an undergraduate course. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

299. Thesis Research, F,W,S
Enrollment restricted to graduate students and permission of instructor. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Other Graduate Courses of Interest

Environmental Studies 210, Political Ecological Thought and Environment

Environmental Studies 240, Public Policy and Conservation

History 221A, Patterns of World History 1500–1750
History 221B, Patterns of World History 1750–Present

History of Consciousness 222A–B, Theories of Late Capitalism, Nationalism, and the Politics of Identity

History of Consciousness 234A–B, Social Movements in the Twentieth Century U.S.

Philosophy 223, Recent European Philosophy
Philosophy 252, Poststructuralism

Sociology 202, Contemporary Sociological Theory
Sociology 203, Sociological Methods
Sociology 205, Field Research Methods

Sociology 220, Global Transformation: Macro- and Global Perspectives
Sociology 223, Sociology of the Environment
Sociology 224, Globalization: Theories and Social Movements

Sociology 250, Course Design and Grant Writing Seminar

Porter College

College Office
(831) 459-2273
http://www2.ucsc.edu/porter

For college description and list of faculty, see page 83.

Lower-Division Courses

12. The ArtsBridge Experience (2 credits).*
Weekly meetings on pedagogy in the arts, lesson planning for arts teaching in schools, and submission of teaching portfolio core of this class. Prerequisite(s): permission of instructor; student must be an ArtsBridge scholar. May be repeated for credit. M. Foley

14. Jazz Vocal Ensemble (2 credits).*
Study of vocal techniques in the context of ensemble rehearsals, often culminating in public performance. Familiarity with musical notation recommended. Admission by audition. May be repeated for credit. (General Education Code(s): A.) The Staff

An exploration of Chicana/Latina identity within the context of developmental theories and heterogenous cultural influences on identity formation, including the acculturation process. Students explore their own identities within the previously stated context. Enrollment limited to 20. The Staff

20. Dance/Theater Practicum (2 credits). W
The practice of dance/theater in a particular world area (i.e., Philippines, Mexico, U.S.). Students learn the dance or theater art of one world area and study the associated cultural background.

20A. Filipino Dance Practicum (2 credits). W
Students are introduced to the different folk dances of the Philippines. Folk dances of the tribal mountain region, of the Spanish Era in the Philippines (Maria Clara Era), and dances of the regional and rural countryside are emphasized. Enrollment limited to 15. May be repeated for credit. (General Education Code(s): A.) W. M. unanntag

20C. Korean Dance Practicum (2 credits). *
Students are introduced to the different dances of Korea related to folk tradition. Movement concepts of music and the relation to culture are explored through demonstration, practice, and performance. Enrollment limited to 15. Offered in alternate academic years. (General Education Code(s): A.) The Staff

20D. Dance Improvisation (2 credits).
Dance practitioners emphasizing spontaneous movement in response to diverse media including visual art and music. Special emphasis given to the conceptual approaches taken by American artists such as Merce Cunningham, John Cage, and Robert Rauschenberg. Enrollment limited to 25. (General Education Code(s): A.) The Staff


21A. Korean Music and Culture (2 credits).*
Introduction to the farmers band tradition. Theory and practice of drumming are emphasized, resulting in a group performance. Enrollment limited to 20. Offered in alternate academic years. (General Education Code(s): A.) The Staff

21C. Gospel Choir (2 credits). W,S
Instruction in vocal performance in the tradition of gospel choirs. Music is transmitted aurally rather than by notation. The ensemble prepares a range of traditional and contemporary gospel music for performance. Ensemble performs publicly at least once each quarter. Admission by permission of director. Enrollment limited to 50. May be repeated for credit. (General Education Code(s): A.) V. Fiddmont

22. Art Practicum (2 credits).
The practice of art in a particular world area (i.e., Japan, Pacific Islands, U.S.). Explores the art and craft of one world area and studies the associated cultural background. Enrollment limited to 15. (General Education Code(s): A.)

22A. Day of the Dead (2 credits). F
Day of the Dead: Creating an Exhibition—an exploration of art created to celebrate death in Mexico, Mexico, and American culture. Culinates in the creation of a Day of the Dead ceremony and community altar including students’ individual art pieces. Enrollment limited to 25. (General Education Code(s): A.) R. Adovaca

22F. Vietnamese Festivals (2 credits).*
Vietnamese festivals and the arts they generate, from carving to water puppetry will be explored for cultural, aesthetic, and iconographic principles, through viewing, discussion and a creative project. Enrollment limited to 20. (General Education Code(s): A.) T. The Staff

22G. Literary Magazine Publishing (3 credits), W
Learn about and practice basics in publishing a national literary magazine with a focus on poetry and the arts. Three-part focus: soliciting/editing, design/publicizing, and publicizing/distributing. Students decide which poems published and awarded prizes in the “Viz 25 and Under Awards” section. Audition for admission at first class with demonstrated experience in related field: creative writing, desk top publishing, art, graphic design, business, etc. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) J. R. Hamilton

23. Film/Theater Practicum.
The practice of film/theater from the perspective of a particular culture, genre, or technical approach.

23A. Film Practicum: Talking in Pictures (2 credits).*
Introductory survey of the language of film and television. Considers the role these media play in shaping of cultural identity. Creative projects in the conceptual preparation for the making of films and videos. Enrollment limited to 25. (General Education Code(s): A.) The Staff

23B. Personal Narratives in Theater and Film (2 credits).*
Focuses on filmmakers and monologue performers (e.g., Spalding Gray, Brenda Wong Aoki, Russ Mcelwee) as they come to terms with their identity autobiographical works. Students write critical responses to texts and create their own brief personal narratives. Enrollment limited to 30. (General Education Code(s): A.) R. Giger

23C. Documentary/Mockumentary Films (2 credits).
The mockumentary grows out of the documentary tradition, but instead of pretending to truthfully capture reality, it blatantly distorts, revealing the subjectivity inherent in cinematic representation. Includes ethnographic music, political and Hollywood mockumentaries, and critical readings on documentary film. Enrollment limited to 25. (General Education Code(s): A.) The Staff

25. Introduction to the Theory and Practice of Musical Criticism (2 credits). W
Introduces students to the theory and practice of musical criticism through the attendance at performances, analysis of composition, and staging and writing of critiques. Enrollment limited to 17. C. Hushu

28. Sound Art (2 credits).*
Several composers and performers of contemporary “art music” discuss the processes by which works are conceived in imagination, transcribed in notation, and realized in sound. After a brief introduction to contemporary music aesthetics, students attend a series of related presentations, seminars, and concerts. Enrollment limited to 18. (General Education Code(s): A.) The Staff

32A. Queering the Arts (2 credits). S
Exploration of the arts as a way to understand and experience how queerness has been expressed, repressed, den-
igated, and celebrated in visual arts, music, film, poetry, and dance. Enrollment limited to 30. (General Education Codes: A.) K. Evans

33. Seminar in Arts (2 credits). *
Theoretical and historical aspects of the arts from one culture or world area are explored through seminar discussion, library research, and film/video presentations. Enrollment limited to 20. (General Education Code(s): A.) The Staff

33A. African Global Art and Music (2 credits). *
The theme of "Changing the Global Community Through the Arts" explored in African global art and music. Through readings, listening sessions, and interactions with academics and performers. Culmination will be the African Global Festival and Symposium April 18-20. Enrollment limited to 25. (General Education Code(s): A.) E. Cameron

34B. Fractals, Chaos Theory, and the Arts (2 credits).
A consideration of chaos theory and fractal geometry as applied by twentieth-century artists in all media. All necessary math and computer skills are covered. Students complete essay or art projects. Enrollment limited to 25. (General Education Code(s): A.) R. Abraham

35. Experiencing Live Theater (2 credits). W
Attendance of live regional theater events include artists' talks, class lectures, and readings. Students participate in informal theater workshops and write short critical essays. Enrollment limited to 30. (General Education Code(s): A.) The Staff

35A. Viewing Art in the Bay Area (2 credits). *
Field trips to museums and commercial galleries. Some reading and brief written reports are required; each field trip subject to discussion in class the week following. Enrollment limited to 25. May be repeated for credit. (General Education Code(s): A.) The Staff

Writers, directors, technical workers, visual artists, and professionals in a diverse range of media discuss current work, paths that led to their creative endeavors, and constraints to working in the industry. The Staff

38B. Working in TV and Film (2 credits). W
Writers, directors, and technical workers in areas of TV and film discuss current work, paths that lead to their creative endeavors, and constraints of working in the industry. Students research aspects of film and TV professional work. (General Education Code(s): A.) L. Stack

39. Jewish Personal Narratives on Film (2 credits). W
Examines documentaries made by Jewish filmmakers who integrate themselves as characters into their films. Students investigate this unique documentary form, while studying the cultural themes that surface in each narrative. Enrollment limited to 30. (General Education Code(s): A.) R. Giges

80. Arts in a Multicultural Society (Porter Core Course). F
Investigates how cultural heritage impacts individual creativity of writers and artists in the multicultural society of California and the Pacific Rim region. Students meet with faculty member in small group tutorials and in section meetings, attend regular lectures/performances, and work with writing tutors. Emphasizes critical reading of contemporary literature, writing, and close intellectual contact with faculty and other students. Readings may vary from section to section. (General Education Code(s): T4-Humanities and Arts, E.) The Staff

80B. Ways of Knowing. W
Creativity in different disciplines is developed via different ways of knowing. Musical, visual, scientific, and spatial literary demand understanding which is not primarily logicocentric. Explores how practitioners of arts and science develop their work and conceptualize its execution. (General Education Code(s): T6-Natural Sciences or Humanities and Arts.) Todd

80E. Arts Education in the Community. W
Organized in small teams, participants engage with students from public elementary classrooms to develop fully-staged group performance projects by end of term. Students are guided by instructor's models of teaching techniques, designed to stimulate the imagination, and by diverse readings. Enrollment limited to 30. (General Education Code(s): T4-Humanities and Arts.) J. Todd

80G. Making Poetry: Readings/Writing (2 credits). *
Guest poets read work and discuss their approaches to writing. Students develop their own poems and the class culminates in a poetry reading of student work. Enrollment limited to 25. (General Education Code(s): A.) The Staff

80H. Arts in a Multicultural Society (Honors Section). F
Investigates how cultural heritage impacts individual creativity of writers and artists in the multicultural society of California and the Pacific Rim region. Students meet with faculty member in small group tutorials and in section meetings, attend regular lectures/performances, and work with writing tutors. Emphasizes critical reading of contemporary literature, writing, and close intellectual contact with faculty and other students. Prerequisite(s): permission of instructor; first-year Porter College students selected for this honors section of first-quarter seminar on basis of application submitted prior to fall quarter; satisfaction of Subject A requirement. Enrollment limited to 25. May be repeated for credit. (General Education Code(s): A.) The Staff

99. Tutorial (5 credits).
Various topics to be arranged. Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits).
Various topics to be arranged. Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

120. Advanced Dance/Theater Practicum (2 credits). *
The practice of dance/theater in a particular world area or culture. Students learn the art of one world area or era and the associated cultural background. Prerequisite(s): audition; prior training in the discipline is required. Enrollment limited to 15. May be repeated for credit. (General Education Code(s): A.)

121C. Opera Workshop/Music Practicum (2 credits). W
Rehearsal of the principal vocal parts of an opera in preparation for a full production. Consideration of the dramatic aspects of each role and the interrelationships of the characters. Enrollment limited to 25. May be repeated for credit. (General Education Code(s): A.) The Staff

121D. Sundanese Gamelan and Dance Theater (2 credits). F
Practical study of the musical traditions of the Sundanese people of Indonesia with attention to technique and cultural features leading to the performance of a dance theater performance. Enrollment limited to 15. May be repeated for credit. (General Education Code(s): A.) U. Sumanara

126. South Asian Seminar (2 credits).
South Asian issues in arts, technology, culture, and history will be presented in weekly seminar. Students will attend lectures, read supplementary articles, and write a short paper on a South Asian topic. Enrollment limited to 15. M. Foley

141. New Works Research Laboratory. *
Artists from different disciplines (i.e., art and music, design and creative writing, performance art and dance, etc.) collaborate with students to research and create new pieces. Students are involved in phases of the development from the conception to presentation of the work. Enrollment limited to 20. May be repeated for credit. T. The Staff

180. Arts in a Multicultural Society: Pedagogical Practicum. F
Upper-division students participate in Porter Core Course, joining in seminars and leading smaller group sections exploring issues of creativity, multiculturalism, and heritages. Participate in weekly seminars dealing with pedagogical practice preparing students to raise issues related to texts, critical thinking, writing, and the artistic process. Enrollment limited to 16. T. The Staff

194. Group Tutorial.
A program of independent study arranged between a group of students and a faculty instructor. The Staff

199F. Tutorial (2 credits).
Individual projects carried out under the supervision of a Porter faculty member. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

---

**Portuguese**

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Lecturer
Ana Maria C. Seara
Portuguese language and Luso-Brazilian studies. Literatures of the Portuguese-speaking world, applied linguistics and second-language acquisition
Programs

Students interested in acquiring proficiency in Portuguese may choose to enroll in either of two accelerated introductory tracks: courses 1A-B are designed as a two-semester sequence for students with no previous experience with the Romance languages; courses 60A-B are a two-semester sequence designed for students with a strong background in the Romance languages or some previous knowledge of Portuguese. Both sequences are aimed at enabling students to gain proficiency in listening comprehension, speaking, reading, and writing skills. Instruction takes place in Portuguese from the beginning and draws heavily on Brazilian culture through popular music and cinema.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 275, under Language Program.

Study Abroad

Students may apply to spend time in Rio de Janeiro, Brazil, through the UC Education Abroad Program (EAP). Courses taken abroad can, with approval of an adviser, be applied to major requirements. For more information on the program, see UC Education Abroad Program (page 40). For information on credit applied to a major, contact the appropriate department.

Lower-Division Courses

1A. Intensive Elementary Portuguese. F
Intensive instruction in elementary Portuguese, emphasizing oral proficiency as well as reading and writing skills. Taken together, courses 1A and 1B are equivalent to first-year instruction. Enrollment limited to 24. The Staff

1B. Intensive Elementary Portuguese. W
Intensive instruction in elementary Portuguese, emphasizing oral proficiency as well as reading and writing skills. Taken together, courses 1A and 1B are equivalent to first-year instruction. Prerequisite(s): course 1A. Enrollment limited to 24. The Staff

60A. Advanced Beginning and Intermediate Portuguese. F
This sequence is designed for students with an equivalent of four quarters of college level study of Portuguese, Spanish, French, Italian, or Catalan or for native speakers of the Romance languages (with the exception of native speakers of Portuguese). Prepares students in all language skills. Prerequisite(s): Spanish 4 or Spanish for Spanish Speakers 64 or French 4 or Italian 4 or placement by examination. The Staff

60B. Advanced Beginning and Intermediate Portuguese. W
This sequence is designed for students with an equivalent of four quarters of college level study of Portuguese, Spanish, French, Italian, or Catalan or for native speakers of these Romance languages (with the exception of native speakers of Portuguese). Prepares students in all language skills. Prerequisite(s): course 60A or placement by examination. (General Education Code(s): IH.) The Staff

65A. Intermediate Portuguese. S
A systematic grammar review is combined with literary and cultural readings, while communicative exercises focus on improving students' ability to understand and hold sustained conversations. Students expand their vocabulary and knowledge of Brazil and other Portuguese-speaking cultures through films and group projects. Fulfills EAP language requirement. Prerequisite(s): course 1B or 60B, or by instructor approval. (General Education Code(s): IH.) The Staff

65B. Intermediate Portuguese. F
A systematic grammar review is combined with literary and cultural readings, while communicative exercises focus on improving students' ability to understand and hold sustained conversations. Students expand their vocabulary and knowledge of Brazil and other Portuguese-speaking cultures through films and group projects. Fulfills EAP language requirement. Prerequisite(s): course 65A or by instructor approval. (General Education Code(s): IH.) The Staff

Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

199. Tutorial. F,W,S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
Students submit petition to sponsoring agency. The Staff

Psychology

273 Social Sciences 2 Building
(831) 459-2002
http://psych.ucsc.edu

Faculty and Professional Interests

Professor

MARGARITA AZMITIA
The sociocultural context of children's and adolescents cognitive and social development; special emphasis on the peer, family and school context of development of ethnically and socioeconomically diverse populations

BRUCE BREGMAN
Phenomenological mechanisms of visual perception and cognition, computer simulation of cognitive processes, space perception, eye movements

MAUREEN A. CALLANAN
Cognitive and language development in the social context of family activities, development of word meanings and concepts, the construction of causal explanations in parent-child conversations

MARTIN M. CHHIMERS
Leadership, team and organizational effectiveness; cultural and personality characteristics of leaders, college student adjustment and performance

CATHERINE R. COOPER
Cultural perspectives on child and adolescent development; linkages among families, peers, schools, and work; issues of diversity, ethnicity, and gender in identity, research, practice, and policy in university outreach programs; linking qualitative and quantitative research

FAYE J. CROSBY
Gender, social identity and social justice, especially affirmative action

RAYMOND W. GIBBS JR.
Language, thought, and embodiment; special emphasis on metaphor, pragmatics, and cognitive science

PER F. GJERDE
Cultural psychology with emphasis on East and Southeast Asia, familial influences on socialization, personality development and assessment, depression in adolescents and young adults, longitudinal research, developmental psychopathology, adult attachment

CRAIG W. HANEY
Applications of social psychological principles to legal settings, assessment of the psychological effects of living and working in institutional environments, social contextual origins of violence, development of alternative legal and institutional forms

AIDA HURTADO
Social identity, feminist theory, social psychology of education, survey methodology

CAMPBELL LEAPER
Social construction and socialization of gender in childhood, adolescence, and adulthood; self-concept and social identity; language and social interaction; social relationships; gender bias in the media

DOMINIC W. MASSARO
Understanding language, speech perception and reading, language learning and speech technology, pattern recognition, psychology of interactive media, psychology of art and new media, human-machine interface

ANTHONY R. PRATKANIS
Social influence; attitude structure, function, and change

BARBARA ROGOFF
Human development in sociocultural activity; informal and formal arrangements for learning, adult/child and peer communication in families and schools in diverse cultural communities, learning through observation; cognitive development, especially problem solving, planning, and attention

AVRIL THORNE
Identity development through personal memory telling, development of meaning in adolescent self-defining memory narratives, family storytelling and the development of a sense of self, narrative co-construction of identity and intimacy

STEPHEN C. WRIGHT
Intergroup relations, social identity, discrimination, and disadvantaged group behavior; cross-group friendship and prejudice reduction; minority language and heritage culture maintenance

Associate Professor

NAM EERA AKHTAR
Cognitive and social cognitive processes in early language development, infant's social understanding

HEATHER BULLOCK
Poverty and economic inequality, welfare policy, feminist psychology, discrimination

JEAN FOX TREE
Psycholinguistics; production and comprehension of spontaneous speech, disfluencies and discourse markers in speech, listener's interpretations of speech

DAVID M. HARRINGTON
The ecology of creativity, longitudinal studies of creativity active adolescents, personality development, personality and situational assessment, research methods and data analysis

ALAN H. KAWAMOTO
Empirical and computer simulation approaches to the study of perceptual and cognitive processes, psycholinguistics, problem solving
COLIN W. LEACH
Social comparison in self-evaluation, emotion, and well-being: the content, structure and function of political attitudes, especially racism, sexism, prejudice, group identity and the political psychology of intergroup relations

MARA MATHER
Memory and decision making, impact of emotional processing on memory, cognitive neuroscience, and aging and memory

Assistant Professor
CATHERINE C. BYRNE
Peace psychology, social psychology of reconciliation, perpetrator accounts, social and political apologies

TRAVIS L. SEYMOUR
Role of immediate memory, consciousness, and executive control on the human performance of laboratory and applied tasks: cognitive processes amenable to strategic control and how they influence the way in which we maintain situational awareness, high levels of performance in complex and cognitive tasks

JACK L. VEVEA
Applied statistics, item response theory, mathematical models for bias in memory, statistical methods for meta-analysis

SU-HUA WANG
Knowledge acquisition in infancy and how experience and context may influence the process; cross-cultural perspectives on moral development, moral development, psychology and law

Cognitive processes amenable to strategic control and cognitive tasks

T. L. V. WU
Applied statistics, item response theory, mathematical models for bias in memory, statistical methods for meta-analysis

SHIHUA WANG
Knowledge acquisition in infancy and how experience and context may influence the process; cross-cultural perspectives on moral development, moral development, psychology and law

Margaret W. Wilson
Visual cognition, working memory, comparisons between auditory and visual representations, sign language

EILEEN L. ZURBRIGGEN
Connections between power and sex, sexual aggression and abuse, sexual decision-making. Motivation, especially power and affiliation-intimacy motives. Information processing models of social and personality psychology

Lecturer
DAVID A. “TONY” HOFFMAN
Child and adolescent development, developmental psychopathology, child and adolescent assessment, school psychology, pediatric psychology

RALPH H. QUINN
Clinical psychology, moral development, psychology and religion, existential-humanistic psychology

DONALD T. SPORZEG
Childhood psychopathology, parenting and family interactions, socialization of children, family mediation, conflict resolution

VERONICA K. TONAY
Clinical psychology, psychotherapy outcome, community mental health, dreams, personal narratives

Emeriti
ELLiot ARONSON, Emeritus
G. WILLIAM DOMNOFF, Emeritus
MICHAEL KAHN, Emeritus
BERT KAPLAN, Emeritus
MAX M. LEVIN, Emeritus
PAVEL MACHOTKA, Emeritus
MELANIE J. MAYER, Emerita
BARRY MCLAUGHLIN, Emeritus
THOMAS F. PETTIGREW, Emeritus
THEODORE R. SARBIN, Emeritus

M. BREWSTER SMITH, Emeritus

Professor
DAVE ARCHER, Sociology
Violence, war and peace, verbal and nonverbal communication, applied research and public policy, cross-national and cross-cultural research, social psychology, crime and law

JEROME NEU, Humanities
Philosophy of mind, ethics, philosophy of law, psychoanalytic theory

ROLAND G. THARP, Emeritus, Education

General Program Description
Psychology majors at UC Santa Cruz are introduced to theory and scientific research in the field. Students begin with lower-division courses that include introductory psychology, precalculus, statistics, research methods, and introduction to developmental psychology. Majors subsequently take eight upper-division courses in four major areas of psychology: cognitive, social, developmental, and personality psychology.

Cognitive psychology focuses on topics such as sensation and perception; brain and behavior; human information processing; decision-making, learning and memory; thinking, feelings, and emotions; and psycholinguistics. Social psychology addresses topics such as persuasion and influence, motivation, group processes, intergroup relations, psychology and law, and social justice.

Developmental psychology is concerned with processes of cognitive, language, social, emotional, and personality development across the life span. Additionally, both developmental and social psychology are concerned with issues of diversity including ethnicity, culture, gender, income, and family structure. Personality psychology focuses on person-centered processes including creativity, attachment, depression, and life stories.

In addition to the general psychology major, an intensive major and a minor (described below) are also available. (Students primarily interested in clinical and counseling psychology should realize that training in these areas does not occur at the undergraduate level but requires professional training through an advanced degree. UCSC does not offer advanced degrees in clinical psychology or counseling.)

Students are encouraged to carry out research projects. Interested psychology majors will find research opportunities in courses, as research assistants in faculty members' research programs, or through faculty-sponsored independent study. This research may be carried out in specialized research laboratories or in the field. Students usually join an ongoing project in which a faculty member is engaged. Students who are especially interested in a career involving empirical research should become involved in a professor's ongoing research by their junior year. Some recent research topics include "Making Decisions: 'How Do You Organize Your World?'" "I'm Every Woman: A Look at Female Perspectives," "Family Story Telling," and "Friendship and the College Transition."

Preparation for the Major
Students interested in pursuing the psychology major should declare the prepsychology major until they have completed the lower-division required courses listed below. After completing the lower-division required courses, students may then declare their major by notifying the department undergraduate adviser.

High school students considering psychology as their university major find that the best preparation is a solid general education in English, mathematics through precalculus, natural sciences, social sciences, and writing.

Transfer Students
Junior transfer students should express an interest in psychology on their UCSC application for admission. It is expected that prospective transfer students will have completed most, if not all, of the lower-division requirements. The psychology faculty recommends that all lower-division requirements be completed by the end of the sophomore year.

Several measures are taken to control over enrollment in the psychology major. At the time of transfer, students must have a 3.0 or higher grade-point average in all UC-transferable course work, with at least a 3.1 in all psychology courses. Junior-level students with 120+ quarter credits will not be admitted into the pre-major. This occasionally affects transfer students who have many credits on their records. It can also affect students who want to change their major in mid-junior year. Senior-level students with 135+ quarter credits will not be admitted into the major. This affects seniors who want to add a minor or double major in psychology (it does not affect those who have already declared a pre-psychology major). Students who want to fulfill requirements with courses taken at other colleges must petition for the substitution of their transfer courses at an orientation session or at an appointment with the department adviser. Students planning to transfer to UC Santa Cruz should check with the advising office of their present college, as many institutions keep a list of courses that are accepted as equivalent to those at UCSC.

Transfer students are strongly encouraged to speak with an academic adviser at the Psychology Department Office prior to enrolling in classes in order to determine their status and begin the actual declaration of major process.

General Psychology Major
Thirteen courses are required for the general major: five lower-division courses in preparation for the major and eight upper-division psychology courses. The lower-division courses are prerequisites for virtually all of the upper-division courses and should be completed as early as possible, or by the end of the sophomore year. Some upper-division courses have additional prerequisites. Once the lower-division courses have been completed, a student may petition to declare the psychology major.

Lower-Division Requirements
Psychology
1. Introduction to Psychology
2. Introduction to Psychological Statistics
3. Research Methods in Psychology
10. Introduction to Developmental Psychology
Mathematics 3, Pre-calculus (or equivalent)
Courses 20, 40, and 60 are strongly recommended.

Upper-Division Requirements
Students must complete at least eight upper-division courses (a minimum of 40 credits) in psychology. These courses must include two courses from each of the following four subfields:

Developmental (courses numbered 100-119)
Cognitive (courses numbered 120-139)
The Psychology Department recommends that students take substantive courses in related disciplines such as anthropology, biology, community studies, computer science, education, linguistics, philosophy, and sociology.

Program Planning Notes
Because some upper-division courses have additional prerequisites, students should read the descriptions of the upper-division courses carefully, noting the prerequisites for courses of interest to them.

Psychology Major Planners
The following are two recommended academic plans for students to complete during their first two years as preparation for the psychology major. Plan One is a suggested guideline for students who are committed to the major early in their academic career. Plan Two is for students who are considering the major or who need more preparation. Students should note that Math 3 is a requirement for the major and a prerequisite for course 2. Courses 20, 40, 60, and Biology 70 are recommended electives and are prerequisites for some upper-division psychology courses.

Requirements for the Intensive Major

Low-Division Requirements
Psychology
1. Introduction to Psychology
2. Introduction to Psychological Statistics
3. Research Methods in Psychology
4. Research Methods in Psychology (alternatives)

Mathematics
5. Mathematics 3
6. Mathematics 4
7. Mathematics 5
8. Mathematics 6

Electives and Prerequisites
Upper-Division Requirements

• Thirteen upper-division courses are required for the intensive major. These courses must include two courses from each of the following four subfields, one of which must be a seminar:

  Developmental (courses numbered 100-119)
  Cognitive (courses numbered 120-139)
  Social (courses numbered 140-159)
  Personality (courses numbered 160-179)

• Course 181 Psychological Data Analysis, or an equivalent course approved by the department

• Two quarters of course 194, Advanced Research, or 195, Senior Thesis

• Two upper-division courses from one or more related areas outside of psychology (these courses may not include psychology courses cross-listed with other programs or taught by psychology faculty)

Minor in Psychology
To obtain a minor in psychology, a student must complete the following courses:

• Psychology 1, 2, 3, and 10
• Mathematics 3 (or equivalent)
• Four upper-division courses in psychology. These courses must be from at least two of the four subfields: developmental, cognitive, social, and personality.

No more than one course numbered 191-199 may be used toward the upper-division requirements. At least three of the upper-division psychology courses (100-199 range) must be taken through the psychology program at UCSC, not transferred from elsewhere. This requirement occasionally affects the plans of transfer students. Students should note that Math 3 is a prerequisite for course 2.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 3</td>
<td>Psy. 2</td>
<td>Psy. 3</td>
</tr>
<tr>
<td></td>
<td>(frsh)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Psy. 10</td>
<td>(Psy. 40</td>
<td>(Psy. 60</td>
</tr>
<tr>
<td>(soph)</td>
<td>(Biol 70 recommended)</td>
<td></td>
<td>recommended)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Begin-upper-division course work)</td>
<td></td>
</tr>
</tbody>
</table>

Plan Two

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 3</td>
<td>Psy. 1</td>
<td>Psy. 10</td>
</tr>
<tr>
<td></td>
<td>(frsh)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Psy. 60</td>
<td>Psy. 2</td>
<td>Psy. 3</td>
</tr>
<tr>
<td>(soph)</td>
<td>(Biol 70 recommended)</td>
<td></td>
<td>(Psy. 40)</td>
</tr>
</tbody>
</table>

The Intensive Psychology Major
The intensive major is an option that any psychology major may choose to undertake. The intensive major would be advantageous for a student intending to go on to a graduate program in any area of psychology. Students intending to take the intensive major should declare this on their proposed study plan during the junior year, outlining their plan for completing the requirements. The intensive major requires 18 courses.

Academic Advising
Students are encouraged to approach faculty in their area of interest for further advising no later than the first quarter of their junior year to discuss an upper-division program of study and to plan for graduate training in psychology. As a supplement to academic advising offered by faculty members, the Psychology Department has an advising office located at 273 Social Sciences 2 Building, (831) 459-2002. The adviser assists students in obtaining information regarding major requirements and applications, course planning, substitution of upper-division courses for future enrollment, careers, and graduate school. Students can also get advice about examinations (the comprehensive examination and the Graduate Record Examination) and assistance in initiating a senior thesis and independent study. Students are encouraged to take advantage of the advising office throughout their college career.

Disqualification from the Major/Minor
Students who receive a No Pass, D, and/or F twice in any one of courses Psychology 1, 2, 3, 10, or Math 3 (or equivalent), or who receive a No Pass, D, and/or F in three or more of these courses combined, will be considered not to be making normal progress in the major or minor and will be subject to disqualification from the major or minor. Students who feel that they were unfairly circumventing circumstances surrounding their failure of a course for the second time or their failure in three courses may appeal their disqualification from the major or minor and/or later petition the department for reinstatement. For further information regarding the disqualification process, contact the Psychology Department Office.

Psychology Handbook
All undergraduate majors should obtain a copy of the undergraduate handbook from the department office, web site http://psych.ucsc.edu. It outlines such information as Psychology Department procedures and requirements, the field-study program, opportunities for independent study, and campus resources for psychology majors.

Senior Thesis
Students with adequate substantive and methodological preparation and a consistent record of strong academic performance may be eligible to apply to write a senior thesis. Students must make formal application to a faculty advisor during the last quarter of the junior year before enrolling in course 195, Senior Thesis. Most faculty prefer to sponsor seniors that are integrated with faculty research, so students are encouraged to talk with faculty before choosing a senior thesis topic. Information and applications are available in the department office, 273 Social Sciences 2.

Honors
Honors in the psychology major are awarded to graduating seniors whose academic performance is judged to be consistently excellent by a committee of psychology faculty. Highest Honors in the major are reserved for students with exceptionally excellent academic performance and an honors-level senior thesis.

Psychology Field-Study Program
The Psychology Field-Study Program provides qualified students an opportunity to apply classroom learning to direct experience in a community agency. Each year
about 200 students develop new skills and clarify personal and professional goals by working as interns in schools, corporations, law enforcement agencies, research organizations, mental health services, and other social service agencies where they are supervised by professionals. Psychology faculty members sponsor the students' field study helping them to integrate their field experience with course work and guiding them in related academic projects.

The two-quarter program is open to junior and senior psychology majors who must apply at least one quarter in advance. There are preparation seminars and individual meetings to help students develop a learning plan, select a placement, and choose an academic project. Application information can be obtained at the psychology field-study bulletin board, second floor of Social Sciences 2, and at: http://psych.ucsc.edu/fieldstudy.

Graduate Program

The psychology program offers three areas of specialization leading to the doctoral degree: cognitive, developmental, and social psychology. The program does not offer courses, training, or supervision in clinical psychology. The program prepares students for research, teaching, and administrative positions in colleges and universities as well as for positions in schools, government, and other public and private institutions. Each student is primarily associated with one of the three research areas and participates in the courses and research forums sponsored by the faculty in that area. The program requires full-time enrollment as a graduate student. Although applicants for a master's degree are not accepted, students in the Ph.D. program may obtain an M.S. degree by fulfilling specific requirements.

Graduate work in cognitive psychology trains students in the methods of experimental psychology and contemporary knowledge in the broad areas of cognitive science and psychobiology, focusing on applications to interactions with the real world. The cognitive faculty have specific expertise in psycholinguistics, perception, memory, and cognitive psychology. Research interests of the faculty include human information processing, cognitive and social processes in learning and memory, language and discourse comprehension, reading, speech perception and production, computer simulation and mathematical modeling of cognitive processes, spatial vision, and visual psychophysics.

Graduate work in developmental psychology addresses processes of developmental change in individuals and relationships through the life span and in community and cultural contexts. The developmental faculty are especially interested in issues of diversity in development, including ethnicity, gender, personality, language, and diversity of family forms and in the interplay between human development and the social contexts of family, peers, school, work, community, and culture. Among the topics studied by faculty are the role of family communication, narrative, and cultural processes in the development of self, identity, and relational competence in childhood and adolescence, cultural aspects of participants in group endeavors and learning through observations, creativity, and creative environments; the social construction and socialization of gender; language and cognitive development within the contexts of conversations with parents, siblings, and peers; and adult attachment and personality development using longitudinal methodologies and diversity issues in university outreach programs.

Graduate work in social psychology area focuses on the study of social justice. Students receive training in the basic theories, data, and methods of social psychology with the aim of applying their training to the analysis and solution of social problems. Students are encouraged to examine theoretical and empirical issues as they arise in different real world cultural, political, and policy contexts. In turn, it is expected that students' experiences in these real world contexts will be used to assess critical theories and methods. Students are trained to conduct real world research with laboratory, field, and survey methods. The research interests of the faculty include leadership and group processes, intergroup relations, gender issues, psychology and law, the study of social class, sexual aggression and abuse, and feminist psychology.

Students in all three research areas acquire teaching experience at teaching assistants for a minimum of two courses during their graduate career.

Graduate students in psychology may obtain a notation on the psychology Ph.D. diploma indicating that they have specialized in women's studies if they meet requirements spelled out by the individual committee composed of psychology and women's studies faculty.

Details of the policies for admission to graduate standing and of the requirements for the Ph.D. degree, as well as information about faculty research interests, are available from the Division of Graduate Studies. For more information, refer to the Graduate Studies section.

Lower-Division Courses

General

1. Introduction to Psychology, F,W,S

Introduces prospective majors to the scientific study of behavior and mental processes and also provides an overview for non-majors. Emphasizes social, cognitive, developmental, and personality psychology and their interrelations. (General Education Code(s): IS.) (F) F. Crosby, (W) B. Bridgeman, (S) C. Cooper

2. Introduction to Psychological Statistics, F,W,S

An introduction to elementary statistical principles and techniques relevant to psychological research. Topics covered include basic parametric and nonparametric statistics, analysis of variance, and simple factorial designs. This course is prerequisite to course 181. Prerequisite(s): course 1, and Engineering 3 or Mathematics 2B or 3 or 11A or sufficiently high score on math placement exam or CEEB Advanced Placement Calculus AB exam. (General Education Code(s): Q J F) T. The Staff, (W) A. Kawamoto, (S) J. Veeva

3. Research Methods in Psychology (7 credits), F,S

An introduction to research methods used to investigate human psychology. Course emphasizes critical thinking, designing and conducting research, analyzing and interpreting data, and writing a professional research report. Prerequisite(s): course 2. Enrollment restricted to prepsychology majors; minors by permission of instructor. (F) F. Crosby, (S) D. Masar

10. Introduction to Developmental Psychology, F,W,S

Psychological development from birth to adolescence, with primary emphasis on infancy and childhood. A broad introduction to the nature of change during childhood and adolescence and to theories of development. Prerequisite(s): course 1. (F) M. Azmitia, (W) S. Wang, (S) N. Akhtar

20. Introduction to Cognitive Psychology, F,S

Introduces basic concepts in cognitive psychology. Topics include thinking, consciousness, perceiving, language, reasoning, problem solving, and decision-making. Prerequisite(s): course 1. (F) M. Wilson, (S) A. Kawamoto

40. Introduction to Social Psychology, F,S

An analysis of contemporary research in social psychology and of what that research can teach us about the world we live in. Problems of conformity, propaganda, prejudice, attraction and aggression. Focuses on a person's relationship with other people--how he or she influences them and is influenced by them. Prerequisite(s): course 1. (F) A. Pratkanis, (S) A. Hurtado

41. Psychology of Women, F

Explores contemporary theories, findings, and social issues regarding the psychology of women. Emphasis is placed on understanding how gender role socialization influences women's beliefs and behaviors across the lifespan. Topics include achievement, intimate relationships, motherhood, mental health, violence against women, and empowerment. Students cannot receive credit for this course and course 140G. (General Education Code(s): IS.) V. Tonay

42. Student-Directed Seminar, F,W,S

Seminars taught by upper-division or graduate students under faculty supervision. (See course 192.) The Staff

60. Introduction to Personality Psychology, W,S

An overview of major personality theories from Freud to the modern day, and an introduction to contemporary personality research and assessment. Prerequisite(s): course 1. (W) A. Thorne, (S) D. Harrington

65. Introduction to Humanistic Psychology, S

Humanistic psychology is seen here as those contemporary aspects of the field which are explicitly directed toward life-enhancement for members of the culture. The course does not attempt a complete survey of these aspects, but rather explores some of them in depth and attempts to begin working toward an overall theory of the humanistic movement. (General Education Code(s): IS.) R. Quinn

80A. Psychology and Religion, F

Topics covered include myth and the unconscious, the varieties of religious experience, dualism, women and religion, the role of authority, transpersonal experience, conversion, disaffiliation, secularism and self. (General Education Code(s): T3-Social Sciences.) R. Quinn

80B. Human Sexuality, W

A study of human sexuality emphasizing its psychological aspects. Sexual development from childhood to adulthood, sexual orientations, biological influences, sexual attitudes and behavior, gender and gender roles, sex therapy, sexual coercion and abuse, sexually transmitted diseases, and the development of sexual relationships. (General Education Code(s): T3-Social Sciences.) V. Tonay

Upper-Division Courses

Developmental

100. Topics in Developmental Psychology, F

These topics, offered at different times by different instructors, examine selected topics in developmental psychology.

100B. The World of Babies, F

Focuses on what infants know and how they learn about the physical and psychological aspects of the
100C. The Social Context of Children's Cognitive Development. *
Focuses on the contribution of cultural and social relationships (e.g., parent-child, peers, siblings) to cognitive development. Special emphasis on the mechanisms through which relationships influence cognition and the features of social interactions that promote and inhibit development. Satisfies seminar requirement. Prerequisite(s): satisfaction of the Subject A and Composition requirements; course 117 preferred. Enrollment restricted to senior psychology majors or permission of instructor. Enrollment limited to 30. (General Education Code(s): W.) B. Rogoff

100N. Special Topics in Narrative Development. S
Examines a special topic of current interest in developmental psychology centering on features of development that unfold during free-flowing discourse, e.g., interviews, conversations, and reminiscences. Topics may include the development of self-narratives, personal memories, family stories, attachment, identity, or achievement. Course satisfies seminar requirement. Enrollment restricted to senior psychology majors. Course 60 recommended. Enrollment limited to 30. A. Thorne

100Q. Issues of Diversity in Developmental Psychology. S
Examines current issues of diversity from the perspective of theory and current empirical research in developmental psychology and related fields. Emphasis on understanding children and families from increasingly diverse cultural, linguistic, and socioeconomic backgrounds, both rural and urban, by examining social, cultural, and psychological processes underlying their development. Prerequisite(s): courses 3 and 10. (General Education Code(s): E.) P. Gjerve

100R. Cultural Perspectives on Adolescent Development. W
Examines cultural influences on adolescence from the perspective of current interdisciplinary theory and research, focusing on identity changes from early adolescence to adulthood, linkages from family to community experiences, gender, immigration, biculturalism, and implications for social policy. Includes research practicum. Course satisfies seminar requirement. Enrollment restricted to senior psychology majors or permission of instructor. Enrollment limited to 30. C. Cooper

100k. Development of Thought and Language. *
Examines the dynamic interface between thought and language throughout development. Focuses on early expression and understanding of meaning in infants and young children and on analysis of everyday conversations and activities of children as a window on developing understandings of the world. Satisfies seminar requirement. Prerequisite(s): satisfaction of Subject A and Composition requirements; enrollment restricted to senior psychology majors. Enrollment limited to 30. (General Education Code(s): W.) M. Callanan

100l. Development as a Sociocultural Process. S
Examines theory and research in sociocultural approaches to how people (especially children) learn and develop through participating in activities of their communities with other people. Emphasizes the organization of social interactions and learning opportunities, especially in communities where schooling has not historically been prevalent. Course satisfies seminar requirement. Prerequisite(s): satisfaction of Subject A and Composition requirements; course 10. (General Education Code(s): W.) P. Gjerve

100M. The Staff

100P. The Staff

100N. The Staff

100R. The Staff

100Q. The Staff

100K. The Staff

100l. The Staff

113. Culture and Human Development (6 credits), W
Examines theory, research, and methods of studying the inherent cultural basis of human development and variations and similarities in human lives and activities in different communities worldwide. The approach draws on ideas and observations from psychology, anthropology, linguistics, sociology, and history. Students cannot receive credit for this course and course 80D. Course includes lab exercises using interview and observation methodologies and presentations of library research. Prerequisite(s): satisfaction of Subject A and Composition requirements and one of the following: course 1; Anthropology 1 or 2; Education 92A, 92B, or 92C; Latin American and Latino Studies 1; or Sociology 1. (General Education Code(s): W., E.) B. Rogoff

115. Current Topics in Personality and Developmental Psychology. *
Examines a special topic of current interest in personality and/or developmental psychology, such as attachment, self-images, self-narratives, motivation, longitudinal studies, systematic descriptions of contexts, and special topics in adolescence. Emphasizes conceptual and methodological issues. Course satisfies seminar requirement. Prerequisite(s): course 60. Enrollment restricted to senior psychology majors. Enrollment limited to 30. D. Harrington

117. Children's Thinking, F
Cognition in children from infancy through adolescence. Basic and current research on children's understanding of the social and physical world. Focuses on major theoretical perspectives, Piaget's constructivist approach, information processing approach, and sociocultural approach. Prerequisite(s): courses 3 and 10. The Staff

119. Lifespan Developmental Psychopathology, W
Examines theory and research on developmental psychopathology. Emphasizes the origin and longitudinal course of disordered behavior. Explores the processes underlying continuity and change in patterns of adaptation and age-related changes in manifestations of disorders. Prerequisite(s): courses 3, 10, and 170. P. Gjerve

Cognitive

120D. Deafness and Sign Language, W
Explores what we can learn about human cognition by studying the aypical case of sensory loss and language in a different sensory modality. Topics include brain organization, sensory compensation, working memory, visual cognition, and psycholinguisitics. Satisfies seminar requirement. Prerequisite(s): course 20 or an upper-division cognitive course strongly recommended. Enrollment restricted to seniors. Enrollment limited to 30. M. Wilson

120E. Consciousness, S
Provides a psychological study of human consciousness. Aim is to explore the following questions: What is consciousness? Where does consciousness come from? What functions does consciousness have in everyday cognition? How do we best scientifically study consciousness? These issues are examined from the perspective of contemporary research in cognitive science. Satisfies seminar requirement. Enrollment restricted to psychology, philosophy, anthropology, and linguistics majors. Enrollment limited to 30. R. Gibbs
120F. The Psychology of Lying and Deception. *
Discusses why and how people lie. Using scientific articles, movies, and our everyday lives as source material, explores the nature of lying: then focuses on various approaches to behavioral and mechanical "lie detection." Students cannot receive credit for this course and course 130B. Satisfies seminar requirement. Enrollment restricted to senior psychology majors. Enrollment limited to 30. T. Seymour

120K. Modeling Human Performance. W
Explores how information processing models distinguish between multiple theories of human memory and performance. Students analyze variety of cognitive tasks and phenomena to produce explicit information processing models. Satisfies seminar requirement. Enrollment restricted to senior psychology majors or relevant mathematical or computer science background with permission of instructor. An upper-division cognitive course is strongly recommended. Enrollment limited to 30. T. Seymour

121. Perception. S
Basic perceptual psychology, emphasizing the relationships between perception and cognition. Prerequisite(s): course 3 or Biology 70. The Staff

123. Behavioral Neuroscience. W
An examination of the physiological mechanisms of psychological processes, including sensory systems, motor systems, control systems, and memory and learning. Principles of nervous system organization are discussed at each level. Prerequisite(s): course 1 or Biology 70 and one course in statistics (course 2 or Engineering 5 or Engineering 7). The Staff

124. Psychology of Reading. F
Focuses on the cognitive processes that underlie reading in adults. Additional topics include different writing systems, learning to read, and reading deficits. Recommended for upper-division students. Prerequisite(s): course 3. A. Kawamoto

125. The Psychology of Language. S
A study of human communication as a function of psychological, linguistic, and social factors. Topics covered include language comprehension and production, language and reasoning, and language as a social activity. Prerequisite(s): satisfaction of the Subject A and Composition requirements; course 3 or 20 or Linguistics 52 or 53 or 55. (General Education Code(s): W I J. Fox Tree

127. Computer Mediated Communication. S
Provides an introduction to perception and cognition as it relates to how people communicate with each other using computers and the Internet. Considers both cognitive/perceptual aspects as well as social aspects of communication and how computers enhance/constrain that communication. Prerequisite(s): course 3 or 20 or consent of instructor. Enrollment limited to 40. A. Kawamoto

129. Human Learning and Memory. *
Examines basic theories, models, methods, and research findings in human memory. Both traditional and nontraditional topics are covered. Students cannot receive credit for this course and course 130A. Prerequisite(s): course 3. M. Mather

130. Visual and Spatial Cognition. F
Focuses on visual and spatial representation as elements of human cognition. Topics include imagery, visual attention, mental models, spatial language, the body schema, near-body space, and brain organization for representing space. Prerequisite(s): course 3; course 20 or any upper-division cognitive course is highly recommended. M. W. Iran

130A. Memory Distortion. F
Most of the time, our memories serve us quite well. However, many of the strategies and mechanisms which help us remember accurately most of the time can also lead to errors. Examines various types of memory distortion and explores what memory errors can tell us about the mechanisms of memory. Satisfies seminar requirement. Students cannot receive credit for this course and course 129. Prerequisite(s): course 20 or any upper-division cognitive course strongly recommended. Enrollment restricted to senior psychology majors. Enrollment limited to 30. M. Mather

130B. Deception, Brain, and Behavior. F
Focuses on behavioral and brain manifestations of deception. Topics include developmental changes that allow us to understand and to use deception, physical implications of lying expressed in the face, voice, posture, and brain activity. Also covers mechanical or behavioral techniques used in deceptive behavior, whether in the form of overt behavior or brain activity. Students cannot receive credit for this course and course 120F. Prerequisite(s): course 3; course 20 or any upper-division cognitive course strongly recommended. T. Seymour

133. Psychology and Evolutionary Theory. S
Human psychology is examined from the viewpoint of evolutionary theory, including perspectives from ethnology, anthropology, and neuropsychology. Upper-division students from diverse backgrounds are encouraged to enroll. Course satisfies seminar requirement. Enrollment restricted to junior and senior psychology, anthropology, biology, philosophy, sociology, and women's studies majors or permission of instructor. Enrollment limited to 30. B. Bridgeman

135. Feelings and Emotions. W
Focuses on contemporary research in the psychology of human emotions. Special attention given to work in cognitive science, including psychology, linguistics, philosophy, and anthropology, on how emotions are central to understanding human action and mental life. Enrollment restricted to psychology, linguistics, philosophy, and anthropological majors. R. Gibbs

136. Conversations. F
Explores how conversations work and how speakers accomplish their goals in an interaction. Topics include conversational structure, turn-taking, variation in language use, and the functions of discourse markers (words like "um," "uh," and "you know"). Course satisfies seminar requirement. Enrollment restricted to psychology and linguistics majors. Enrollment limited to 30. J. Fox Tree

137. Mind, Body, and World. F
Physicists primarily view the mind as being separate from the body, and the body as being separate from the external world. This course questions this widely held position and explores the way that minds arise from the individual's body and the interactions between minds and the world around them. Particular attention is paid to the role of human embodiment in language use and everyday cognition. Enrollment restricted to psychology, linguistics, philosophy, and anthropological majors. R. Gibbs

138. Psychology of Interactive Media. *
A laboratory course in which students work with state-of-the-art language technologies. The goal is to design, conduct, and analyze experiments in interactive media and human machine interface. Experimental and theoretical literature will be covered as a foundation for the experiments. Prerequisite(s): course 3 or permission of instructor. Enrollment limited to 20. D. Massaro

139. Decision Making and Problem Solving. W
Course goal is to support the development of reflective thought to provide students with a more complete set of skills (psychological literacy). Various problem-solving and decision-making scenarios will be presented and analyzed within the context of cognitive psychology. Prerequisite(s): course 3 or permission of instructor. The Staff

Social

140. Topics in Social Psychology.
140C. Health Psychology. F
Course examines the psychological aspects of health, illness and healing. Focuses primarily on etiology, treatment and prevention; specific topics include stress and the immune response, social support, compliance with health beliefs, and the healing relationship. Prerequisite(s): courses 3 and 40. The Staff

140D. Psychology of the Oppressed. *
Are there psychological consequences to subordination? What constitutes resistance? Course examines the psychological position of the oppressed, with special attention to Fanos' "psycho-ecological" perspective developed in relation to decolonization movements. H. Helg, S. Keene, G. Butcher, and personality and social psychology. Satisfies seminar requirement. Prerequisite(s): course 40. Enrollment restricted to senior psychology majors. Enrollment limited to 30. C. Leach

140J. Human Motivation. *
An introduction to psychological theories of human motivation, including both those focused on the self and those highlighting the effects of social settings. Applications of these theories to domains such as politics or sports will be discussed. Prerequisite(s): courses 3 and 40. E. Zurbruggen

140M. Research Seminar in Crime and Media. F
Empirically examines several aspects of the criminal justice system (in particular, jury selection and decision-making processes) in the context of psychological theory and research projects. Satisfies seminar requirement. Prerequisite(s): courses 147A and 147B; or Legal Studies 147A and 147B; or concurrent enrollment in course 147B or Legal Studies 147B. Enrollment restricted to psychology and legal studies majors. Enrollment limited to 30. C. Hany

140N. Social Issues Research. *
Reviews contemporary social issues research. Emphasizes understanding how researchers study social problems and how theory and research can contribute to social change. Examines intersections of psychology and social policy. Satisfies seminar requirement. Enrollment restricted to senior psychology majors. Enrollment limited to 30. H. Bullock

140P. Psychology of Sexual Aggression. *
An overview of psychological theory and research related to sexual aggression, focusing on both perpetuation and victimization. Includes a discussion of the social construction of masculinity and femininity, media representations of sexual violence, and alternative (non-aggressive) visions of sexuality. Course satisfies seminar requirement. Enrollment restricted to
144. Consumer Psychology. F
An advanced course on the social psychology of consumption. Topics include history of consumerism, consumer needs, market segmentation, advertising effectiveness, pricing, distribution channels, product design, and ethical issues of consumerism. Course satisfies seminar requirement. Enrollment restricted to psychology and business management economics majors. Enrollment limited to 30. A. Pratkanis

145. Intergroup Relations. S
An overview of the social psychological study of intergroup relations, emphasizing underlying social and individual dynamics. Considers theory and research in the field and the application of these to a variety of societies and groups. Topics include the importance of groups in individual identity, stereotypes, prejudice, and discrimination; intergroup inequality and injustice; collective action and social protest. Prerequisite(s): course 3 and 40. (General Education Code(s): E.) C. Byrne

146. Social Influence. S
An advanced course for upper-division undergraduates interested in the study of the persuasion process. The course investigates common influence tactics and how those tactics are used in various settings. Prerequisite(s): course 3 or permission of instructor. E. Zurbriggen

147A. Psychology and Law. *
Current and future relationships between law and psychology, paying special attention to gaps between legal fiction and psychological realities in the legal system. Topics include an introduction to social science and law, the nature of legal and criminal responsibility, the relationship between the social and legal concepts of discrimination, and the nature of legal punishment. (Also offered as Legal Studies 147A. Students cannot receive credit for both courses.) Prerequisite(s): courses 3 and 40 are recommended prior to taking this course. Enrollment restricted to psychology, pre-psychology, legal studies/policies, legal studies/philosophy, legal studies/economics majors. C. Haney

147B. Psychology and Law. *
Continuing discussion of current and future relationships between law and psychology and to contrasting psychological realities with legal fictions. Special attention is given to the criminal justice system including the psychology of policing and interrogation, plea bargaining, jury selection and decision making, eyewitness identification, and the psychology of imprisonment. (Also offered as Legal Studies 147B. Students cannot receive credit for both courses.) Prerequisite(s): course 147A. C. Haney

150. Social Psychology of Flimflam. W
Why do we believe strange things? How did muckrakers and confidence men develop their skills? How do we know that the Loch Ness monster is not real? How can we detect the tricks of the television medium? Prerequisite(s): course 147A. C. Byrne

153A. Psychology of Poverty and Social Class. W
Examines how social class shapes attitudes, beliefs, and behaviors. Emphasis is placed on structural barriers and their impact on the well-being of low-income groups. Strategies for reducing class discrimination and improving interclass relations are discussed. Enrollment restricted to anthropology, community studies, economics, legal studies, politics, psychology, sociology, or women's studies majors. H. Bullock

153B. Psychology and Law. S
Continuing discussion of current and future relationships between law and psychology and to contrasting psychological realities with legal fictions. Special attention is given to the criminal justice system including the psychology of policing and interrogation, plea bargaining, jury selection and decision making, eyewitness identification, and the psychology of imprisonment. (Also offered as Legal Studies 147B. Students cannot receive credit for both courses.) Prerequisite(s): course 147A. C. Haney

Study of social justice, social inequality, and social movements. The seminar format allows students an opportunity to discuss the implications of the course readings and to see how they have been applied to real-world situations. Enrollment limited to 30. A. Pratkanis

157A. Chicana Feminism. *
Students are introduced to the writings of Chicana feminists to identify the gender issues that produce conflict and cooperation in their communities. The course also makes linkages to gender issues in other U.S. communities of color and Latin America. (Also offered as Women's Studies 151A. Students cannot receive credit for both courses.) Prerequisite(s): courses 3 and 40 or Sociology 136. T. Staff

157B. Advanced Topics in Chicana Feminism. W
Course is a continuation of course 151A which introduces students to the writings of Chicana feminists to identify the gender issues that cause conflict and cooperation in their communities. The seminar format allows students an opportunity for extensive discussion. Satisfies seminar requirements. (Also offered as Women's Studies 151B. Students cannot receive credit for both courses.) Prerequisite(s): courses 1, 4, or 157A or Women's Studies 1A, 1B, 100, or 151A, or consent of instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 30. A. Hurtado

158. Latinos in the Media. *
Introduces portrayals of Latinos in the U.S. media including magazines, film, and television. Covers the most recent social psychological research on media representations and implications for identity. (Also offered as Latin American and Latino Studies 125. Students cannot receive credit for both courses.) Prerequisite(s): course 3 or Latin American and Latino Studies 1. (General Education Code(s): E.) A. Hurtado

159. Organizational Psychology. *
The psychology of human interaction: individual motivation, social perception, leadership and participation, group, intergroup, and system dynamics, conflict and conflict resolution, cooperation and decision-making. Also considers contemporary issues facing American organizations. Prerequisite(s): course 3. The Staff

Personality

161. Fostering Creativity. *
Examines theories, research, and practices that suggest ways creativity can be fostered in the arts and sciences as well as in business, education, social action, and everyday life. Focuses on special topics of personal interest to students. Satisfies seminar requirement. Prerequisite(s): courses 3 and 40. Enrollment limited to 30. D. Harrington

162A. The Psychology of Creativity. F
The study of creative people, processes, and places in the arts, literature, science, business, and education. Examines theories, systematic research, and case studies. Social roles, economic factors, child-rearing practices, and educational methods which may influence creativity are also studied. Prerequisite(s): course 3, course 60 is recommended as preparation. D. Harrington

162B. Special Topics in Creativity. *
Examines selected topics in creativity which are of particular interest to seminar members. Topics will be explored in greater depth and from more perspectives than in course 162A. Satisfies seminar requirement. Prerequisite(s): course 162A. Enrollment restricted to psychology majors. Enrollment limited to 30. D. Harrington

163. Freud. *
The development of Freud's concept of mind. Extensive reading tracing the origins and development of Freud's theories and concepts (e.g., abstraction, psychic energy, defense, wish-fulfillment, unconscious fantasy, dreams, symptoms, transference, cure, sexuality) and emphasizing the underlying model of the mind and mental functioning. (Also offered as Philosophy 139. Students cannot receive credit for both courses.) Offered in alternate academic years. J. Neu

164. Current Topics in Personality Psychology. *
Explores a single topic of current interest in personality psychology, such as resilience, attachment, motivation, self-narratives, self-concept, longitudinal studies, or cross-cultural perspectives. Examines relevant theories, research, and practical applications. Active student participation is required. Satisfies seminar requirement. Prerequisite(s):
165. Systems of Psychotherapy. S
A review of methods of psychotherapy, with attention to the underlying assumptions about personality, health, and disease. Prerequisite(s): course 3; course 60 or 170 recommended. V. Tonay

166. Personality Assessment. W
How do we really know a person? Course provides hands-on experience with assessing such individual differences as intimacy motivation, dominance, paranoia, and well-being. Students construct their own personality test and learn to critique the kinds of self-report, observational, and interview techniques that are used in organizational and counseling contexts. Prerequisite(s): course 3; course 60 highly recommended as preparation. The Staff

167. Clinical Psychology. W
Serves as an in-depth introduction to the field of clinical psychology. Covers issues of clinical assessment, interviewing, testing, and a range of therapeutic modalities. Prerequisite(s): courses 3, and 60 or 65; course 170 is recommended as preparation. R. Quinn

168. The Study of Dreams. *
An overview of dream studies by several major theorists and researchers of the twentieth century, including Freud, Jung, and Hall. An emphasis on studies that reveal cognitive conceptions and personal concerns through quantitative and qualitative analyses of sets of dreams from individuals and groups. Other topics covered more briefly include dream recall, children and dreams, and the role of dreams within cultures. Prerequisite(s): course 3. G. D. Omhoff

169. Community Psychology. F
Examines theory and research on outreach and prevention for use with various populations in community settings (e.g., victims of violence, immigrants, severely mentally ill); presents characteristics of successful agency and agency development. Surveys prevention and intervention models currently used in community psychology. Prerequisite(s): course 3. V. Tonay

170. Abnormal Psychology. S
Survey of theory and research on the nature of behavioral disorders. Covers psychological, biological, developmental, and socio-cultural approaches. Prerequisite(s): course 1 or 60; course 60 highly recommended as preparation. P. Gjerde

171. Childhood Psychopathology. F
A critical and intensive exploration of a wide variety of specific disorders within their biological, developmental, and social contexts. Concepts of psychopathology in childhood, major and minor diagnostic systems, and a variety of theories of etiology are explored. General intervention strategies and a wide range of specific psychotherapy systems for treatment are closely examined and demonstrated. Prerequisite(s): courses 3 and 10; and 167 or 170. D. Saponik

172. Theories of Moral Psychology. W
A seminar with focus on theories of moral development from the psychoanalytic, social learning, cognitive-developmental, and humanistic perspectives. Students confront and discuss moral dilemmas from the four perspectives, working toward their own individual theories of pre-social behavior. Course satisfies seminar requirement. Prerequisite(s): essay required on an moral issue or dilemma relevant to the student's life. Enrollment limited to 25. R. Quinn

175. Personality, Relationships, and Emotions. S
Explores the nature, composition, and origins of human personality; the expression of emotions; and the individual as seen in context of relationships with others. Prerequisite(s): course 3. The Staff

176. The Emotions. W
Analysis of particular emotions (e.g., jealousy, boredom, regret) and exploration of general theoretical issues (e.g., universality, expression, control) with emphasis on moral psychology. Satisfies seminar requirement. (Formerly Philosophy 190L.) Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment restricted to juniors and seniors. Enrollment limited to 20. (General Education Code(s): O.J.) Neuro

190. Senior Seminars.
Special topics with a format varying each quarter. The Staff

191. Teaching College Psychology.
A series designed to provide undergraduates at the upper-division level with an opportunity to participate in planning and teaching college-level psychology. May not be repeated for credit. The Staff

191A. Introduction to Psychology. F,W,S
Students lead discussions and provide one-to-one tutoring for course 1. Admission requires essay describing interest in becoming a course assistant, copies of psychology evaluations, and a letter of recommendation from a psychology faculty member; completion of some upper-division psychology courses prior to enrollment in this course. Enrollment restricted to psychology majors. Enrollment limited to 20. (F) F. Crosby, (W) B. Bridgeman, (S) C. Cooper

192. Directed Student Teaching. F,W,S
Teaching of a lower-division seminar (course 42) under faculty supervision. Available only to upper-division or graduate students. Students submit petition to sponsoring agency. The Staff

193. Field Study. F,W,S
Series designed to provide advanced psychology undergraduates opportunity to apply what they have learned in the classroom to direct experience in a community agency. Students earn academic credit by working as interns at a variety of psychological settings where they are trained and supervised by a professional within the agency. Faculty also supervise the students' academic work by providing guidance and helping them integrate psychological theories with their hands-on intern experience. A two-quarter commitment. Students submit petition to sponsoring agency. Prerequisite(s): completion of lower-division psychology major requirements. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. The Staff

193A. Developmental Field Study. F,W,S
Work in a community-based setting while completing self-directed academic work focused in the developmental area under the guidance of a faculty member. Students submit petition to sponsoring agency; applications due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. The Staff

193B. Cognitive Field Study. F,W,S
Work in a community-based setting while completing self-directed academic work focused in the cognitive area under guidance of a faculty member. Students submit petition to sponsoring agency; applications due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. The Staff

193C. Social Field Study. F,W,S
Work in a community-based setting while completing self-directed academic work focused in the social area under guidance of a faculty member. Students submit petition to sponsoring agency; applications due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. The Staff

193D. Clinical/Personality Field Study. F,W,S
Work in a community-based setting while completing self-directed academic work focused in clinical or personality area under guidance of a faculty member. Students submit petition to sponsoring agency; applications due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. The Staff

194. Advanced Research in Special Topics.
Provides a means for a small group of students to do research on a particular topic in consultation with a faculty sponsor. The Staff

194A. Advanced Developmental Research. F,W,S
Provides students with intensive experience conducting current research in developmental psychology. Students submit petition to sponsoring agency; applications due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. M. Azmitia

194B. Advanced Cognitive Research. F,W,S
Provides students with intensive experience conducting current research in cognitive psychology. Students submit petition to sponsoring agency; applications due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. J. Fox Tree

194C. Advanced Social Research. F,W,S
Provides students with intensive experience conducting current research in social psychology. Students submit petition to sponsoring agency. May be repeated for credit. A. H. Urrutia

195A. Senior Thesis. F,W,S
Preparation of a senior thesis is over one, two, or three quarters beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students contemplating a senior thesis should have a superior academic record and be well prepared with a suitable background of previous course work or independent study for performing their proposed research. Students must file a petition with the
Psychology Office the quarter in which they would like to begin the thesis. Senior thesis petitions are available in the Psychology Department Office. Check with office for enrollment conditions. The Staff

195B. Senior Thesis. F, W, S
Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students contemplating a senior thesis should have a superior academic record and be well prepared with a suitable background of previous course work or independent study for performing their proposed research. Students must file a petition with the Psychology Office the quarter in which they would like to begin the thesis. Senior thesis petitions are available in the Psychology Department Office. Check with office for enrollment conditions. The Staff

195C. Senior Thesis. F, W, S
Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students contemplating a senior thesis should have a superior academic record and be well prepared with a suitable background of previous course work or independent study for performing their proposed research. Students must file a petition with the Psychology Office the quarter in which they would like to begin the thesis. Senior thesis petitions are available in the Psychology Department Office. Check with office for enrollment conditions. The Staff

198. Independent Field Study. F, W, S
Provides psychology majors with the opportunity to apply what has been learned in the classroom to direct experience in a community agency outside the local community. Students earn academic credit by working as interns at a variety of psychological settings, where they are trained and supervised by a professional on site. Faculty also supervises the students' field study, providing guidance and help integrating psychological theories with their hands-on experience. Two-quarter commitment required. Admission requires completion of lower-division psychology major requirements; students submit petition to sponsoring agency. Applications are due one quarter in advance to the Psychology Field Study Office. Enrollment restricted to junior and senior psychology majors. May be repeated for credit. The Staff

199. Tutorial. F, W, S
Individual directed study for upper-division undergraduates. Students must file a petition with the Psychology Office the quarter in which they would like to take the tutorial. Petitions may be obtained in the Psychology Department Office. The Staff

Graduate Courses

204. Quantitative Data Analysis. F
Intermediate statistical methods widely used in psychology (e.g., t-test, ANOVA, ANCOVA, multiple comparisons, repeated-measures, nested-designs, correlational analyses, bivariate regression), corresponding SAS programs, and elements of measurement theory. Enrollment restricted to graduate students. Enrollment limited to 20. J. Vevea

210. The Experimental Method in Social Psychology. *
Explores the philosophy and practice of the experimental method in social psychology. Enrollment restricted to graduate students. C. Haney

211A. Proseminar: The Person as Social Being. *
Provides an introduction to social psychology, focusing on various micro-social topics, including the self, social cognition, perception, person perception, attitudes, attribution, and interpersonal relations. Enrollment restricted to psychology graduate students; undergraduates planning graduate work in social psychology may enroll with permission of instructor. Enrollment limited to 20. C. Leach

211B. Proseminar: Groups in Society. F
Provides an introduction to social psychology. Surveys major empirical and theoretical developments in social psychology related to group and intergroup dynamics. Topics include norms, power, leadership, communication, culture, and social psychology's relationship to public policy. Enrollment restricted to graduate students. Enrollment limited to 20. C. Haney

214A. Multivariate Techniques for Psychology. W
Provides an introduction to multivariate regression (MR) and multivariate analysis of variance (MANOVA) as data analytic methods. Both methodological and statistical aspects of multivariate data analysis discussed. Practical problems in estimating and testing regression and ANOVA models addressed. Gain experience in carrying out and interpreting analyses using SPSS. Prerequisites: course 204. Enrollment limited to graduate students. Enrollment limited to 20. E. Zurbriggen

214B. Advanced Multivariate Techniques for Psychology. S
Provides an introduction to factor analysis and structural equation modeling (SEM). Develop skills in defining, estimating, testing, and critiquing models. Topics include rationale of SEM, model identification, goodness of fit, and estimation. Learn how to use relevant software packages (SPSS, LISREL, EQS, and/or AMOS) to conduct exploratory and confirmatory factor analyses, path analyses, and full (“hybrid”) analyses with latent variables. Prerequisites: course 214A. Offered in alternate academic years. E. Zurbriggen

215. Topics in Language Use. *
Seminar on current and historical topics in language use, such as spontaneous talk reveals about speakers' thinking and how talk is understood. Enrollment restricted to graduate students. May be repeated for credit. J. Fox Tree

218. Speech Perception and Reading. *
An information-processing analysis of speech perception and reading. The stages of information processing in understanding language are studied, with particular emphasis on pattern recognition processes, memory processes, and utilization of context and knowledge in speech perception and reading. Enrollment restricted to graduate students. D. Masauro

220. Special Topics in Human Memory. *
Topics announced when offered. Seminar on selected issues relevant to topic. Emphasis on development of research ideas. Enrollment restricted to graduate students. Enrollment limited to 12. The Staff

221. Visual Perception. F
Seminar to study human perception, its methodology, and driving issues as illustrated by selected research topics (e.g., adaptation to unusual sensory environments). Where possible, parallels with other areas of psychology are drawn. Enrollment restricted to graduate students. Enrollment limited to 15. B. Bridgeman

222. Topics in Lexical Organization. *
The recognition of words is a critical step in natural language processing. Discusses a range of contemporary issues related to the representation of a word and the access of this information from the perspective of psychology, linguistics, and artificial intelligence. Enrollment restricted to psychology graduate students; undergraduates who have completed course 124 may enroll with permission of instructor. Enrollment limited to 10. A. Kawamoto

224A. Proseminar: Cognitive I. F
A proseminar reviewing current topics in cognitive psychology, designed to introduce new graduate students to the field. Enrollment restricted to psychology graduate students. Enrollment limited to 10. D. Massaro, B. Bridgeman

224B. Proseminar: Cognitive II. W
A proseminar reviewing current topics in cognitive psychology, designed to introduce new graduate students to the field. Enrollment restricted to psychology graduate students. Enrollment limited to 10. R. Gibbs, T. Seymour

225A. Introduction to Developmental Research I. S
Surveys the rationale and techniques of research in developmental psychology. Students build skills in evaluating published research, in translating theoretical ideas into searchable hypotheses, and in selecting appropriate research designs, measurement, and statistical approaches for research problems. Enrollment restricted to psychology graduate students or with instructor's permission. C. Cooper

225B. Introduction to Developmental Research II. S
Focuses on drawing reasonable conclusions from research findings by focusing on students' first-year research projects and critiques of existing research. Enrollment restricted to psychology graduate students. S. Wang

227. Contemporary Issues in Psychology of Language. *
Topics in current and language are examined from the perspectives of cognitive science. Particular attention given to embodied experience and higher-order cognition. Enrollment restricted to graduate students. May be repeated for credit. R. Gibbs

229. Computer Simulation Models. *
Course analyzes various computer simulation techniques and how they can be used to model perception and cognition. Parallel processing in networks is emphasized. Enrollment restricted to graduate students; undergraduates who have completed course 122 may enroll with permission of instructor. Offered in alternate academic years. A. Kawamoto

Seminar to study, critique, and develop research in perception and cognition, including topics in psychobiology, psycholinguistics, and memory. Enrollment restricted to psychology graduate students. May be repeated for credit. The Staff, T. Seymour, D. Masauro
Seminar to study, critique, and develop research in social psychology. Enrollment restricted to psychology graduate students. May be repeated for credit. A. Hurtado

232. Evolution of Cognition. *
Explores current research on evolution of human cognition, viewing findings from other species and from the archaeological record. Topics include language, working memory, episodic memory, numerical abilities, and social cognition. Enrollment restricted to graduate students. M. Wilson

233. Impact of Emotion on Memory and Decision Making. *
Examines research and theory on emotion from the perspective of cognitive psychology. Examines what emotion might have to do with information-processing, focusing in particular on the ways that emotion affects memory and decision making. Enrollment restricted to graduate students. M. Mather

235. Infant Development in Contexts. *
Seminar on how contextual factors influence the development in infancy, especially on cognitive domains. Discusses at least four types of contextual factors: cultural, experiential, event, and interpersonal contexts. Enrollment restricted to psychology graduate students. S. Wang

Seminar to study, critique, and develop research in developmental psychology. Enrollment restricted to psychology graduate students. M. Mather

244A. Proseminar I: Cognitive and Language Development. F
Explores major theories and research in the fields of cognitive development and language development. Begins with classic theories, such as Piaget's theory of cognitive development, and proceeds to theories and research on topics of current interest, such as the relation between culture and cognitive and language development. Enrollment restricted to graduate students. N. Akhtar

244B. Proseminar II: Socioemotional and Personality Development. W
An examination of contemporary theory and research on socioemotional and personality development across the lifespan. Enrollment restricted to graduate students. M. Azmitia

246. Cultural Diversity in Human Development. F
Focuses on issues of culture and ethnicity in our theoretical and empirical understanding of human development. Particular attention is paid to issues of language, culture, and socialization as they relate to social institutions, such as education, that affect children and families. Enrollment restricted to graduate students. Enrollment limited to 20. P. Gjørde

247. Special Topics in Developmental Psychology. W
Focuses on particular issues of theoretical importance in developmental psychology. Topics vary from year to year. Particular issues in language, culture, cognitive, social, and personality development may be covered. Enrollment restricted to graduate students. Enrollment limited to 15. M. Mather may be repeated for credit. D. Harrington

248. Survey Methods. W
Practicum to give students hands-on experience with survey methods by conducting their own survey on the topic of their choice. Course requires the survey to be conducted off campus at a local agency or program chosen by student with approval of instructor. Enrollment restricted to graduate students. Enrollment limited to 10. A. Hurtado

249. Field Methodologies and Social Ethnography. *
Designed to train graduate students in applied field methods. Emphasis is on gaining knowledge and experience with actual field methods, by conducting social ethnography in the community. Field research in community placements required. Enrollment restricted to graduate students. Enrollment limited to 10. Offered in alternate academic years. C. Haney

250. Prejudice and Social Relations. *
Examines the ways in which the various branches of psychology have approached the issue of prejudice. Attention is paid to the assumptions underlying each approach and their relation to core psychological ideas such as the self and emotion. Enrollment restricted to graduate students. C. Leach

251. Feminist Theory and Social Psychology. *
Course bridges feminist theory and social psychological research to explore connections between theory covered and empirical studies on various topics in social psychology. Seminar format allows students opportunity for extensive discussion. (Also offered as Women's Studies 251. Prerequisite: Students cannot receive credit for both courses.) Enrollment restricted to graduate students. A. Hurtado

252. Special Topics in Cognitive Psychology. F,W,S
Focuses on particular issues in cognitive psychology. Topics vary from year to year. Particular issues in language, memory, perception, attention, judgment and decision making, problem solving, reasoning, emotion, cognitive modeling, cognitive neuroscience, and cognition and aging are covered. Enrollment restricted to graduate students. May be repeated for credit. (W) M. Mather, (S) T. Seymour

253. Theory and Research in Intergroup Relations. *
Examines, compares, and contrasts a variety of theories in intergroup relations while examining relevant empirical research. The relevance of both theory and research findings to contemporary social issues is explored. Enrollment restricted to psychology graduate students; undergraduates considering graduate work in social psychology are encouraged to enroll with permission of instructor. Enrollment limited to 12. Offered in alternate academic years. S. Wright

256. Psychology of Social Class and Economic Justice. F
Course examines the social psychological antecedents, correlates, and consequences of economic inequality in contemporary U.S. society. The impact of social class on attitudes, beliefs, and behaviors is assessed. Strategies for reducing class discrimination and improving interclass relations are discussed. Enrollment restricted to graduate students. Enrollment limited to 10. H. Bullock

259. Social Psychology of Justice. *
Looks at theories of distributive, procedural, and retributive justice; seeks universal justice norms (e.g., reciprocity); and critically examines the rules of evidence and inference guiding psychological findings. Emphasis on student participation and research. Enrollment restricted to psychology graduate students; undergraduates planning graduate work in social psychology may enroll with permission of instructor. Enrollment limited to 12. F. Crosby

290. Proseminar. Various topics to be offered throughout the year.

290B. Advanced Developmental Research and Writing (2 credits). F,W,S
Tailored to graduate students' interests among topics involving research and scholarship in sociocultural approaches to development, methods for research design, data collection, coding, and analysis, and preparing and reviewing grant proposals and journal manuscripts. Multiple-term course; students receive six credits in the third quarter of attendance; the grade and performance evaluation submitted for the final quarter applies to all three quarters. Enrollment restricted to graduate students. May be repeated for credit. B. Rogoff

290C. Professional Development (3 credits). F,W,S
Designed to aid advanced psychology graduate students with development of competence in professional activities (e.g., preparing a vita, making job and conference presentations, submitting and reviewing manuscripts and grant proposals, professional communication, career decisions). Multiple-term course; students receive 6 credits in the second quarter of attendance; the grade and evaluation submitted for the final quarter applies to the previous quarter. Enrollment restricted to advanced psychology graduate students. A. Thorpe

290E. Grant Writing for Psychologists. W
Discusses how to write and put together a grant proposal for psychological research, culminating in a completed proposal. Intended for psychology graduate students at all levels of their careers, applying to predoctoral dissertation, dissertation, summer, or postdoctoral funding sources. Enrollment restricted to psychology graduate students. J. Fox Tree

293. Field Study. F,W,S
Student-designed and student-conducted research carried out in field settings. The Staff

297. Independent Study. F,W,S
Independent study and research under faculty supervision. The Staff

The Staff

299A. Thesis Research. The Staff

299B. Thesis Research (10 credits). The Staff

299C. Thesis Research (15 credits). The Staff

Religious Studies
Religious studies is not a separate program at UCSC, but students can focus on aspects of religion by selecting one of the following majors and then carefully choosing courses in the area of religion. Anthropology, history, history of art and visual culture, literature, and philosophy are appropriate majors for students interested in religion. The History of Art and Visual Culture Department offers a history of art and visual culture major with con-
The Staff

I

Placement Exams

Faculty and Professional Interests

Lecturer

William Nickell

Leo Tolstoy, Russian cultural history, 1920s and 1930s Soviet Russia, Russian Soviet film, Russian language and pedagogy

Program Description

For students interested in acquiring proficiency in the Russian language, beginning and intermediate level language courses are offered. Students may also select a major in Russian studies (below).

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 275, under Language Program.

Lower-Division Courses

1. Instruction in the Russian Language, F

Aural comprehension, speaking, reading, and writing. Recitation and laboratory. Elementary sequence (1-2-3) begins in the fall quarter only. The Staff

2. Instruction in the Russian Language, W

Aural comprehension, speaking, reading, and writing. Recitation and laboratory. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 1; or placement by examination. The Staff

3. Instruction in the Russian Language, S

Aural comprehension, speaking, reading, and writing. Recitation and laboratory. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 2; or placement by examination. The Staff

4. Intermediate Russian, F

Second-year courses designed to improve functional competence in speaking, listening, reading, and writing by activating basic grammar covered in introductory courses. Grammatical explanations and exercises supplemented with short readings and films. Prerequisite(s): course 3; or permission of instructor. (General Education Code(s): E.IH.) The Staff

5. Intermediate Russian, W

Second-year courses designed to improve functional competence in speaking, listening, reading, and writing by activating basic grammar covered in introductory courses. Grammatical explanations and exercises supplemented with short readings and films. Prerequisite(s): course 4; or permission of instructor. (General Education Code(s): E.IH.) The Staff

6. Intermediate Russian, S

Second-year courses designed to improve functional competence in speaking, listening, reading, and writing by activating basic grammar covered in introductory courses. Grammatical explanations and exercises supplemented with short readings and films. Prerequisite(s): course 5; or permission of instructor. (General Education Code(s): E.IH.) The Staff

94. Group Tutorial, F.W.S

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

99F. Tutorial (2 credits), F.W.S

Students submit petition to sponsoring agency. The Staff

Upper-Division Courses

194. Group Tutorial, F.W.S

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

199F. Tutorial, F.W.S

Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F.W.S

The Staff

Russian Studies

Students interested in the detailed study of Russian history, culture, language, literature, and politics may declare an individual major in Russian studies, with an emphasis in any of these areas. The campus now offers instruction in the Russian language. There are several opportunities available for travel and study in Russia. More information may be obtained from the faculty involved in the program: Jonathan F. Beecher (history), Jaye Padgett (linguistics), Peter Kenes (history), William Nickell (Russian literature and language), and Michael Urban (politics).

Science Communication

460 Kerr Hall (831) 459-4475
http://sciocom.ucsc.edu

Faculty

Inge G. Chen, Lecturer in Science Writing
Glenda Chui, Lecturer in Science Writing
Robert Iston, Lecturer in Science Writing
John McNicholas, Lecturer in Science Writing
Paul Rogers, Lecturer in Science Writing
Sara Solovitch, Lecturer in Science Writing
Peter Steinhardt, Lecturer in Science Writing
John Wilkes, Senior Lecturer in Science Writing, Program Director

Program Description

The Science Communication Program is a graduate program currently composed of one track: science writing. Students combine a background in science with a desire to communicate science to the general public. Special note: the science illustration track is now offered through UCSC Extension (http://ucsc-extension.edu). Some science illustration courses are still offered during UCSC Summer Session (http://summar.ucsc.edu).

The science writing graduate certificate program focuses on the theory and practice of conceiving, reporting, writing, and editing articles on scientific, medical, environmental, and technological subjects for news and magazines, and special publications directed at general readers. The program in science writing offers intensive training in news, features, essays, and editorials. Science feature writing is stressed.

Graduate Certificate in Science Writing

The program accepts 10 students per year, and enrollment in science writing classes is strictly limited to students enrolled in the program. The program consists of one academic year of full-time study, beginning in fall quarter, followed by a full-time internship lasting a minimum of 10 weeks. Science Notes, the UCSC online science magazine, is produced annually by the graduate students. Please see the current issue and an archive of past issues on our web site.

At least a bachelor’s degree in science and additional full-time research experience are required for admission. Students who have an intimate acquaintance with the theory and practice of science, an aptitude for writing, and a strong desire to communicate science to the general public are ideal candidates for the program. Other admission requirements may be obtained from the program web site, along with biographical information about most of the program graduates. Applications and instructions can be found at http://gradstudies.ucsc.edu.

Further Information

Details about the science writing graduate certificate program may be obtained from the Science
Communication Program Office, the web site, or by sending e-mail to scicom@ucsc.edu.

Graduate Courses

201A. Reporting and Writing Science News. F
A survey of the conventions of newspaper journalism and the special application of these conventions to scientific and technological subjects. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. Enrollment limited to 10. The Staff

201B. The Science Feature. W
A survey of selected feature articles in the current national science magazines, with attention to strategy, level of complexity, explanation technique, and style. Writing assignments include a publishable feature article. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. Enrollment limited to 10. The Staff

201C. The Science Essay, S
A survey of science and nature essayists. Purpose, content, form, and style are considered. Writing assignments include reviews of films and books, as well as original essays on current issues in science, technology, and society. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. Enrollment limited to 10. The Staff

202. Writing and Editing Workshop, F,W,S
Theory and practice of writing, editing, and conceiving illustrations for articles on scientific, medical, environmental, and technological subjects for newspapers, magazines, and special publications directed at non-technical readers. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. Enrollment limited to 10. The Staff

297. Independent Study, F,W,S
A topic is studied with faculty tutorial assistance, to satisfy a need for the student when a regular course is not available. Enrollment restricted to Science Communication Program graduate students. Students submit petition to sponsoring agency. The Staff

Social Documentation

Students wishing to pursue a course of study in social documentation should consult the social documentation program under Community Studies, page 158.

Social Sciences

Graduate Studies in Social Sciences

The Department of Sociology offers five graduate courses. The program is designed to provide advanced training in research methods, theory, and application, and to prepare students for careers in academic and non-academic fields. The program emphasizes interdisciplinary research and collaboration with other social science disciplines.

High Demand Courses

Sociology

Sociology 201A. Reporting and Writing Science News.
This course provides an overview of the conventions of newspaper journalism and their application to the writing of scientific and technological subjects. Students will learn how to research, write, and edit feature articles for publication.

Sociology 201B. The Science Feature.
This course focuses on the writing of selected feature articles from national science magazines. Students will gain practical experience in writing for a technical audience.

Sociology 201C. The Science Essay.
This course is designed for students who wish to pursue a career in science writing. Students will develop the skills necessary to write compelling essays on scientific topics.

Sociology 202. Writing and Editing Workshop.
This course provides a forum for students to practice their writing and editing skills. Students will work on articles for newspapers, magazines, and special publications.

Sociology 297. Independent Study.
This course allows students to pursue a topic of their choosing under the guidance of a faculty member. Students must submit a petition to the sociology program.

Sociology 194A. UCDC Internship and Internship Seminar.
This course offers students the opportunity to participate in an internship in a Washington, DC-based organization. Students will gain practical experience in a field of their choice.

Sociology 194B. UCDC Internship and Internship Seminar.
This course provides students with an opportunity to participate in an internship in a Washington, DC-based organization. Students will gain practical experience in a field of their choice.

Sociology 199A. UCDC Internship and Internship Seminar.
This course offers students the opportunity to participate in an internship in a Washington, DC-based organization. Students will gain practical experience in a field of their choice.

Sociology 199F. Tutorial (2 credits).
This course provides students with a tutorial in a field of their choice. Students must submit a petition to the sociology program.

Sociology 199G. Tutorial (2 credits).
This course provides students with a tutorial in a field of their choice. Students must submit a petition to the sociology program.

Faculty and Professional Interests

Professor

Dane Archer
Violence, war and peace, cross-national and cross-cultural research, verbal and nonverbal communication, crime and law

John Brown Childs
Ethnic conflict and transnational cooperation, sociology of knowledge, African American and Native American interactions

William H. Friedland, Emeritus

Walter L. Goldfrank
Social change, historical sociology, world systems, modern Mexico, Chile, social movements and revolution, development theories, policies and outcomes

Herma S. Gray
Cultural studies, media and television studies, black cultural politics

Paul M. Lubeck
Political sociology, political economy of development, globalization, labor and work, logics of methodology, religion and social movements, Islamic society and identities, information and networks

Dennis C. McElrath, Emeritus

Marcia Millman
Social psychology, fieldwork methods, sociology of emotions, sociology of medicine, disease, the family

James R. O'Connor, Emeritus

Craig Reinarmann
Political sociology, law, crime and social justice, drugs and society

Pamela Ann Roby
Sociology of learning, women and work, leadership and social change, sociology of emotions, feminist research, inequality and social policy

Dana Y. Takagi
Social inequality and identity, research methods, race relations, nationalism and social movements

Candace West
Language and social interaction, sociology of gender, conversation analysis, microanalysis, and medicine

Associate Professor

Julie Bettie
Feminist studies, cultural studies, racedivision studies, identity, popular culture, educational inequality, critical ethnography

Ben Crow
International development, sociology of water and markets, global inequality, South Asia and East Asia, political economy, and green enterprise

E. Melanie DuPuis
Economic sociology, sociology of consumption, sociology of development, political sociology, sociology of the environment, technological change, historical sociology, social theory, food and social change

Hiromi Fukurai
Law and society, jurisprudence of justice, political theory of checks and balances, racial identity and inequality, law and politics in Japan and East Asia, advanced quantitative statistical methods
HELEN SHAPIRO
Political economy, Latin American economic history and development (with an emphasis on Brazil), industrial policy, the auto industry, the state and transnational corporations

ANDREW SZASZ
Environmental sociology, political sociology, theory

Acting Assistant Professor

GABRIELA SANDOVAL
Race and ethnic studies, Latina/o and Chicano/a studies, stratification, urban and political sociology, and voting behavior

Lecturer

WENDY MARTYNA
Death and dying, gender, social change

Professor

BARBARA L. EPESTEIN (History of Consciousness)
Social movements and theories of social movements, 20th-century U.S. politics and culture; Marxism and related theories of social change

NANCY STOLLER (Community Studies)
Race and gender aspects of health, the AIDS epidemic, community organizing, sexualities, and medicine in prisons

MARC TRAUGOTT (History)
Social and economic history, 19th-century France, French revolution, European working class, historical methods, worker’s autobiographies

DAVID WELLMAN (Community Studies)
Working-class culture, American ethnic and racial diversity, social documentary studies, critical race theory, interrogations of whiteness, and qualitative research methods

Assistant Professor

PAMELA PERRY (Community Studies)
Youth activism and empowerment, youth cultures, educational inequalities, race and ethnic identities, and whiteness

Program Description

Sociology is the study of social interaction, social groups, institutions, and social structures. Sociologists examine the contexts of human action, including systems of beliefs and values, patterns of social relations, and the processes whereby social institutions are created, maintained, and transformed.

Sociology was born as an intellectual response to the democratic and industrial revolutions that ushered in the modern era. It encompasses a search for social order together with a vision of a just, free, and egalitarian society—a vision that may require fundamental change in the existing social order. Developing an understanding of both these aspects of the sociological tradition is one of the teaching goals of sociologists at UC Santa Cruz. A related aim is the development of an appreciation for the craft of social science: disciplined inquiry, observation, and research.

Members of the sociology faculty are engaged in research on a wide range of topics, such as the study of violence; microanalysis of conversations; medicine and technology; social inequality; the intersection of class, race, and gender; revolutions and drugs in society; crime and deviance; environmental sociology; legal institutions; popular culture; media studies; political economy; and language and communication. Because of the interdisciplinary emphasis among the sociology faculty, undergraduates find the department agreeable to double majors and minors, and nonmajors find many sociology courses of interest. In recent years, students have conducted independent studies and written senior theses on a variety of subjects, including the social construction of gender, emerging professions in health care, utopian communities, mass communication, surveys of health care needs, studies of the social effects of war, gender differences in attitudes and behavior, causes of and beliefs about family violence, and the history of political struggles.

The sociology major at UCSC is a rigorous program of study that retains enough flexibility to accommodate students with diverse career goals and plans. It ensures that all students are trained in the main theoretical and methodological traditions of sociology. Yet it permits considerable variation in students’ own areas of specialization. The major provides the necessary intellectual foundation for students who are considering graduate studies in sociology and related social sciences. It also can be used as preparation for careers in fields as diverse as law, social work, management, environmental planning, public service, teaching, health services, counseling, and other professional pursuits. Finally, the sociology major can provide a general liberal education for undergraduates interested in the study of contemporary society and social problems.

Preparation for the Sociology Major

Students must complete four courses prior to declaring the major: course 1, Introduction to Sociology, or equivalent; course 10, Issues and Problems in American Society, or equivalent; course 15, World Society; and Mathematics 3, Precalculus, or equivalent or a score on the math placement exam or the College Entrance Examination Board Advanced Placement calculus exam sufficient to be placed into calculus.

Once the lower-division courses have been completed, students may petition to declare the sociology major. Students must provide evidence of completion in the four lower-division requirements prior to declaring the sociology major.

Requirements for the M ajor

For more details, students may consult the sociology handbook, available from the department office, 235 College Eight.

Sociology majors are required to take a total of 14 courses (four prescribed lower-division courses in preparation for the major, four prescribed upper-division core courses, and six upper-division electives). In addition, they must successfully complete one of three comprehensive requirements prior to graduation.

Lower-division preparation. All sociology majors are required to take the following four courses or their equivalents.

Mathematics

3. Precalculus

Upper-division core courses. The following four sociology courses are required as the foundation of theoretical and methodological training in the discipline. Students are encouraged to take these courses early in their academic career.

103A, Statistical Methods

103B, The Logic and Methods of Social Inquiry

105A, Classical Sociological Theory

105B, Contemporary Sociological Theory

Upper-division advanced course work. Six additional upper-division sociology courses are required, including at least one in each of three undergraduate areas of specialization: clusters; institutional analysis, social psychology, and inequality and social change. Courses that qualify under each area of specialization are listed under specific headings below.

Comprehensive requirement. Prior to graduation, all sociology majors are required to complete one of the following comprehensive requirements:

- Comprehensive examination. Score of 60 percent or better on the comprehensive examination consisting of questions written by faculty responsible for the required sociology core courses.
- Comprehensive courses. Pass three additional upper-division courses in sociology beyond the 10 upper-division courses required for the major. To ensure comprehensive breadth in sociology, one course must come from each of the three clusters beyond the one course from each cluster required for the major. All three courses must be regularly scheduled courses in sociology taken at UCSC.
- Senior thesis. The prerequisite for the senior thesis course is 103B. By the second week of spring quarter (four quarters before graduation), students who would like to write a senior thesis must submit to their preferred faculty thesis sponsor a proposal that includes a one- to three-page abstract and draft research plan or design, a brief bibliography, and evaluations from relevant courses. Students who are unsuccessful in obtaining a thesis sponsor through these means may submit their proposals to the department’s undergraduate education committee (UEC) by the fourth week of spring quarter. Members of the UEC will review the merits of these proposals and assign the ones they approve to faculty members who have not yet agreed to serve as thesis advisers for the following year. Students will be notified of the outcome of the UEC’s deliberations by the end of spring quarter.
Requirements for the Combined Major

Students may choose to declare a combined major in sociology and Latin American and Latino studies. The requirements (listed below) should be examined carefully before choosing the combined major option. Both departments must approve a study plan before the major can be declared. Each department determines major and minor honors separately.

The Mathematics 3 requirement will be waived in lieu of the language requirement for the sociology/Latin American and Latino studies combined major.

Language Study

Students must demonstrate proficiency in Spanish or Portuguese equivalent to the completion of Spanish 6 or 56 or Spanish for Spanish Speakers 65 or Portuguese 65A.

For Spanish language instruction information, see Spanish and Spanish for Spanish Speakers, page 367. For Portuguese language instruction information, see page 347.

Sociology/Latin American and Latino Studies

Students are required to take a total of 14 courses and satisfy a comprehensive requirement. There are four lower-division course requirements, two each from the sociology and Latin American and Latino studies (LALS) majors. One of the lower-division LALS classes must be Latin American and Latino Studies 1 (no substitutions). Transfer students may petition to take the other lower-division class with an appropriate course from another institution. Students are assigned a faculty advisor from each discipline. Upper-division requirements include six core courses: Latin American and Latino Studies 100A, 100B; Sociology 103A, 103B, 105A, and 105B; and four additional elective courses, two from sociology and two from Latin American and Latino studies. At least one of the Latin American and Latino studies upper-division courses must be taught in Spanish or Portuguese, and at least one course in the sociology/Latin American and Latino studies combined major must be on Chicano/Latino issues. Up to three relevant courses taken through study abroad programs from which credits are transferable to UCSC may be credited toward the major when the content is deemed appropriate by the faculty advisers of both sociology and Latino American and Latino studies. Students can satisfy the comprehensive requirement in one of three ways: (1) writing a senior thesis, (2) passing an appropriate Latin American and Latino Studies Seminar (194 series), or (3) completing the sociology course option of two additional sociology upper-division cluster III courses. If the thesis option is selected, it should be planned in consultation with an adviser from each department, completed under the supervision of a faculty member from either department, and read and approved by both advisers; one adviser is sufficient if this faculty member belongs to both departments.

Requirements for the Minor

Students who minor in sociology are required to take seven courses: one of courses 103B, 105A, and 105B; and at least four other upper-division sociology courses. Students must pass the lower-division requirement, courses 1, 10, or 15, prior to declaring the sociology minor. Students must provide evidence of completion in the lower-division requirement prior to declaring the sociology minor.

Major Disqualification Policy

Students who receive a D, F, N.P. or W twice in any of the upper-division core courses (courses 103A, 103B, 105A, and 105B) will be disqualified from the major or minor. Students, their college, and the Office of the Registrar will be notified by the department no later than the first day of instruction of the quarter following the disqualifying failure. Students who feel that there were extenuating circumstances surrounding their failure of a course for the second time may appeal their disqualification by submitting a letter to the chair of the Sociology Undergraduate Education Committee. The appeal must be filed no later than 15 days after the disqualification notification was mailed, or the 10th day of classes in the quarter of the disqualification, whichever is later. For further information regarding the disqualification process, consult the Sociology Department.

UC Education Abroad Program Students

Academic year programs. Students must declare the major and pass the four lower-division preparatory core requirements (1, 10, 15, and Mathematics 3) and three of the upper-division courses (103B, 105A, 105B) prior to study abroad. The student's sociology faculty advisor must review and approve the courses intended to be taken abroad prior to departure. Up to three approved courses may be used toward the sociology major.

Semester programs. Fall semester: students must declare the major and pass the four lower-division preparatory core requirements (courses 1, 10, 15, and Mathematics 3) and one upper-division core course (105A) prior to fall semester study abroad. Spring semester: students must declare the major and pass the four lower-division course requirements (courses 1, 10, 15, and Mathematics 3) and two upper-division core courses (103B and 105B) prior to spring semester study abroad.

Transfer Students

Junior transfer students expressing an interest in sociology on their UCSC application for admission are admitted as proposed sociology majors. This status is considered undeclared. Transfer students must meet with the sociology undergraduate adviser when they arrive on campus in order to determine their status and begin the actual declaration of major process, which must be completed by the end of the second quarter of the junior year for transfer students. Declaring sociology early in the academic career will give a student priority for sociology course enrollment in subsequent quarters.

Graduate Program

The graduate program in sociology at UC Santa Cruz is an interdisciplinary program that leads to the Ph.D. in sociology. An M.A. degree may be taken en route to the doctorate, but a master's program per se is not available. The program is designed to educate students in major areas of sociology. It provides a general background in sociological theory and methods and also stresses independent work. After completing a group of required courses, students work closely with individual faculty members in designing their own course of study.

The sociology program is intended to lead to both academic and nonacademic careers, and the interests of the faculty reflect this twofold objective. Faculty specialties include comparative and historical sociology; criminology; cultural sociology; development; drug policy; deviant behavior; economics and society; education; emotions; environmental sociology; globalization; health; language and social linguistics; law and society; Marxist sociology; mass communication and public opinion; medical sociology; policy analysis and political economy; qualitative methodology; race, class, gender; science and technology; sexuality and homosexuality; social inequality; sociology of knowledge; and visual sociology.

When asked what they most appreciate about the sociology graduate program, most students cite the students’ and faculty’s activism and commitment to social change in combination with their dedication to teaching, scholarly research, and understanding of the social forces of our society. Research concerns cluster around environmental, racial, cultural, feminist, Latin American, peace, sexuality, and class issues. The Sociology Department’s colloquium series—as well as occasional national and international conferences on one or another of these concerns held on campus—enhance scholarship, practice, and collegial networks. The diversity in age, ethnicity, and work experience of the student body enriches this work.

The core curriculum is divided into two parts, (1) basic grounding in theory and methods, and (2) exposure to research in three areas of concentration: (a) economy, development, and environment; (b) inequality and identity; and (c) culture, knowledge, and power. Beyond the required series of core courses, students are expected to specialize in a particular area and to take additional course work offered in that area. Students use comparative and historical analysis, quantitative techniques, and interpretative and/or field research methods to study questions of human agency and social structure and the ways in which they are limited by and dependent upon one another.

Numerous sociology students present papers at professional conferences and publish articles during the course of their graduate studies. The sociology master’s paper is designed in part to prepare students to write for professional journals. Ongoing faculty seminars focusing on concrete research topics and problems are available for advanced graduate students working on papers and dissertations in related areas.

The program encourages interdisciplinary work. Many of the faculty in the Sociology Department have additional interests and are affiliated with other departments on campus. Seminars in the anthropology, environmental studies, history, history of consciousness, politics, psychology, and women's studies programs are open to sociology students. Graduate students in sociology may obtain a parenthetical notation on the sociology Ph.D. diploma indicating that they have specialized in women's studies, environmental studies, Latin American and Latino studies, politics, and several other areas of study. They must meet requirements spelled out by the relevant department and their committee members. Some fellowship and grant opportunities are available. Students also participate in research projects under the auspices of six interdisciplinary social science research centers: the Center for Agroecology and Sustainable Food Systems, the Center for Global, International, and Regional Studies; the Center for Justice, Tolerance, and Community; the Chicano/Latino Research Center; the Center for Research on Educational Diversity and Excellence, and the Santa Cruz Center for International Economics.
The sociology program also emphasizes teaching experience because the skills required for good teaching—the ability to articulate ideas, to organize and present materials in logical sequence, and to listen attentively and discern someone else's comprehension—are fundamental to many human activities and occupations. Therefore, the sociology program requires that graduate students serve as teaching assistants for at least three quarters in the departments core classes of the undergraduate curriculum, whether or not they plan to pursue an academic career.

**Required Courses**

Students are required to take at least 12 courses as follows:

- **A three-course core group:**
  - 201, The Making of Classical Theory
  - 202, Contemporary Sociological Theory
  - 203, Sociological Methods

- **Two methods courses:**
  - 204, Methods of Quantitative Analysis
  - and one of the following five courses
  - 205, Field Research Methods
  - 206, Comparative Historical Methods
  - 209, Analysis of Cultural Form
  - 241, Cross-National and Cross-Cultural Research or Psychology 248
- **Three area foundation courses:**
  - 220, Global Transformation: Macro-sociological Perspectives
  - 240, Inequality and Identity
  - 260, Culture, Knowledge, Power
- **At least one writing course (208 or 250)**
- **A minimum of three elective courses approved by the graduate director**

Students with no background in statistics are required to take the undergraduate course, Statistical Methods, before enrolling in M methods of Quantitative Analysis.

**Progress Toward the Ph.D.**

- **Beginning at least by the end of the first year, students initiate work on their master’s paper.**
- **Completion of the master’s paper is expected by the end of the second year.**
- **Students are expected to take an oral qualifying exam by the end of the third year, but no later than the end of the fourth year.**
- **Graduate students prepare field statements in two distinct areas of sociology and, in addition, prepare a detailed course outline and a grant proposal in one or the other of these areas.**
- **The qualifying examination is an oral examination and based on the student’s field statements.**
- **After passing the qualifying examination, a student is advanced to candidacy and begins work on the dissertation with the aid of a three-person dissertation committee.**

Details of the policies for admission to the graduate program, the requirements for the Ph.D. degree, and information on financial support opportunities are available from the Department of Sociology. For more information, refer to the Graduate Studies section of the catalog.

**Lower-Division Courses**

1. **Introduction to Sociology, F,S**
   - A systematic study of groups ranging in size from small to social institutions to entire societies. Organized around the themes of social interaction, social inequality and social change. Fulfill lower-division major requirement. (General Education Code(s): IS.) P. Roby, J. Bette

10. **Issues and Problems in American Society, W,S**
    - Exploration of nature, structure, and functioning of American society. Explores the following: social institutions and economic structure; the successes, failures, and intractabilities of institutions; general and distinctive features of American society; specific problems such as race, sex, and other inequalities; urban-rural differences. Fulfill lower-division major requirement. (General Education Code(s): IS.) J. Childs, M. Milham

15. **World Society, F,W**
    - Designed as an introduction to comparative and historical sociology. This course focuses on the internationalization of national societies. After a review of classical liberalism, Marxism, Weberian, and world systems theories, transnational corporations, international regulatory agencies, and peasant revolutionary movements are analyzed from a global perspective. Fulfill lower-division major requirement. (General Education Code(s): IS.) P. Lubeck, B. Crow

20. **Key Issues in Race and Ethnic Analysis**
    - Provided as a solid conceptual foundation for undergraduates interested in pursuing the study of race and ethnic issues in advanced upper-level classes. (General Education Code(s): IS, E.) P. Lubeck, B. Crow

30A. **Information Methods for Global Information Internships (3 credits), F**
    - Introduction to information technology and communication networks using the Internet to reduce global inequality and bridge the "digital divide." Preparers students enrolled in the Global Information Internship Program to construct web pages and write grant proposals for community and non-governmental organizations. Course 186 recommended but not required. Enrollment limited to 60. May be repeated for credit. P. Lubeck

30B. **Information Methods for Global Information Internships (3 credits), W**
    - Introduction to information technology and communication networks using the Internet to reduce global inequality and bridge the "digital divide." Preparers students enrolled in the Global Information Internship Program to construct web pages and write grant proposals for community and non-governmental organizations. Course 186 recommended but not required. Enrollment limited to 60. May be repeated for credit. P. Lubeck

30C. **Information Methods for Global Information Internships (3 credits), S**
    - Introduction to information technology and communication networks using the Internet to reduce global inequality and bridge the "digital divide." Preparers students enrolled in the Global Information Internship Program to construct web pages and write grant proposals for community and non-governmental organizations. Course 186 recommended but not required. Enrollment limited to 60. May be repeated for credit. P. Lubeck

35. **Information Methods: Information Technology Design and Application for Social Change.**
    - Information technology (IT) is an essential tool for community organizations. When, how, and with what success IT is used, however, is not a simple problem. This seminar works through core design processes and helps develop "information plans" for successful technology application in community organizations. Priority given to Global Information Internship Program participants. Enrollment limited to 30. K. Eischen

42. **Student Directed Seminar, F,W,S**
    - Seminars on selected topics taught at various times by upper-division students under faculty supervision. (See course 192.) Consult the Schedule of Classes for specific offerings. The Staff

80E. **The Sociology of Love, W**
    - Investigation of love from a sociological perspective, including the following: (1) how the experience of love is constructed/shaped by the individual, social structure, conventions, ideology; (2) functions of love for the individual/society; (3) how love varies by gender/social class; (4) mythologies of love. Emphasis on romantic heterosexual love and its historical development in Western culture. (General Education Code(s): T3-Social Sciences.) The Staff

80I. **Race and Criminal Justice, W**
    - An introduction to comparative and historical analyses of the relations between race and criminal justice in the U.S. Emphasis on examinations of structural mechanisms that help maintain and perpetuate racial inequality in law, criminal justice, and jury trials. (General Education Code(s): T3-Social Sciences, E.) H. Fukurai

80Z. **Youth and Crime, W**
    - Addresses foundations of development of our juvenile justice system and its adaptation (or failure to adapt) to changing youth crime and socioeconomic patterns at the beginning of the millennium, with special emphasis on California. (General Education Code(s): T3-Social Sciences.) The Staff

93. **Field Study, F,W,S**
    - Ordinarily call numbers for this course will not be issued after the first week of instruction. Students submit petition to sponsoring agency. The Staff

99. **Tutorial, F,W,S**
    - Ordinarily call numbers for this course will not be issued after the first week of instruction. Students submit petition to sponsoring agency. The Staff

**Upper-Division Courses**

103A. **Statistical Methods (7 credits), F**
    - Fundamental concepts in statistics. Introduction to measuring causation. Learn to use computer to analyze data efficiently. Emphasis on practical applications. (Formerly course 104.) Prerequisite(s): M: Mathematics 3 or equivalent or a score on the mathematics placement exam or the College Board AP calculus exam sufficient to be placed into calculus. Enrollment restricted to sociology, proposed sociology, and combined sociology majors. (General Education Code(s): Q.) H. Fukurai, D. Takagi

103B. **The Logic and Methods of Social Inquiry (7 credits), W**
    - The first part of the course focuses on basic ethical, political, and logical issues in social scientific inquiry. The second part develops a wide range of skills and methods
116. Communication and Mass Media. W
Examines media institutions, communication technologies, and their related cultural expressions. Focuses on specific ways the media—including media studies and criticism—operate as social and cultural factors. Contemporaneous theory or equivalent in related fields recommended. Enrollment restricted to upper-division students. F. Guerra

117. California Youth in Transition. F
Explores modern California youth as a transitional generation whose trends signal a "new sociology" in the interplay of race, immigration, class, gender, and age. Examines the myths/realities of youth crime, violence, suicide, drug abuse, school failure, and other social issues. Course 1 or course 10 recommended but not required. M. Males

Considers the role of popular music as a site of contemporary social practice and cultural politics. Examines the institutional organization and production of popular music, its cultural meanings, and its social uses by different communities and social formations. Also examines popular music as a vehicle through which major cultural and political debates about identity, sexuality, community, and politics are staged and performed. Prerequisite(s): course 105A or 105B. Enrollment restricted to juniors and seniors. T. The Staff

119. Sociology of Knowledge. *
Focus includes the following three areas: historical examination of sociological theories of knowledge with reference to Durkheim, Weber, Mannheim, and others; examination of black and feminist perspectives within sociology; examination of whether and how "outside" observers can analytically grasp the inner workings of other cultures. Prerequisite(s): course 103B or 105A or 105B. J. Chidsey

120. Feminisms and Cultural Politics. *
Examines the role of women and feminism in contemporary cultural politics. Considers misrepresentations, alternative narratives, and popular culture, explores the relationship between academic and popular feminisms and addresses the discourse of the "third wave." Prerequisite(s): course 149 or 144 or 187. J. Batterie

121. Sociology of Health and Medicine. S
Analysis of the current health care "crises" and exploration of the social relationships and formal organizations which constitute the medical institution. Study of the political, economic, and cultural factors which affect the recognition, distribution, and response to illness. T. The Staff

122. T. The Sociology of Law. *
Explores the social forces that shape legal outcomes and the ways laws, in turn, influence social life. Traces the historical and political economy of American law; the relation between law and social change; how this relation is shaped by capitalism and democracy, and how class, race, and gender are expressed in welfare and regulatory law. (Also offered as Legal Studies 172. Students cannot receive credit for both courses.) H. Fukurai

122A. Sociology of Punishment. *
Traces evolution of American state punishment from its pre-Civil War days to the current super-maximum Security housing units with an eye along the way to revealing punishment's changing social/cultural meanings. Punishment is not just instrumental, but expressive. It is at once an artifact of American society's cultural forms and itself a determinant of culture. Enrollment restricted to junior and senior sociology majors. Enrollment limited to 45. T. The Staff

122C. Chicano/a and the Law. F
Surveys development and function of law and legal events affecting Chicano/a and Chicana/o, with specific emphasis on California. Highlights intersections of community, power relations, Mexican American history, family, culture, and gender roles as it relates to Chicano/a roles with law and the criminal justice system. Prerequisite(s): course 1. Enrollment restricted to juniors and seniors. Enrollment limited to 30. (General Education Code(s): E) C. Laventan

123. Law, Crime, and Social Justice. S
Blends the latest research in criminology with that from social stratification, inequality, and social welfare policy with the objective of exploring the relationship between levels of general social justice and specific patterns of crime and punishment. T. The focus is primarily on the U.S. although many other industrialized democracies are compared. An introductory course in sociology is recommended as preparation. (Also offered as Legal Studies 173. Students cannot receive credit for both courses.) F. Guerra

125. Society and Nature. *
A healthy society requires a stable and sustainable relationship between society and nature. Covering past, present, and future, the course covers environmental history of the U.S., the variety and extent of environmental problems today, and explores their likely development in our lifetimes. T. The Staff

126. Sociology of Sex. *
Explores social and cultural aspects of human sexuality and reproduction, including how and why meanings and behaviors are contested. Analyzes sexuality and reproduction as forms of social and political control as well as cultural expression and self-determination. Enrollment restricted to upper-division students. Enrollment limited to 90. T. The Staff

127. Drugs in Society. W
Explores the history of the use and abuse of consciousness-altering substances like alcohol and other drugs. Social-psychological theories of addiction are reviewed in tandem with political-economic analyses to identify the social conditions under which the cultural practices involved in drug use come to be defined as public problems. An introductory sociology course is recommended prior to taking this course. M. Males

128. Law and Politics in Contemporary Japan and East Asian Societies. S
Introduction to contemporary analysis of Japan's race relations, ethnic conflicts, and a government's failure to restore remedial justice for war victims in Japan, Asia, and the U.S. Specific issues include comfort women, national or state narratives on Hiroshima, forced labor during World War II, and Nayon legislation that allows war victims to sue Japanese government and corporations in California. H. Fukurai

129. Popular Culture. *
Examines popular culture both as a social practice and social product: the ways that commercial cultural products are created, distributed, and circulated with contemporary American society and how they operate as expressions of social moods, conflicts, and identities and the multiple meanings and social significance of popular culture. Treats popular culture as a contemporary arena where major social and cultural struggles over power and meaning is played out in the areas of sexuality, identity, gender, social class, and race and ethnicity. Enrollment restricted to juniors and seniors. Enrollment limited to 40. J. Batterie

SOCIOLY

363

appropriate to actual research. Course 103A, Statistical Methods, is strongly recommended. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Mathematics 3 or equivalent mathematics placement exam/ACT exam scores. Enrollment restricted to sociology, proposed sociology, and sociology combined majors. (General Education Codes(s): W, Q, J, C, West)

105A. Classical Sociological Theory. F
This intensive survey course examines the intellectual origins of the sociological tradition, focusing on changing conceptions of social order, social change, and the trends observed in the development of Western civilization in the modern era. Readings are taken from original texts and include many of the classical works in social theory with special emphasis on the ideas of Marx, Weber, and Durkheim which constitute the core of the discipline. Required for sociology majors planning on studying abroad (EAP). Enrollment restricted to sociology, proposed sociology, the combined Latin American and Latino studies/sociology majors and sociology minors. M. Traugott

105B. Contemporary Sociological Theory. S
Surveys major theoretical perspectives currently available in the discipline including functionalism, symbolic interactionism, ethnomethodology, conflict theory, critical theory, neo-Marx, feminist theory. Enrollment restricted to sociology, proposed sociology, the combined Latin American and Latino studies/sociology majors and sociology minors. A. Szasz

110. Violence in the Family. F
Examines child abuse and neglect, wife abuse, and sexual abuse in the family, using gender as a lens through which to understand domestic violence. Using a variety of sources, the course undertakes to understand the social, political, and cultural forces that contribute to abuse and to consider solutions. D. O'Brien

111. Family and Society. W
Focuses on the interaction between family and society by considering the historical and social influences on family life and by examining how the family unit affects the social world. Readings draw on theory, history, and ethnographic materials. T. The Staff

112. Economic Sociology. *
Introduction to economic sociology using field visits to key sites of production and consumption to investigate sociological ideas about the modern economy. B. Crow

113. Political Sociology. *
An intensive examination of major substantive monographs representing pluralist, elite, and class theories of the state in industrialized capitalist democracies. T. The Staff

114. Sports and Society. *
Explores the interconnections between sports and society using sociological theories and methods. Topics include class, race, and gender; mass media and popular culture; political economy; education and socialization; leisure patterns (participants and spectators); globalization and cross-national comparisons. W. Girardin

115. Sociology of Leadership. *
Examines biographies, research, and theories about the exercise of leadership in relation to social organizations and social change. Provides students with opportunity to examine their own and other leaders' effectiveness, practices, and goals. Intended for students currently involved in leadership (with or without leadership titles in college or campus organizations, families, in off-campus organizations, etc.). Enrollment limited to 25. P. Roby
130. Sociology of Food. *
Following food from mouth to dirt, explores the politics, economy, and culture of eating, feeding, buying, selling, and growing food. Topics cover both the political economy of the food system as well as how body and nature are constructed at the "end" of this system. E. Du Puis

132. Sociology of Science and Technology. *
Reviews social and cultural perspectives on science and technology, including functionalist, Marxist, Kuhnian, social constructionist, ethnographic, interactionist, anthropological, historical, feminist, and cultural studies perspectives. Topics include sociology of knowledge, science as a social problem, tab studies, representations, practice, controversies, and biomedical knowledge and work. Prerequisite(s): course 103B, 105A, or 105B. Enrollment limited to 20. The Staff

133. Currents in African American Cultural Politics.
Takes as its subject, the dialogues, debates, conceptions, and strategies of self-representation produced by blacks in the U.S. and Atlantic world in the twentieth and twenty-first centuries. These issues are examined through the insights of feminist theory, cultural studies, media studies, sociology, and African American studies. Enrollment restricted to juniors and seniors. (General Education Code(s): E.) H. Gray

134. Television and the Nation.
The role of American network television in the production of the postwar American national imagination is our focus. Our approach will explore issues of media power, especially television's industrial apparatus, its network structure, its strategies of representation in relationship to the construction of the image of the nation, and the meaning of citizens, consumers, and audiences. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to juniors and seniors. (General Education Code(s): W.) F. Guerra

Explores varieties of nonverbal communication: facial expressions, tones of voice, personal space and proxemics, gestures, and paralanguage. Readings are drawn from sociology, psychology, and anthropology. Includes films, videotapes, photographs, and audiotapes. D. Archer

136. Social Psychology.
Major theories and concepts in sociological study of social psychology. Topics include identity and social interaction, deviance, sociology of emotions, social narratives, and the social construction of reality. M. Milman

137. Deviance and Conformity.
Why certain social acts are considered threatening and how individuals or groups become stigmatized. Sociological analysis of the institutions and processes of social control and the experience of becoming deviant and living with a stigmatized identity. Introductory course in sociology recommended. F. Guerra

The study of group development and interpersonal behavior based primarily on observation of the class discussion group. Readings are drawn from psychology and fiction as well as from sociology. Offered in alternate academic years. Enrollment restricted to senior sociology majors. Enrollment limited to 18. M. Millman

142. Language and Social Interaction.
Concerns the routine and taken-for-granted activities that make up our interactions with one another, consisting in large part—but not exclusively—of verbal exchanges. Emphasizes on the socially situated character of communication, whether intimacy between two people or dominance of a group. An introductory sociology course is recommended prior to taking this course. An introductory sociology course is recommended prior to taking this course. Enrollment restricted to sophomores, juniors, and seniors. C. West

143. Conversation Analysis. *
A working seminar, involving the analysis of actual conversations. Covers fundamental ethical, conceptual, and methodological issues that arise in the collection of conversational data, as well as the skills and techniques of conversation analysis. Given our operating assumption, that talk is a primary means of constructing social identities, there is a heavy thematic emphasis on gender, status, and power in conversation. Prerequisite(s): course 142 or Psychology 80E. Enrollment restricted to juniors and seniors. Enrollment limited to 20. C. West

144. Sociology of Women.
Analysis of the social significance and social production of gender. Some consideration of how sex differences have developed. Major emphasis on the impact of gender as a categorical imperative in the present social context. In this context, the course is also about sexual segregation, sexual inequality, and the dynamics of interpersonal power. Enrollment restricted to juniors and seniors. An introductory sociology course is recommended. C. West

145. Sociology of Men.
Examines conflicting views on the development and state of modern masculinity as adaptation, transitional phase, or pathology. Did men lose the "gender war"? Do boys need rescuing? What are common and divergent social experiences of men within race, class, gender, culture, era? An introductory sociology course recommended. M. Male

146. Sociology of Violence, War, and Peace.
Explores key issues, theories, and topics in the study of violence, war, and peace. Addresses aspects of aggression, personal violence, political violence, and war. In addition, various strategies for the prevention of violence and war are examined. D. Archer

Examines learning and achievement from class, race, and gender perspectives; provides tools for improving learning and achieving goals; explores interplay between past and present social forces affecting learning and achievement. Class has dyads rather than sections. Enrollment restricted to juniors and seniors. P. Roby

149. Sex and Gender.
Modern analyses of sexuality and gender show personal life closely linked to large-scale social structures: power relations, economic processes, structures of emotion. Explores these links, examining questions of bodily difference, femininity and masculinity, structures of inequality, the state in sexual politics, and the global re-making of gender in modern history. Recommended as background: any lower-division sociology course. The Staff

150. Sociology of Death and Dying.
Explores contemporary, historical, cross-cultural and interdisciplinary perspectives on the social psychology of death and dying. Cultural norms and institutional contexts are studied, along with the individual experience, and the ways in which our perspectives on death and dying influence our experiences of life and living. Enrollment restricted to juniors and seniors. W. M. Arntya

Focuses on advanced topics in verbal and nonverbal communication. Members of this research seminar select a specific area of human communication (e.g., "gestures," "facial expressions," "the voice," etc.). Students assemble an annotated bibliography, drawing on literatures in many social scientific disciplines, and write scripts that demonstrate complex communication issues. Finally, students use audio and video equipment to illustrate these scripts. Prerequisite(s): course 135. Enrollment limited to 25. D. Archer

152. Body and Society. *
Critically examines the place of the human body in contemporary society. Focuses on the social and cultural construction of bodies, including how they are gendered, racialized, sexualized, politicized, represented, colonized, contained, controlled, and inscribed. Discusses relationship between embodiment, lived experiences, and social action. Focuses on body politics in Western society and culture, especially the United States. An introductory sociology course is recommended prior to taking this course. Enrollment restricted to juniors and seniors. Enrollment limited to 50. The Staff

153. Sociology of Emotions.
Examines sociological approaches to the understanding of emotions and the application of these approaches to work, learning, interpersonal relationships, health and illness, sports, and other aspects of everyday life. Enrollment restricted to juniors and seniors. T. The Staff

Examines a variety of theoretical, methodological, and substantive approaches to cross-national and cross-cultural research. Focuses on the importance and variety of cross-national and cross-cultural studies. Prerequisite(s): one of the following: course 103, 139, or 183. Enrollment limited to 20. D. Archer

155. Political Consciousness.
Explores the relationship between consciousness, ideology, and political behaviors from voting to rebellion. Special attention is given to the lived experience and the identity interests that complicate the nexus of class position and political ideology. An introductory sociology course is recommended as preparation. E. Du Puis

162. Twentieth-Century Revolutions.
Treatment of twentieth-century Latin American revolutions from Zapatista to the Zapatistas. Focuses on the causes and consequences of revolutions rather than on their narrative histories. (Also offered as Latin American and Latino Studies 194M. Students cannot receive credit for both courses.) Enrollment limited to 25. (General Education Code(s): E.) T. The Staff

163. Global Corporations and National States.
Examines the nature and development of the capitalist world system since 1945. Emphasis is on the power of multinational corporations as managers of the world system and the response of states: role of multilateral agencies such as the World Bank, International Monetary Fund, United Nations. H. Shapiro

165. World Systems Perspective.
Seminar on the intellectual origins and contemporary expressions of the world-system perspective in the social sciences: Marx, Braudel, Polanyi, Amin, Schumpeter, Wallerstein. Prerequisite(s): courses 105A and 105B or permission of instructor. W. Goldfrank
166. Economics for Non-Economists. *
Fosters economic literacy among students who are not economics majors but are interested in the political and social ramifications of economic change. Emphasizes economic institutions and policy and is taught by case-study method, which requires active student participation. Enrollment restricted to juniors and seniors. Enrollment limited to 40. H. Shapiro

167. Development and Underdevelopment. S
Examines global, national, and local projects of development; program theories of development; and trajectories of social change in different parts of the contemporary world. B. Crow

169. Social Inequality. S
A survey of theories and systems of social stratification focusing on such phenomena as race, class, power, and prestige. Enrollment restricted to juniors and seniors. (General Education Code(s): E.) C. Lavenant

170. Ethnic and Status Groups. F
Examines the enduring and changing status of ethnic and other visible minority groups in the United States, e.g., Latinos, Asian Americans, African Americans, and immigrants, with comparative materials drawn from other societies. An introductory course in ethnicity and race is recommended as preparation. Satisfies American History and Institutions Requirement. (General Education Code(s): E.) J. Bettie

172. Sociology of Social Movements. *
Through readings on social movements that span the twentieth century, examines the causes of popular mobilizations, their potential for rapid social change, and the theories developed to understand and explain their role in modern social life. Enrollment restricted to upper-division students. Enrollment limited to 40. M. Traugott

174. Twenty-First-Century African American Social Structure. S
A sociological overview of African American society in the twenty-first century. The changing patterns of social/cultural organization, class structure, and modes of political action are analyzed. This analysis is located within the framework of migration, urbanization, and social struggle among African Americans. Prerequisite(s): course 10 or 20. (General Education Code(s): E.) D. Takagi

175. Social History of Asian Americans. *
Provides a general introduction to the history of Chinese, Japanese, Filipinos, Koreans, and Southeast Asians, within the context of American history. Examines the diverse processes of immigration, the formation of communities, work, and family relations of Asians and Asian Americans. Looks at how social, political, and economic changes in the larger U.S. society have affected the lives of Asians in America. Offered in alternate academic years. Enrollment restricted to juniors and seniors. Satisfies American History and Institutions Requirement. (General Education Code(s): E.) D. Takagi

176. Women and Work. W
Examines the history of women and work; women's current conditions of work and political, economic, and social factors affecting these conditions; means by which women may shape working conditions including contributing leadership, developing policies, building unity, and creating alliances. Offered in alternate academic years. Enrollment restricted to juniors and seniors. P. Roby

178. Sociology of Social Problems. F
Views "problems" in society not as given but as social constructs. Examines the ways in which conditions in society become identified and defined as problems and consequences that follow from such a process. M. Mallas

Concerns about environmental change, including global warming, threats to the ozone layer, and industrial pollution, raise questions about Third World development. Simple views of the relation between society and nature, such as blaming population growth, industrialization, or poor people, seem to preclude higher living standards. Uses debates and case studies to explore more subtle and optimistic views of social-natural relations. Enrollment limited to 45. B. Crow

179L. Nature, Poverty, and Progress Laboratory. F
For enrollment in course 179, this optional lab provides opportunities to research ideas and produce a rough business plan for green enterprise of choice. Examples include compostable packaging, gray water systems, sustainable manufacturing, solar-powered submarines, green consulting, and other enterprises. Concurrent enrollment in course 179 required. Enrollment limited to 20. B. Crow

181. A Sociology of Place: The California Coast. S
Examines the California coast, including important social, political, cultural, and environmental aspects of this most important place. Lectures, readings, discussion, and class assignments examine the history, development, and future of the California coast. Enrollment restricted to juniors and seniors. Enrollment limited to 45. M. Beiler

184. Hunger and Famine. *
Why do famines happen? Why are some hungry and some over-fed? Recent advances in the understanding of food crises and chronic undernutrition are the focus of this course. B. Crow

185. Environmental Inequality. W
Modern society not only assaults nature; it does so in ways that reproduce existing social inequalities. Reviews research on disproportionate exposure to risks and hazards, especially along dimensions of class and race, and examines the environmental justice movement. Course 125 is recommended as preparation. T. The Staff

Reviews theories of globalization, the information revolution, world inequality, and the value of information networks for upgrading capacity of NGOs and community groups to promote progressive social change. Requires research project/grant proposal using Internet resources. P. Lubeck

187. Feminist Theory. *
Examination of shifts in twentieth- and twenty-first-century feminist theory and epistemology. Considers various deconstructive challenges to second wave feminism based on the politics of race, ethnicity, nation, sexuality, and class. Focus changes regularly. Prerequisite(s): course 105B, and either course 144 or 149 or Women's Studies 1A or 100. Enrollment limited to 35. J. Batter

188. Religion and Social Change. *
Uses historical-comparative method to explore role of religion in global and local social movements. Case studies include historical analysis of the civil rights movement, Islamic movements, liberation theology, and millenarian movements. Topics vary annually. Recommended for social science and history majors. (General Education Code(s): E.) P. Lubeck

189. Gender and Development: Analysis and Practice. *
One of the greatest social transformations of our time arises from the struggle to address the almost universal (across space and time) subordination of women. For the majority of the world's population, this struggle takes place in the context of attempts to raise living standards. Examines case studies and key analytical texts, primarily relating to the Third World. Enrollment restricted to juniors and seniors. B. Crow

190. Proseminar.
T. The Staff

191. Sociology Teaching Practicum. F,W,S
Under the supervision of the instructor, the student works with a group of students in a lower-division course, leading discussions, explaining material, reading and marking submissions, consulting individually and/or in other ways assisting in the teaching of a course. Interview and selection by professor required. Prerequisite(s): Senior standing and excellent performance in course 191. Enrollment restricted to senior sociology majors. T. The Staff

192. Directed Student Teaching. F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students submit petition to sponsoring agency. T. The Staff

193. Field Study. F,W,S
Provides for department-sponsored individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor (as opposed to course 198 where faculty supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Ordinarily call numbers for this course will not be issued after the first week of instruction. Students submit petition to sponsoring agency. M. May be repeated for credit. T. The Staff

193F. Field Study (2 credits). F,W,S
Provides for department-sponsored individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. M. May not be counted toward major requirements. Students submit petition to sponsoring agency. M. May be repeated for credit. T. The Staff

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. M. May be repeated for credit. T. The Staff

194F. Group Tutorial (2 credits). F,W,S
Small group study of a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. M. May be repeated for credit. T. The Staff

195A. Senior Thesis. F,W,S
Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. The senior thesis satisfies the comprehensive requirement. Course is for independent senior thesis research and writing. Courses may be taken consecutively or concurrently. Prerequisite(s): course 103B. Students submit petition to sponsoring agency. T. The Staff

195B. Senior Thesis. F,W,S
Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. The senior thesis satisfies the comprehensive requirement. Course is for independ-
ent thesis research and writing. Courses may be taken con-
currently or concurrently. Prerequisite(s): course 103B. 
Students submit petition to sponsoring agency. The Staff 
195C. Senior Thesis. F,W,S 
Preparation of a senior thesis over one, two, or three quar-
ters, beginning in any quarter. The senior thesis satisfies 
the comprehensive requirement. Course is for independ-
ent thesis research and writing. Courses may be taken con-
currently or concurrently. Completion of course 195C 
(completion of the thesis) satisfies the W general educa-
tion requirement. Prerequisite(s): course 103B and 
satisfaction of the Subject A and Composition requirements. 
Students submit petition to sponsoring agency. (General Education Code(s): W) The Staff 
198. Independent Field Study. F,W,S 
Provides for (department-sponsored) individual study pro-
cram off campus for which faculty supervision is not in 
person (e.g., supervision is by correspondence). Up to 
three such courses may be taken for credit in any one 
quarter. Ordinarily call numbers for this course will not be 
issued after the first week of instruction. Students submit 
petition to sponsoring agency. May be repeated for credit. 
The Staff 
199. Tutorial. F,W,S 
Advanced directed reading and research. Petitions may be 
obtained from the Sociology Department Office. Students 
submit petition to sponsoring agency. May be repeated for 
credit. The Staff 

Graduate Courses 

201. The Making of Classical Theory. F 
Examines the establishment of “theory” in the discipline of 
sociology. Introduces students to close readings and 
analysis of a core selection of social theory. Problematizes 
the construction, maintenance, and reproduction of a the-
etorical canon in sociology. Enrollment restricted to grad-
uate students in sociology and by permission number. 
Enrollment limited to 20. A. Szasz 

202. Contemporary Sociological Theory, W 
Intensive survey of major trends in modern social 
thought, including functionalism, symbolic interaction-
ism, ethnomethodology, critical theory, structuralism, 
phenomenology, neo-Marxism, and feminist theory. En-
rollment restricted to graduate students in sociology and 
by permission number. H. Gray 

203. Sociological Methods. F 
Approaches methods as a series of conscious and strategic 
choices for doing various kinds of research. Introduces 
students to the epistemological questions of method in so-
cial sciences to key issues in “science,” particularly con-
trol, reliability, and validity; and to good examples of 
social research. Enrollment restricted to graduate students 
in sociology and by permission number. D. Archer 

204. Methods of Quantitative Analysis. F 
Students are provided with intuitive explanation of fun-
damental concepts in statistics and learn how to use sta-
thetics to answer sociological questions. Experience and 
guidance in using computers to efficiently analyze and data 
are provided. Enrollment restricted to graduate students in 
sociology and by permission number. Enrollment limited to 
20. H. Fukurai 

205. Field Research Methods. * 
Gives students first-hand experience doing fieldwork with an 
emphasis on participant observation and some inter-
viewing. Students submit weekly field notes and a final 
project analysis. At seminar meetings, field experiences 
and relevant literature are examined. Enrollment restricted 
to graduate students in sociology and by permission num-ern. Enrollment limited to 10. Offered in alternate aca-
demic years M. Millman 

206. Comparative Historical Methods. * 
Overview of research strategies and methods used in his-
torical and social sciences. Students read works exempli-
fying a variety of analytical approaches. Written 
assignments cultivate critical skills, weighing of trends 
herent in all methodological choices, and elaboration of 
methodological research designs. Enrollment restricted to 
graduate students. Enrollment limited to 20. E. Du Puis 

208. Writing Practicum. S 
Writing intensive course designed to facilitate the com-
pletion of the master’s thesis, oral field statement, or the 
dissertation in sociology. The seminar is convened by a 
faculty member in conjunction with students and their 
advisor or appropriate committee chair. Students are ex-
pected to produce and present drafts of work completed 
in the seminar. Enrollment restricted to sociology gradu-
ate students and by permission number. Enrollment lim-
ited to 12. M. Millman 

209. The Analysis of Cultural Forms. S 
Examines material and symbolic forms such as media 
products, cultural artifacts, language, nonverbal commu-
nication and social practices using discourse, textual, con-
tent, interpretive, and conversation analyses as well as 
ethnography and different channels of communication. 
Theoretically, relies on cultural studies, communication 
studies, cultural sociology, film studies, and eth-
nomethodology. Enrollment restricted to sociology gradu-
ate students and by permission number. Enrollment lim-
ited to 12. M. Millman 

210. The State, Capitalism, and Democracy. * 
Examines various explanations for the existence of the 
modern state, starting with its rise in conjunction with 
the growth of industrial capitalism. Is the modern state 
intrinsically a servant of economic interests or can it be re-
sponsive to a broader set of interests? Explores how vari-
ous authors have attempted to answer this question, with 
the goal of envisioning state institutions that are truly dem-
ocratic. Enrollment restricted to graduate students. En-
rollment limited to 12. E. Du Puis 

211. Sociology of the Environment. * 
A critical survey of the theoretical issues of persistence and 
change in doing cross-national and cross-cultural research. In ad-
dition to a consideration of different research paradigms 
and approaches, representative works from each compar-
ative tradition are examined. Enrollment restricted to graduate students. Enrollment limited to 15. D. Archer 

212. Political Sociology. * 
A survey of major works and themes in the relationship of 
politics and society, with primary emphasis on the comp-
atabilities and contradictions of pluralist, elite, and class 
perspectives on the state. Enrollment restricted to grad-
uate students, E. Du Puis 

213. Current Issues in Sociology. * 
Examines trends in sociology and their relationship to the 
development of Western capitalism. Leading Western the-
ories of environmental crisis and their relation with ide-
ologies of environmentalism and environmental moves. 
Enrollment restricted to graduate students. Enrollment limited to 20. May be repeated for credit. E. Du Puis 

241. Cross-National and Cross-Cultural Research. * 
Seminar examining theoretical and methodological issues in 
doing cross-national and cross-cultural research. In ad-
dition to a consideration of different research paradigms 
and approaches, representative works from each compar-
ative tradition are examined. Enrollment restricted to graduate students. Enrollment limited to 15. D. Archer 

244. Feminist Theory. * 
Examination of shifts in twentieth- and twenty-first-cen-
tury feminist theory and epistemology. Explores the de-
centering of universalist feminist theories and asks what 
constitutes feminist theory after gender has been decon-
centered. Considers various deconstructive challenges to sec-
one-wave feminist theory based on the politics of race, 
equality, nation, sexuality, and class. Focus changes reg-
ularly. Enrollment restricted to sociology graduate stu-
dents. Enrollment limited to 12. J. Battle
247. Race and Class. W
Introduces the student to the recent literature on race and
class. Covers several different theoretical perspectives in-
cluding internal colonialism, labor market segmentation
theories, racial formation, and neo-grassian cultural
analyses. In addition to study of theory, also comparative-
ethical perspectives to the historical experience of mi-
nority groups, in particular, blacks, Hispanics, and
Asians. Enrollment restricted to sociology graduate stu-
dents. J. Childs

248. Class and Cultural Studies. *
Examines theoretical and historical approaches to
class and culture. In particular, focuses on how historical
and ethnographic studies of class structure theorize different
models of culture in the context of class formation. En-
rollment restricted to sociology graduate students. En-
rollment limited to 15. D. Takagi

250. Course Design and Grant-Writing Seminar. *
A professional training seminar devoted to the philo-
osophical, conceptual, and practical issues of course design,
pedagogy, and grant writing. Topics covered: institutional
contexts; curriculum (including syllabi, course content, as-
signments, evaluation); pedagogy; teaching as work/labor
process; grant writing; budgets. Enrollment restricted to
sociology graduate students. Enrollment limited to 15.
J. Bettie

253. Race, Crime, and Justice. *
An introduction to comparative and historical analyses of
relations between race and the criminal justice system.
Specific topics include defining race/ethnicity, sentencing
disparities, jury nullification, jury selection and decisions,
prosecutorial misconduct, government's charging and in-
vestigative discretion, and other racially biased law en-
forcement practices and criminal court processes. Also
covers a number of highly publicized trials that involved
unmistakable elements of race and racism such as Chin,
King, Simpson, and Unabomber cases. Students are also
exposed to World Wide Web (Internet) to learn how to do
research in the field of criminal justice. Enrollment re-
stricted to graduate students. Enrollment limited to 15.
H. Fukurai

255. Engaging Cultural Studies. W
Examines feminist and ethnic studies production, appro-
priation, and transformation of cultural studies theories
and methodologies. Considers the utility of various theo-
retical apparatuses and methodological strategies em-
ployed in the interdisciplinary site that combines feminist,
ethnic, and cultural studies. Enrollment restricted to grad-
uate students. Enrollment limited to 15. J. Bettie

260. Culture, Knowledge, Power. S
An introduction to theoretical approaches and exemplary
studies of culture, knowledge, and power which critically
interrogate the relationship between cultural formations
and the production, circulation, and meaning of knowl-
edges, materials, artifacts, and symbolic forms. Explores
the concrete ways that power is organized and operates
through different forms and sites, how it interoperates with
other forms of power, and examines knowledges and cul-
ture as specific forms of power and sites of political strug-
gle. Enrollment restricted to sociology graduate students.
Enrollment limited to 15. H. Gray

261. Sociology of Knowledge. *
Explores three main issues: the social determination of
knowledge including natural science, the character of in-
tellectual labor and intellectuals as a social group, the role
of organized knowledge and "knowledge industries" in
contemporary social change. Texts examined include class-
based theories (Lukacs, Manheim, Gramsci), feminist
standpoint analysis (Smith, Harding, etc.), and theories of
postmodern culture (Loydard, Harvey, etc.). Enrollment
restricted to graduate students. Enrollment limited to 20.
B. Crow

262. Cultural Practice and Everyday Life. *
Examines contemporary debates about the role of mass
produced expressive symbols in modern industrial soci-
eties, and the circumstances of cultural production for its
impact on the creation, organization, and use of cultural
artifacts. Concerns with the use and experience of popular
symbols for the ways that their use involves the creation of
meanings and the role of such meanings in the social
organization of society. Enrollment restricted to graduate
students. Enrollment limited to 10. H. Gray

Examines social and cultural perspectives on science, tech-
ology, and medicine. Analyzes theoretical approaches
that open up "black boxes" of scientific and biomedical
knowledge, including the politics of bodies, objects, and
health/illness. Links are made to medical sociology. En-
rollment restricted to graduate students. M. Milman

Policy research. Covers a variety of theoretical perspectives
found in policy studies. Surveys various methodological
approaches used in policy research. Theories and methods
linked to research agendas on the various phases of the
policy life cycle. Students are required to design a research
proposal. Enrollment restricted to graduate students. En-
rollment limited to 10. Offered in alternate academic years.
E. D. Puig

290. Advanced Topics in Sociological Analysis. *
The topics to be analyzed each year vary with the in-
structor but focus upon a specific research area. The Staff

293. Going on the Job Market. *
A seminar devoted to the practical problems of securing a
job as a professional sociologist. Topics covered: research-
ing colleges, universities, and public and private organi-
izations that employ sociologists; designing a curriculum vitae; writing an application letter; preparing a "job talk:" handling questions during the interview process; the eth-
quette of visiting (and its aftermath); finding out about them; and the terms of employment: what is negotiable and what is not. Enrollment restricted to graduate stu-
dents. C. West

294. Writing for Social Scientists. *
Seminar on the genres of social science writing, and the
problems of starting and finishing a publishable thesis,
book, or article. For advanced graduate students working
on the composition of their dissertations and journal ar-
ticles. Enrollment restricted to graduate students. Enroll-
ment limited to 10. M. Milman

297. Independent Study. F, W, S
Students submit petition to sponsoring agency. The Staff

Students submit petition to sponsoring agency. The Staff

South and Southeast Asian Studies

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html

Guidelines for individual majors: In both South Asian and
Southeast Asian studies have been developed for students
who wish to obtain a broad social, political, and cultural
understanding of these areas and their place in the world
context. The South Asian studies major has its focus on
India, but course work and research on Bangladesh,
Nepal, Pakistan, and Sri Lanka are also encouraged. The
Southeast Asian studies major has subjects focus the nations
of insular Southeast Asia (Indonesia, Malaysia, and the
Philippines), but course work and research in other areas
such as Burma, Cambodia, Laos, Thailand, and Vietnam are
also encouraged.

The India and South Asia component of the program
has three special resources in support of study of the tradi-
tional and contemporary civilization and cultures of India:
the Satyajit Ray Film and Study Collection (Ray FASC)
at McHenry Library, the Ali Akbar Khan Endowment,
and the Satyajit Ray Film and Study Collection (Ray FASC)
Classical Indian Music. Hindi/Urdu is offered as part of
The India and South Asia component of the pro-
gram. A student who undertakes the individual major in
South or Southeast Asian studies is expected to complete
a double major in conjunction with a discipline such as
anthropology, one of the arts, Earth sciences, economics,
education, environmental studies, history, politics, sociol-
ogy, or women's studies. Along with the course work for
the individual major program, requirements for the South
or Southeast Asian studies component include a senior
project or thesis.

The minor in South Asian studies. Students must
complete Anthropology 130E, Ethnographic Area Studies
Culture and Politics of India Southeast Asia, and three
upper-division courses from lists maintained by the coor-
dinator. For details on the minor program, contact the
Language Program Office at (831) 459-2054, 239 Cowell
College. For details on the individual major, contact your
college academic preceptor.

Study Abroad. Students may apply to spend their junior
year in Delhi or Hyderabad through the UC Education
Abroad Program (EAP). Students can seek internships and
enroll in special study abroad programs in addition to
the ones in Delhi or Hyderabad through initiatives under-
taken by U.C. Santa Cruz in cooperation with institutions
in India.

Students may apply to the Volunteers in Asia program
to teach English in Indonesia or other Southeast Asian
countries; contact the Kresge College Office for more
information on this program.

Spanish and Spanish for Spanish Speakers

Language Program
239 Cowell College
(831) 459-2054
http://lang2.ucsc.edu/language_program/index2.html
Faculty and Professional Interests

Professor
JULIANNE BURTON-CARVAJAL (Literature)
Twentieth- and twenty-first-century Latin(o) American visual culture, particularly film; melodrama as a transnational form; gender and authorship; history, culture, and representations of California, particularly the Central Coast

NORMA KLAIN (Literature)
Latin American literary and cultural studies (specialization: Mexican, Chicano, Latin American literature and culture from a cross-border perspective, popular culture and the novel, poetics and politics, fiction and history, nation and narrational, cultural and feminist theories)

Associate Professor
JORGE ALADRO FONT (Literature)
Spanish mysticism, theory and historical developments of imagery in the Middle Ages to the baroque period, Renaissance and baroque Hispanic literature, Italian ideas in the Spanish Renaissance, Cervantes

LOURDES MARTINEZ-ECHAZABAL (Literature)
Latin American and Caribbean literatures, Afro-Latin American literatures, cultures, and societies found in national narratives, Brazilian literature, literature of Cuba and the Cuban diaspora; critical race theory

Lecturer
IGNACIO AZNAR, Emeritus
BRENDA BARCELÓ
Latin American culture, bilingual studies, Romance languages, Spanish/English and English/Spanish translation, Hispanophone linguistics

CARLOS CALIERNO
Latin American culture, history, literature, cinema, music, art, economics, and politics

VERONICA FELIU
Latin American literature of 20th century and colonial period, cultural studies, studies on testimony, popular culture, visual culture, and gender and authorship; history, culture, and representations of California, particularly the Central Coast

MAURICIO GONZALEZ-PAGANO
Language teaching methodology; Spanish syntax; computer-assisted foreign language learning; Latin American cultural studies, especially women's contributions

MARTA NAVARRO
Latin American literature, Mexican/Chicano culture, Latina/Chicana issues

Ariel Perez
Language acquisition and teaching methodology, computer-assisted language learning, teaching language for proficiency, oral proficiency assessment; Latin American current affairs

FRANK AL PEREZ
Seventeenth language acquisition, bilingual education, Siglo de Oro Theater, Peninsular medieval literature, Spanish-language film and theater for linguistic and cultural acquisition

ALVARO ROMERO-MARCO
Spanish literature of the nineteenth and twentieth centuries; film, cultural studies

Programs

Students interested in acquiring proficiency in Spanish can enroll in a wide range of Spanish language or Spanish for Spanish speakers (SPSS) courses, from beginning to advanced levels. The language and culture sequences of lower-division courses, Spanish 1-6 and 56 and Spanish for Spanish Speakers 61-63, are aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills as well as cultural competence. Students are strongly encouraged to finish year-long sequences without interruption and, if possible, to study in Spanish-speaking countries. Students may select from among several major programs: a major or minor in language studies (page 275), a major in literature with emphasis in Spanish/Latin American/Latin American literatures (page 292), a major in Latin American and Latino studies (page 276), or a major in global economics (page 177).

Spanish

Students beginning with Spanish level 1 can choose between two teaching tracks, either the first-year 1-2-3 series or the first-year 1T-2T-3T series. However, students placing beyond level 1 cannot enter the linked “T” series, which requires continuous enrollment from fall through spring quarters. For further information on the aims and nature of the 1-2-3 series and the 1T-2T-3T series, please see the course descriptions.

Spanish for Spanish Speakers

Spanish for Spanish speakers (SPSS) has been developed for students who, although raised in Spanish-speaking communities or households, are not yet fully proficient in Spanish. Spanish for Spanish speakers courses take into account the experiences and influences of bilingual and bicultural upbringing.

SPSS students are required to attend lab instruction once a week in addition to the regular class meetings. Some lower-division and all upper-division courses can fulfill requirements for several majors or departments, such as American studies, education, global economics, language studies, and Latin American and Latino studies.

Campus Language Laboratories and Placement Exams

Information on these topics can be found on page 275 under Language Program.

Study Abroad

The UC Education Abroad Program (EAP) offers programs ranging from one quarter to one year in Santiago, Chile; San Jose and Monteverde, Costa Rica; Mexico City and Monterrey, Mexico; and Cordoba, Madrid, Alicante, Barcelona, and Granada, Spain. Generally, students must have completed Spanish 63 or Spanish 6 or 56 by the end of the sophomore year to qualify for a junior year abroad. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For more information on the program, see UC Education Abroad Program (page 40). For information on credit applied to a major, contact the appropriate department.

Spanish

Lower-Division Courses

1. Instruction in the Spanish Language, F,W,S

Speaking, listening comprehension, reading and writing fundamentals. Taught entirely in Spanish; conversational fluency is encouraged through classroom practice and conversation groups, and is supplemented by language laboratory work. Classes are held three days a week; students complete the conversation group work independently of the classroom sessions. Prerequisite(s): Spanish Placement Examination score of 10. Enrollment limited to 26. The Staff

2. Instruction in the Spanish Language, F,W,S

Speaking, listening comprehension, reading and writing fundamentals. Taught entirely in Spanish; conversational fluency is encouraged through classroom practice and conversation groups, and is supplemented by language laboratory work. Classes are held three days a week; students complete the conversation group work independently of the classroom sessions. Prerequisite(s): course 1 or Spanish Placement Examination score of 20. Enrollment limited to 26. The Staff

3. Instruction in the Spanish Language, F,W,S

Speaking, listening comprehension, reading and writing fundamentals. Taught entirely in Spanish; conversational fluency is encouraged through classroom practice and conversation groups, and is supplemented by language laboratory work. Classes are held three days a week; students complete the conversation group work independently of the classroom sessions. Prerequisite(s): course 2, 2X, or Spanish Placement Examination score of 30. Enrollment limited to 26. The Staff

4. Intermediate Spanish, F,W,S

Includes comprehensive grammar review, composition, readings, and discussion. Students begin with Spanish level 1, or Spanish Placement Examination score of 20. Enrollment limited to 26. The Staff

5. Intermediate Spanish, F,W,S

Includes comprehensive grammar review, composition, readings, and discussion. Students begin with Spanish level 1, or Spanish Placement Examination score of 20. Enrollment limited to 26. The Staff

5M. Medical Spanish, W

Students learn vocabulary, expressions, and cultural background to be able to interact with Spanish-speaking patients and doctors. Medical Spanish fulfills language requirement for the health science major of the Biology Department. Prerequisite(s): course 4, 4X, Spanish for Spanish Speakers 61, or Spanish Placement Examination score of 50. Enrollment limited to 24. (General Education Code(s): H.I.) The Staff

6. Intermediate Spanish, F,W,S

Increases oral and written proficiency using authentic reading materials which focus on such topics as social class, ethnicity, education, religion, economic, and political developments in the Spanishspeaking world. Prerequisite(s): course 5, 5X. Spanish for Spanish Speakers 62, or Spanish Placement Examination score of 60. Enrollment limited to 24. (General Education Code(s): H.I.) The Staff

56. Advanced Readings in Different Genres, S

Includes composition, discussion, and vocabulary building based on the reading of selected prose, poetry, and related cultural material. Conducted in Spanish. Recommended as preparation for upper-division courses.
Upper-Division Courses

114. Advanced Conversation and Composition, S
Advanced conversation and composition based on extensive readings in the humanities and social sciences. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): course 6 or 56, Spanish for Spanish Speakers 63, or Spanish Placement Examination score of 70. The Staff

156. Topics in Hispanic Language and Culture. S
An analytic study of twentieth-century Hispanic language and culture as revealed in print and audio visual media. One of the following courses is offered quarterly.

156A. Hispanic Culture through Film, W
Focuses on how different Hispanic nations/regions document images of themselves and others through their national film. Students research particular themes, such as national crisis, humor, changes in class/gender roles, and language varieties in films from minimally three nations/regions. Prerequisite(s): course 6, 56, Spanish for Spanish Speakers 63, or Spanish Placement Examination score of 70. The Staff

156F. El humor en Espanol, F
Topic-oriented language course on sociopolitical and historical issues as seen through humor in different genres and media. Topics include Mafalda and Con- dorito (comic strips), Rius (collage of comic strips, photographs and original documents), Contiflas and Almodovar (cinema), E1 Teatro Campesino (theater), Ana L., Vega (literature), Les Luthiers (song and music). Course deals with written and oral discourse pertaining to the following Spanish language varieties: Rio de la Plata, Mexican, Caribbean, U.S., and Peninsular. Intensive writing and speaking in Spanish. Prerequisite(s): courses 6, 56, Spanish for Spanish Speakers 63 or Spanish placement examination score of 70. M. Gonzalez Pagani

194. Group Tutorial, F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

199. Tutorial, F,W,S
Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. The Staff

Spanish for Spanish Speakers

Lower-Division Courses

61. Spanish for Spanish Speakers, F
This course deals with orthography (syllabification, accentuation, etc.), basic grammatical features, verbal structures, and development of conversation skills and confidence in spoken Spanish. Focus on development of writing skills: description, dialogue, exposition, and commentary on contemporary issues relevant to Spanish speakers of the Americas. Students need to utilize the Self-Placement Guidelines, available in Crown 122 to assure proper placement in this class. (General Education Code(s): IH.) The Staff

62. Spanish for Spanish Speakers, W
Comprehensive review of the subjunctive, the passive voice, different uses of “ser” and “estar” and other nuances of the language. Intensive practice in understanding specialized readings, presentation/discussion of major ideas, vocabulary expansion, and writing essays on topics discussed. Students who have not taken Spanish for Spanish Speakers 61 need to speak with an instructor in the Spanish for Spanish Speakers Program. Prerequisite(s): course 6 or placement exam. (General Education Code(s): IH.) The Staff

63. Spanish for Spanish Speakers, S
Comprehensive grammar review. Rigorous practice in reading historical, sociopolitical, and literary works pointing out nuances of Spanish. Rigorous experimentation with various writing styles: analytical, argumentative, and creative. Prerequisite(s): course 6 or placement exam. (General Education Code(s): IH.) The Staff

94. Group Tutorial, F,W,S
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency. Enrollment limited to 10. The Staff

99. Tutorial, F,W,S
Students submit petition to sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S
Students submit petition to sponsoring agency. The Staff

15. Latina Identity (2 credits), W
A weekly seminar addressing Latina development of identity. Covers psychological, cultural, political, historical, and sociological issues impacting ethnic identity development. Discussions based on the reading material; students prepare a five-page paper and present one research article for discussion. Enrollment limited to 15. The Staff

42. Student-Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision (see course 192). The Staff

80A. Self and Society (Stevenson Core Course), F,W,S
Students learn relationship between “self” and “society” through introduction to various cultural and social heritages by study of great books. Readings range from ancient texts to the present and are representative of such thinkers as Plato, Shakespeare, Gandhi, M. Alcoy X, Sor Juana, Woolf, Marx, and Freud and such works as the Bible and Koran. (General Education Code(s): TS-Humanities and Arts or Social Sciences.) The Staff

80B. Self and Society (Stevenson Core Course), W
Students learn relationship between “self” and “society” through introduction to various cultural and social heritages by study of great books. Readings range from ancient texts to the present and are representative of such thinkers as Plato, Shakespeare, Gandhi, M. Alcoy X, Sor Juana, Woolf, Marx, and Freud and such works as the Bible and Koran. Prerequisite(s): satisfaction of the Subject A requirement for designated sections. (General Education Code(s): TS-Humanities and Arts or Social Sciences, C for designated sections.) The Staff

80H. Rainbow Theater: An Introduction to Multicultural Theater, F
Introduction to Asian American, Chicano/Latino, and African American plays through reading of major authors, discussion of social and historical context of their work, and development of a production of a one-act play from each cultural group. In-depth examination of key historical context of these three cultural groups. Video presentations followed by class discussion. Enrollment limited to 25. May be repeated for credit. (General Education Code(s): T4-Humanities and Arts, E.) D. Williams

80T. Self and Society for Transfer Students, S
A historical introduction to great ideas centering on the theme of the relationship between individual and society in a variety of cultural settings. Texts drawn from the three quarters of course 80A-B-C. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code(s): TS-Humanities and Arts or Social Sciences, W, E.) The Staff
Upper-Division Courses

120. Self and Society: Teaching Practicum. W, S
Each student facilitates one of the discussion sections of Stevenson 808 or 80C, attends lectures, and meets with staff for practice in the teaching process. Prerequisite: qualifications as determined by instructor at first class meeting. Enrollment limited to 5. The Staff

192. Directed Student Teaching. F, W, S
Teaching of a lower-division seminar under faculty supervision (see course 42). Prerequisites: upper-division standing and a proposal supported by a faculty member willing to supervise. The Staff

193. Field Study. F, W, S
Provides for individual programs of study, sponsored by the college and performed off-campus. This course may be counted for up to three courses of credit in any quarter. Prerequisites: approval of student's advisor and the academic preceptor, and, in the case of full-time study, the board of studies supervising the major. May be repeated for credit. The Staff

A program of independent study arranged between a group of students and a faculty instructor. Enrollment restricted to members of Stevenson College. Enrollment limited to 12. The Staff

194F. Group Tutorial (2 credits). F, W, S
A program of independent study arranged between a group of students and a faculty instructor. Course designed for members of Stevenson College. Students submit petition to sponsoring agency. Enrollment limited to 10. May be repeated for credit. The Staff

198. Independent Field Study. F, W, S
Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Prerequisite: approval of the student's advisor, certification of adequate preparation, approval by the academic preceptor. May be repeated for credit. The Staff

198F. Independent Field Study (2 credits). F, W, S
Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Students submit petition to sponsoring agency. Requires approval of the student's advisor and academic preceptor. May be repeated for credit. The Staff

199. Tutorial. F, W, S
Individual projects carried out under the supervision of a Stevenson faculty member. Students submit petition to sponsoring agency. The Staff

199F. Tutorial (2 credits). F, W, S
Individual projects carried out under the supervision of a Stevenson faculty member. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Subject A
(English Composition)

See page 25 and 380.

Theater Arts

Program Description

The Theater Arts Department combines drama, dance, critical studies, and theater design/technology to offer students an intensive, unified undergraduate program. Combining theory and practice, the program seeks to educate the mind, the body, and the imagination of students. Graduates of the UCSC program typically pursue careers in professional theater and dance companies, in film and television, and in teaching at all levels—from university to high school to grade school. Others engage in careers in arts administration, dramatic writing, and related fields.

The program stresses the interrelation of drama, theatrical design/technology, dance, and digital arts and new media as essential to the successful practice of the theater arts in the contemporary world. The lower-division curriculum requires a range of practical work in theater arts and a rigorous exposure to the history of drama, design/technology, and dance. At the upper-division level, students are given the opportunity to focus on an area of interest within the discipline in limited-enrollment studies and through direct interaction with faculty. At the same time, they are asked to expand their theoretical perspective through confrontation with the range of dramatic theories and focused course work in the history and theory of drama, design/technology, and dance. The impact of digital arts and new media on theater is also explored.

A wealth of production opportunities are offered to students. This includes major productions directed by faculty or distinguished visiting artists, productions directed or choreographed by students, and faculty-directed workshops. Undergraduate students are also given the opportunity to see their own writing, choreography, or interdisciplinary concepts put into production in annual festivals of student work. Although majors are given preference in studio

Faculty and Professional Interests

Professor

James H. Bierman
Playwriting, theater history and literature, classical and Renaissance drama, Chicano theater, digital media

Andrew K. Doe, Emeritus

Michael D. Edwards, Adjunct
Acting and directing, dramatic literature, opera, Shakespeare

M. Kathleen Foley
Asian theater, Southeast Asian studies, performance studies, maskwork, puppetry, multicultural theater

Mark Franko
Dance history and theory, choreography, technique, performance studies, theatrical theory in historical and critical perspective

Norvid J. Roos, Emeritus

Danny Scheie
Acting, directing, dramatic literature, theater history, Shakespeare, Wagner, gay studies

Ruth L. Solomon, Emeritus

Audrey E. Stanley, Emerita

Paul Whitworth
Acting, directing, dramatic literature, English and Spanish Renaissance, translating dramatic literature

Associate Professor

Elaine Yokoyama Roos
Costume design, costume history, makeup, mask making, design for dance, Asian and Asian American theater, CADD

Assistant Professor

David Cuthbert
Lighting design, CADD, projection design, scenic design

Kate Edmunds
Set design for theater and film

Patty Gallagher
Movement training for actors, circus and clown traditions, and Indonesian dance performance

Kimberly Jannerone
Directing, dramaturgy, dramatic theory and criticism, theater history, acting

Alma Martinez
Acting, Chicano theater, contemporary Mexican and Latin American popular/political theater, theater of American cultures, critical theory, directing

Edward C. Warburton
Development of dance thought in action, creative processes, and technology in theater arts; dance technique, movement research and composition, and applied dance practice

Lecturer

Rosa Apodaca
Chicana/o teatro, acting

Tandy Beal
Choreography, improvisation, technique, performance skills, collaborations with classical and jazz composers, circus, theater and video, children's productions

Gregory Fritsch
Acting and directing, development of new scripts

Kate Hawley
Playwriting

Doug Holscaw
Acting, directing, playwriting, queer theater

Connie Kreemer
Contemporary theory and technique, somatic therapies, dance and gender theory, Isadora Duncan reconstructions, 20th-century dance

William Nichols
History of design, technical design, lighting design, sound design

Marcia Taylor
Acting, stage directing

Professor

Mary-Kay Gamel (Literature)
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

Program Description

The Theater Arts Department combines drama, dance, critical studies, and theater design/technology to offer students an intensive, unified undergraduate program. Combining theory and practice, the program seeks to educate the mind, the body, and the imagination of students. Graduates of the UCSC program typically pursue careers in professional theater and dance companies, in film and television, and in teaching at all levels—from university to high school to grade school. Others engage in careers in arts administration, dramatic writing, and related fields.

The program stresses the interrelation of drama, theatrical design/technology, dance, and digital arts and new media as essential to the successful practice of the theater arts in the contemporary world. The lower-division curriculum requires a range of practical work in theater arts and a rigorous exposure to the history of drama, design/technology, and dance. At the upper-division level, students are given the opportunity to focus on an area of interest within the discipline in limited-enrollment studies and through direct interaction with faculty. At the same time, they are asked to expand their theoretical perspective through confrontation with the range of dramatic theories and focused course work in the history and theory of drama, design/technology, and dance. The impact of digital arts and new media on theater is also explored.

A wealth of production opportunities are offered to students. This includes major productions directed by faculty or distinguished visiting artists, productions directed or choreographed by students, and faculty-directed workshops. Undergraduate students are also given the opportunity to see their own writing, choreography, or interdisciplinary concepts put into production in annual festivals of student work. Although majors are given preference in studio

Lecturer

Rosa Apodaca
Chicana/o teatro, acting

Tandy Beal
Choreography, improvisation, technique, performance skills, collaborations with classical and jazz composers, circus, theater and video, children's productions

Gregory Fritsch
Acting and directing, development of new scripts

Kate Hawley
Playwriting

Doug Holscaw
Acting, directing, playwriting, queer theater

Connie Kreemer
Contemporary theory and technique, somatic therapies, dance and gender theory, Isadora Duncan reconstructions, 20th-century dance

William Nichols
History of design, technical design, lighting design, sound design

Marcia Taylor
Acting, stage directing

Professor

Mary-Kay Gamel (Literature)
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

Program Description

The Theater Arts Department combines drama, dance, critical studies, and theater design/technology to offer students an intensive, unified undergraduate program. Combining theory and practice, the program seeks to educate the mind, the body, and the imagination of students. Graduates of the UCSC program typically pursue careers in professional theater and dance companies, in film and television, and in teaching at all levels—from university to high school to grade school. Others engage in careers in arts administration, dramatic writing, and related fields.

The program stresses the interrelation of drama, theatrical design/technology, dance, and digital arts and new media as essential to the successful practice of the theater arts in the contemporary world. The lower-division curriculum requires a range of practical work in theater arts and a rigorous exposure to the history of drama, design/technology, and dance. At the upper-division level, students are given the opportunity to focus on an area of interest within the discipline in limited-enrollment studies and through direct interaction with faculty. At the same time, they are asked to expand their theoretical perspective through confrontation with the range of dramatic theories and focused course work in the history and theory of drama, design/technology, and dance. The impact of digital arts and new media on theater is also explored.

A wealth of production opportunities are offered to students. This includes major productions directed by faculty or distinguished visiting artists, productions directed or choreographed by students, and faculty-directed workshops. Undergraduate students are also given the opportunity to see their own writing, choreography, or interdisciplinary concepts put into production in annual festivals of student work. Although majors are given preference in studio

Lecturer

Rosa Apodaca
Chicana/o teatro, acting

Tandy Beal
Choreography, improvisation, technique, performance skills, collaborations with classical and jazz composers, circus, theater and video, children's productions

Gregory Fritsch
Acting and directing, development of new scripts

Kate Hawley
Playwriting

Doug Holscaw
Acting, directing, playwriting, queer theater

Connie Kreemer
Contemporary theory and technique, somatic therapies, dance and gender theory, Isadora Duncan reconstructions, 20th-century dance

William Nichols
History of design, technical design, lighting design, sound design

Marcia Taylor
Acting, stage directing

Professor

Mary-Kay Gamel (Literature)
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

Program Description

The Theater Arts Department combines drama, dance, critical studies, and theater design/technology to offer students an intensive, unified undergraduate program. Combining theory and practice, the program seeks to educate the mind, the body, and the imagination of students. Graduates of the UCSC program typically pursue careers in professional theater and dance companies, in film and television, and in teaching at all levels—from university to high school to grade school. Others engage in careers in arts administration, dramatic writing, and related fields.

The program stresses the interrelation of drama, theatrical design/technology, dance, and digital arts and new media as essential to the successful practice of the theater arts in the contemporary world. The lower-division curriculum requires a range of practical work in theater arts and a rigorous exposure to the history of drama, design/technology, and dance. At the upper-division level, students are given the opportunity to focus on an area of interest within the discipline in limited-enrollment studies and through direct interaction with faculty. At the same time, they are asked to expand their theoretical perspective through confrontation with the range of dramatic theories and focused course work in the history and theory of drama, design/technology, and dance. The impact of digital arts and new media on theater is also explored.

A wealth of production opportunities are offered to students. This includes major productions directed by faculty or distinguished visiting artists, productions directed or choreographed by students, and faculty-directed workshops. Undergraduate students are also given the opportunity to see their own writing, choreography, or interdisciplinary concepts put into production in annual festivals of student work. Although majors are given preference in studio
courses, most courses and productions welcome nonma-
jors as well. Opportunities to study and perform non-
Western as well as Euro-American traditions are also a sig-
nificant part of the program.

The stage and studio spaces available to students of
theater arts allow for this breadth of training and per-
formance opportunities. The Theater Arts Center con-
tains a 500-seat thrust stage, a state-of-the-art experimen-
tal theater, and a 200-seat proscenium theater; acting,
directing, and dance studios; costume, scene, and prop-
ties shops; a sound recording room; a computer lab; and
a mural shop. Elsewhere on campus are the open-air
Quarry Theater seating 3,000, the Shakespeare Santa
Cruz Festival Glen, and the 150-seat Barn T theater.

Library holdings in theater literature and history are
extensive, including a large slide collection; journals in
current theater, design/technology, and dance and
recordings, films, videotapes, and CD-ROMs.

A unique resource for UCSC students is Shakespeare
Santa Cruz. Acknowledged to be one of the leading
Shakespeare festivals in the country, SSC was founded in
1982 to foster links between modern scholarship and
contemporary professional theater practice. SSC’s annual
summer festival presents the works of Shakespeare in
thematically related or other great plays of the world
stage, performed, designed, and directed by professionals
from all over the country. SSC offers undergraduates
various opportunities to work in conjunction with the
professional actors through its summer intern program,
its winter holiday production (in fall quarter), and
Shakespeare-to-Go, a 45-minute Shakespeare outreach
production in which students perform and tour
(rehearsed during winter quarter and performed during
spring quarter) for audiences throughout Santa Cruz
County and beyond.

Majors who wish to intensify their study of a partic-
ular theater arts area before seeking admission to gradu-
ate school or work with professional companies are
encouraged to apply to the department’s Fifth-Year
Certificate Program.

Petitioning for the Major

Prior to petitioning for the major, students must have
successfully completed 2 credits of course 50,
Fundamentals of Theater Production, and courses 60A-B-
C, Development of Theater Arts Delivery, Literature, and
Practice. Students are encouraged to complete these
courses as early in their studies as possible so that the
petition to major status can be accomplished no later
than the first quarter of the junior year.

Transfer Students

During the first quarter on campus, transfer students
who have not satisfied the prerequisites for the theater
arts major may declare the major after completing a
study plan during an advising session. Transfer students
may petition to have equivalent courses taken at other
schools count toward the major requirements.

Petition forms and information on courses and major
requirements can be obtained at the department office,
J106 Theater Arts Center.

Major Requirements

Students majoring in theater arts may organize their
studies around a particular area of interest in accordance
with the requirements outlined below. The theater arts
major requires six lower-division courses and 6 credits of
course 50 (a 2-credit course that provides experience in
production work), six upper-division courses in resi-
dence; two electives (which may be upper- or lower-
division courses), and satisfaction of the senior seminar
requirement. Students must also take one course within
the department that focuses on theater of diverse groups.
The following lower-division courses must be taken by
all majors

50 Fundamentals of Theater Production
(2-credit course; must take a total of 6 credits)
60A-B-C Development of Theater Arts Delivery,
Literature, and Practice

One course in each of the theater arts areas of drama,
dance, and theater design and technology:

10 Introduction to Theater Design and Technology
20 Introductory Studies in Acting
30 Introduction to Modern Dance Theory and Technique
or other approved introductory dance classes (Check with the Theater Arts Department Office.)

Three lower- or upper-division elective theater arts courses:

- one theater arts diversity course (see list in Theater Arts Department Office)
- two other theater arts electives

Six upper-division theater arts courses:

- 160, Dramatic Criticisms
- two courses in theater literature/history/critical studies
- two studio courses
- one faculty-directed theater arts production course

Each major must satisfy the senior seminar requirement (course 185).

Exceptions to the major requirements, through the UC
Education Abroad Program or transfer credits, are consid-
ered on a case-by-case basis by the department chair.

Theater Arts Major Planners

The following are two recommended academic plans for
students to complete during their first two years as prepa-ation for the theater arts major. Plan One is a guideline
for students who are committed to the major early in
their academic career; Plan Two is for students who are
considering the major.

Plan One

Starting Fall Winter Spring
1st Year
Thea 60A
(fish) gen ed
Thea 60B
bwdy studio gen ed
Thea 60C

2nd Year
Thea 30
(soph) gen ed
Thea 10
gen ed
Thea 20

3rd Year
Thea 60A
(college core)
Bwdy studio gen ed
Thea 50

4th Year
Thea 60B
Thea 30

Plan Two

Starting Fall Winter Spring
1st Year
Thea 20
(fish) gen ed
Thea 20
bwdy studio gen ed
Thea 30

2nd Year
Thea 50
(soph) gen ed
Thea 10
gen ed
Thea 50

3rd Year
Thea 60A
Thea 30

Comprehensive Requirement

Theater arts majors are responsible for successfully com-
pleting a senior comprehensive exam in winter quarter of
their last year of study in conjunction with course 185. It
has two parts—oral and written—which are given in the
fifth and 10th weeks of the quarter, respectively. In the
fifth week of winter quarter, the oral presentation is
delivered. Students select a focused portion of their cre-
ative or critical work to present to a committee of faculty
members. Presentation options might include presenting
a design project or an acting scene, discussing a director-
al concept, demonstrating a choreography, or reading a
scene from an original play. The written exam consists of
essays analyzing selected texts around a selected topic in
theater arts. For details, see the Theater Arts Department
Handbook.

Minor Requirements

Students earn a minor in theater arts by completing seven
courses (six 5-credit courses and one 2-credit course)
comprising a background in the theory and prac-
tice of the theater arts as well as a focus on either drama,
theater design/technology, or dance. The course require-
ments are listed below. There is no comprehensive
requirement for the minor.

- Two courses in the literature/theory of the
  theater arts, chosen from the following: 60A-B-C,
  160, or the 161 series
- 2 credits of course 50
- One of the following courses, in the student’s area of
  focus: 10, 20, or 30
- Three upper-division electives, of which must be
  a studio or faculty production course

Fifth-Year Certificate Program

The Theater Arts Department offers a graduate certifi-
icate program that allows a limited number of students to
refocus or intensify their skills, concentrating on per-
formance reinforced by scholarship. The program pro-
vides the opportunity to experience the benefits of
apprenticeship in an academic setting. Students follow an
individual program suited to their background, needs,
and interests while specializing in drama, design/tech-
ology, dance, playwriting, Western or non-Western theater,
or dramatic literature.

Students in the graduate certificate program are
expected to complete one year as a full-time resident stu-
dent, passing eight 5-credit theater arts courses. Of those
eight courses, one is a graduate seminar, and one must be
in the history, criticism, or theory of theater, design/tech-
ology, or dance. The remainder of the program is
designed by the student according to individual interests
and needs in consultation with the faculty adviser. Many
students elect to take faculty-supervised individual stud-
ies courses in their area of emphasis.

For additional information, contact the Theater Arts
Department.

Lower-Division Courses

10. Introduction to Theater Design and Technology, F,S

Addresses imagination and creativity. Using the frame-
work of theater production, students explore the process
of translating a script into a performance. Topics include
visual literacy, creative problem solving, establishing ef-
f ective working teams, tear sheets, storyboard, drawing,
sound, and color theory. This course is a prerequisite for
all upper-division design courses. (General Education
Code(s): A.) K. Edmunds
12. Production Management. F
Designed to acquaint students with the complexities of staging productions from the audition process to final performance. Directing, lighting, scenic production, sound, cueing, and personnel management are aspects that will be touched upon in class. Students are billed for a materials fee. (General Education Code(s): A.) The Staff

14. Drawing. *
A fundamental course in drawing from still life, the figure, and in the landscape. The approach is from the tonal and volumetric aspects of the object. Color is introduced as the course progresses. Instruction fashioned to the individual needs of the student. The inexperienced are welcomed as well as the experienced. Students are billed for a materials fee. (General Education Code(s): A.) The Staff

17. Costume Construction. F
The process of interpreting a costume designer's sketch into a finished theatrical costume. Some techniques included are dyeing, fabric selection, draping, flat pattern drafting, pattern manipulation, adaptation, fitting, and alteration. Using various techniques, students make basic pattern pieces and learn to modify them to create costumes. Students are billed for a materials fee. Enrollment limited to 20. (General Education Code(s): A.) E. Roos

18. Drafting for Theatrical Production. S
An examination of the fundamentals of drafting scale drawings for production, including floor plans, elevations, sections, working drawings, dimensions, layout, and lettering. Students learn isometric drawing, perspective, and rendering techniques. Students are billed for a materials fee. Enrollment limited to 20. (General Education Code(s): A.) K. Edmonds

19. Design Studio: Lighting Studio A. W
An introduction to the theory and practice of lighting design with attention to the practical skills and creative approaches to lighting performance pieces, the technical side of lighting design via demonstrations, lectures, and labs. Students complete projects evolving and executing concepts for lighting chosen pieces. Students are billed for a materials fee. Prerequisite(s): course 10. (General Education Code(s): H.), A.) D. Cuthbert

Introduction to acting as an art and the problems of performance. Concentrates on expanding the students' range of expression and ability to respond to and analyze dramatic text. Students with little or no experience are encouraged to attend. (General Education Code(s): H., A.) (F) P. Gallagher, (W) A. Martinez, (S) D. Scheie

Studio course involving acting exercises based on Stanislavski principles of acting as well as work on movement, voice, and interpretation of text. Prerequisite(s): course 20 or permission of instructor. Enrollment limited to 30. (General Education Code(s): H., A.) The Staff

22. Indonesian Dance and Drama, F, S
Students learn the basic movement repertoire of the specific characteristics of the Indonesian dance-drama/puppetry tradition over the quarter with explanation of how these types operate in their own cultural context. The course culminates in an open showing of a student-created performance. Students are billed for a materials fee. Prerequisite(s): admission by audition; departmental office for more information. The Staff

23. Voice for the Actor. S
Students work on developing resonance, range and expressivity for stage performance via physical exercises and text explorations undertaken in small groups. Prerequisite(s): course 20. Enrollment limited to 20. (General Education Code(s): A.) P. Whitworth

30. Introduction to Modern Dance Theory and Technique, F, W, S
Intensive instruction in developing the dancer's physical instrument, combined with basic movement theory. May be repeated for credit with consent of instructor. Students are billed a materials fee. May be repeated for credit. (General Education Code(s): H., A.) The Staff

32. Introduction to Ballet. F
Introduction to ballet basics such as healthy alignment, anatomically sound articulation of hips and feet, balance control, moving through space harmoniously, and development of technical strength and combative capacity in a classical, but fluid, aesthetic. Students are billed a materials fee. Enrollment limited to 35. May be repeated for credit. (General Education Code(s): H., A.) E. Warburton

33. Advanced Introduction to Modern Dance. F
Intensive instruction in developing the dancer's physical instrument combined with basic movement theory. Enrolled limited to 20. May be repeated for credit. (General Education Code(s): H., A.) E. Jannarone

35. Introduction to Tap Dance. W
Intensive instruction in developing the dancer's physical instrument combined with basic movement theory. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): H., A.) J. Bierman

40. Scenography. F
An introduction to the theory and practice of their art. Presentations include discussion of the nature of their artistic work and reflection on the path that brought them to their present work with attention to the creativity and constraint that they experience in their profession. P. Whitworth

40B. Rock 'n' Roll Design, W
Examination of the genesis, history and development of the technical theater practices used in large arena rock shows. Topics will include the development of rigging practices used in arenas, touring logistics, lighting instrumentation and aesthetics of rock shows, and the nature, practice, and approach of sound in those venues. (General Education Code(s): T-4-Humanities and Arts, A.) The Staff

40E. Stand-Up Comedy, W
American comedy from Mark Twain to present, including popular humor, history, and politics, using comedy from the '20s through the women's gay and civil rights movements. Discussions are based on readings and videos of a wide variety of artists. Students present performances weekly. (General Education Code(s): T-4-Humanities and Arts, A.) The Staff

40G. Creative Process/Dance. *
Introductory dance, with participation in a wide range of movement classes taught by the instructor and guest artists. Students develop their movement experiences through further viewing of world dance, discussion, reading, and writing. Enrollment limited to 100. (General Education Code(s): T-4-Humanities and Arts, A.) The Staff

40H. Hamlet and Othello. F, W
Offered online, the course explores major issues of interpretation of Shakespeare's classic play, which has occupied the minds of audiences, directors, designers, performers, and critics during its 400-year history. In doing this, it offers a sense of history of people's preoccupations with and...
thoughts about the play. Students taking this class are expected to complete the course during the quarter for which they are enrolled. All students enrolled in this course should visit elsinore.ucsc.edu and write to elsinore@ucsc.edu. (General Education Code(s): T4-Humanities and Arts, A.) J. Bierman

80L. Muppet Magic: Jim Henson's Art. W The artistic and social impact of the Muppets on American puppetry, children's television, and Hollywood film is explored through viewings; guest lectures; and analysis. Henson's legacy in artistic innovation, mainstreaming of puppet theater for adult audiences, and establishment of puppetry in media and marketing are also explored. (General Education Code(s): T4-Humanities and Arts, A.) J. Bierman

80M. Chicano/a Teatro, W Introduction to Teatro Chicano/a with examination of how cultural diversity plays a role in theater. Through lectures, films, and workshop exercises, reflect upon the process of Teatro Chicano. Students write their own acts, improvise, and perform in class. (General Education Code(s): T4-Humanities and Arts, A., E.) The Staff

80N. Walt Disney. An examination of Walt Disney's creation of the American vision of "family entertainment." Particular attention will be paid to the classic animated feature films of Walt Disney and to the way this Disney invention has been preserved and developed since his death. We will also look at the live-action films, theme parks, and other Disney creations. (General Education Code(s): T4-Humanities and Arts, A., E.) J. Bierman

80O. Comedy in American Theater and Media since 1950. * The interrelationship of comedy in contemporary American media and innovations at Second City, the Chicago-based comedy club, will be explored, as well as the theory and practice of improvisation as a technique for generating comic material and the varied relationships of performers, writers, and audiences in live theater, television, and film. (General Education Code(s): T4-Humanities and Arts, A.) M. Foley

80S. Theater Arts Education and the Community, * This course is designed to develop ways in which we can direct our interest in the arts into concrete and successful community projects. Although the emphasis will be on developing skills to work within K-12 classrooms, other community projects will be discussed and designed. (General Education Code(s): T4-Humanities and Arts, A.) T. Queer Theater. S

80T. The Performance of Story in Theater and Film, * An examination of the theory and practice of theater and film, comparing and contrasting works that have been adapted from one genre to another. Lecture, film, and video viewing and discussion of materialist, psychoanalytic, and feminist approaches will be shared. (General Education Code(s): T4-Humanities and Arts, A.) T. Queer Theater. S

80U. Socks, Drugs, and Rock and Roll: American Costume Since 1950, * This course is an introduction to American fashion and fashion designers from the 1950s to the present with special attention given to the influence of popular media on American costume since 1950, the beginning of rock and roll. Students cannot receive credit for this course and course 116B. (General Education Code(s): T4-Humanities and Arts, A.) E. Roos

80V. The Circus in American Culture, * Circus arts from their shamanic roots to contemporary practice will be analyzed in a historical, aesthetic, and creative dimension. Lecture, discussion, and demonstrations will explore the theory and practice of American circus arts. In section, students will explore basic circus skills from clowning to tumbling to exhibition of freaks. (General Education Code(s): T4-Humanities and Arts, A.) T. Queer Theater. S

80W. The Broadway Musical, * The musical comedy as a distinctly American contribution to theater and film will be studied through scripts, scores, film, and video viewing. Analyzes European backgrounds, the relationship of Broadway musicals and Hollywood film in the studio era, the work of Rogers and Hammerstein and Sondheim, and changes in popular music from blues to rock to Disney musicals. Students cannot receive credit for this course and course 161V. Students are billed a materials fee. (General Education Code(s): T4-Humanities and Arts, A.) P. M. Skloot

80X. The Performance of Story in Theater and Film, * The intangible and transitory nature of the acoustic reality. Electronically regenerated sounds for use in the performing arts. Broad scope of the course consideration begins with found sound and includes sound propagation. Emphasis on tape-recording, editing, sound control functions, and equipment utility. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S

80Y. The Broadway Musical. * The development of scenic design from the Greek period to the present. Concentration is on the changing styles of set design in relation to the changing attitudes toward dramatic literature, art, and theater architecture. (General Education Code(s): A.) T. Queer Theater. S

107. Design Studio: Masks and Makeup. S Advanced work in the design and techniques of stage makeup and masks. Students are billed for a materials fee. Prerequisites: course 10. Enrollment limited to theater arts majors open at the end of the quarter if space permits. Enrollment limited to 20. Offered in alternate academic years. E. Roos

110. Advanced Stage Technology, † An investigation into the intricacies of production, focusing on structural, spatial, and visual concepts of the design and execution of scenic units, drafting, and related areas of technology. Designed to facilitate in-depth studies of specific production problems. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S

113. The History of Design for Theater, † The development of scenic design from the Greek period to the present. Enrollment limited to 20. Offered in alternate academic years. E. Roos

114. Design Studio: Sound, F The intangible and transitory nature of the acoustic reality. Electronically regenerated sounds for use in the performing arts. Broad scope of the course consideration begins with found sound and includes sound propagation. Emphasis on tape-recording, editing, sound control functions, and equipment utility. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S

115. Design Studio: Scenic Design, W Advanced work in principles and theory of scenic design. M ay be repeated for credit with consent of instructor. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) K. Edmunds

116A. History of Clothing and Costume, † Survey of the influence of popular media on American costume since 1950, the beginning of rock and roll. Students cannot receive credit for this course and course 80U. (General Education Code(s): A.) T. Queer Theater. S

116B. American Costume Since 1950: Socks, Drugs, and Rock 'n' Roll, * Introduction to American fashion and fashion designers from the 1950s to the present with special attention given to the influence of popular media on American costume since 1950, the beginning of rock and roll. Students cannot receive credit for this course and course 80U. (General Education Code(s): A.) E. Roos

117. Design Studio: Costume, W Advanced principles and theory of costume design for theatrical productions. Students are billed for a materials fee. Prerequisites: course 10. May be repeated for credit. (General Education Code(s): A.) E. Roos

118. Design Studio: Scene Painting, * Emphasis on techniques used in painting scenery for the theater. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S

Upper-Division Courses

104. Multimedia Authoring, S Introduces students to basic tools for the creation of multimedia digital projects. Special attention is given to the integration of video, sound, graphics, text and virtual reality and to the creation and execution of strategies for interaction between users and the projects themselves. This with this in mind, students design and create computer programs and games. Enrollment limited to 25. (General Education Code(s): A.) J. Bierman

105. Introduction to Digital Media Design, F Introduction to digital media design for live theater. Primarily focuses on developing working understanding of Adobe Photoshop, Final Cut Pro, and DVD Studio Pro as applied to digital media design. Gives additional attention to theoretical questions raised by introduction of moving images in a theatrical space, visual composition, and editing practices. Enrollment limited to 15. (General Education Code(s): A.) T. Queer Theater. S

107. Design Studio: Masks and Makeup, S Advanced work in the design and techniques of stage makeup and masks. Students are billed for a materials fee. Prerequisites: course 10. Enrollment limited to theater arts majors open at the end of the quarter if space permits. Enrollment limited to 20. Offered in alternate academic years. E. Roos

110. Advanced Stage Technology, † An investigation into the intricacies of production, focusing on structural, spatial, and visual concepts of the design and execution of scenic units, drafting, and related areas of technology. Designed to facilitate in-depth studies of specific production problems. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S

113. The History of Design for Theater, † The development of scenic design from the Greek period to the present. Enrollment limited to 20. Offered in alternate academic years. E. Roos

114. Design Studio: Sound, F The intangible and transitory nature of the acoustic reality. Electronically regenerated sounds for use in the performing arts. Broad scope of the course consideration begins with found sound and includes sound propagation. Emphasis on tape-recording, editing, sound control functions, and equipment utility. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S

115. Design Studio: Scenic Design, W Advanced work in principles and theory of scenic design. May be repeated for credit with consent of instructor. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) K. Edmunds

116A. History of Clothing and Costume, † Survey of the influence of popular media on American costume since 1950, the beginning of rock and roll. Students cannot receive credit for this course and course 80U. (General Education Code(s): A.) T. Queer Theater. S

116B. American Costume Since 1950: Socks, Drugs, and Rock 'n' Roll, * Introduction to American fashion and fashion designers from the 1950s to the present with special attention given to the influence of popular media on American costume since 1950, the beginning of rock and roll. Students cannot receive credit for this course and course 80U. (General Education Code(s): A.) E. Roos

117. Design Studio: Costume, W Advanced principles and theory of costume design for theatrical productions. Students are billed for a materials fee. Prerequisites: course 10. May be repeated for credit. (General Education Code(s): A.) E. Roos

118. Design Studio: Scene Painting, * Emphasis on techniques used in painting scenery for the theater. Students are billed for a materials fee. Prerequisites: course 10. (General Education Code(s): A.) T. Queer Theater. S
119. Design Studio: Lighting Studio B. S
The theory and practice of lighting design with emphasis on practical application. Light plots, electricity, optics, design, and manipulation of lighting for the theater and related performance events are investigated. The student explores mechanics and aesthetics with hands-on experience. Students are billed for a materials fee. Prerequisite(s): course 19. (General Education Code(s): A.) The Staff

121. Acting Studio II. F,W
Continuing concentrated work on basic acting skills and textual analysis through scene study. May be repeated for credit with consent of instructor. Prerequisite(s): admission by audition at first class meeting. Department office for more information. Course 21 recommended as preparation. May be repeated for credit. (General Education Code(s): A.) The Staff

122. Indian Performance: Rama, Siva, Krishna.
Study of the classical theater and dance of India, with attention to performance practice, aesthetic theory, relationship to religious practice devoted to Rama, Siva, and Krishna, political implications and intercultural experimentation. (General Education Code(s): IH, A.) The Staff

124. Movement for Performers. W,S
Awareness and extension of personal movement repertoire, through observation, movement experience, and exploration. (General Education Code(s): A.) The Staff, S. P. Gallagher

126. Acting Studio III. F,W
Individual work on acting skills and problems, with emphasis on individual interpretation and scene work with other students. Prerequisite(s): course 121; permission of instructor; audition at first class meeting; contact department office for more information. Enrollment limited to 18. May be repeated for credit. (General Education Code(s): A.) The Staff, S. P. Gallagher

129. Advanced Ballet (2 credits). *
Continued study of classical ballet technique as a serious, expressive art form. Work includes longer combinations, air work, and style study in a regular class routine. Audition at first class meeting. Students are billed a materials fee. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) The Staff

130. Intermediate Modern Dance Theory and Technique. W
A progression from the simple phrasing and articulation of beginning technique class to more complex material requiring more acute perceptual skills and richer dynamic range. Emphasis is on both alignment and maintaining the kinetic integrity of the body as it moves through space. Students are billed a materials fee. Prerequisite(s): course 30 or 31 or permission of instructor. May be repeated for credit. (General Education Code(s): A.) The Staff

131. Advanced Modern Dance Theory and Technique. *
Advanced instruction in developing the dancer's physical instrument, combined with movement theory. Students are billed a materials fee. Prerequisite(s): course 30 or 31 or permission of instructor. May be repeated for credit. (General Education Code(s): A.) The Staff

132. Modern Dance Studio (2 credits). *
Instruction in developing the dancer's physical instrument, combined with movement theory. Students are billed a materials fee. Prerequisite(s): course 30 or 31 or permission of instructor. May be repeated for credit. (General Education Code(s): A.) The Staff

133. Issues in Dance History and Theory. *
A research seminar. Topics range from problems in dance aesthetics, criticism, or theory to particular movements, periods, or the work of a choreographer. Enrollment limited to 20. May be repeated for credit. (General Education Code(s): A.) M. Franko

134. Introduction to Dance Modernism. *
Rare historical footage and the writings of famous choreographers provide an overview of twentieth-century dance within the perspective of modernism. Topics include romanticism, "national" dance, Orientalism, Ausdruckstanz, "industrial" dance, American modern dance and neo-classicism, chance procedure, postmodernism, and the avant-garde commodity marketplace. (General Education Code(s): A.) M. Franko

135. Dance Improvisation and Theory. *
Exploring sources for movement: gaining facility in a wide range of movement elements, working in ensemble and solo. Students are billed a materials fee. Information and resources are provided by the instructor. Prerequisite(s): course 32 or permission of instructor. Enrollment limited to 30. May be repeated for credit. (General Education Code(s): IH, A.) E. Warburton

136. Intermediate Ballet. S
Continued study of classical ballet technique as a serious expressive art form. Work includes longer combinations, air work, and style study (Baroque and Romantic) in a regular class routine. Class also involves viewing, reading, and reviewing. Admission is limited to those persons chosen to take part in a Theater Arts Department sponsored production. Enroll-ment is limited to those persons chosen to take part in a particular production. Admission by audition; audition schedule to be announced at first class meeting. May be repeated for credit. (General Education Code(s): A.) The Staff

151. Studies in Performance (Drama). F,W,S
Studies in theater, taken in connection with participation in a Theater Arts Department sponsored production. Enrollment is limited to those persons chosen to take part in a particular production. Admission by audition; audition schedule to be announced at first class meeting. May be repeated for credit. (General Education Code(s): A.) The Staff

A process-oriented investigation of specific playwrights or theatrical styles consisting of work which may culminate in a final production. Admission by audition at first class meeting; department office for more information. May be repeated for credit. (General Education Code(s): A.) D. Scheie, D. Cuthbert

156. Play Development Workshop. *
"Hands on" study and exploration of the process of developing a new script from the perspective of the playwright, the actor, and the director. Students enrolling in this course as playwrights are selected on the basis of submissions turned in the previous quarter. Students taking the course as directors are required to obtain consent of the instructor. Other students may enroll as usual. May be repeated for credit. (General Education Code(s): A.) J. Bierman

158. Chautauqua Workshop. S
Advanced course that provides directors, writers, and performers with an opportunity to develop new works in performance. Students enrolling in this course as playwrights are selected on basis of submissions turned in the previous quarter. Students enrolling in this course as playwrights are selected on basis of submissions turned in the previous quarter. Students taking the course as directors are required to obtain consent of the instructor. Other students may enroll as usual. Interview with instructor at first class meeting. May be repeated for credit. (General Education Code(s): W.A.) J. Bierman

159. Advanced Playwriting. W
A study, through practice, of the constituent elements in the construction of a drama. Students concentrate, in particular, on the organization of complex plots, the expression of character through conflict, and maximizing the emotional impact of dramatic situations. Prerequisite(s): course 157 or equivalent, satisfaction of the Subject A and Composition requirements. May be repeated for credit. (General Education Code(s): W.A.) J. Bierman

160. Dramatic Theories. W,S
An examination of the theories of acting and directing from the nineteenth century to our own time, starting with the classic theater and concentrating on the twentieth-century debate centered in Stanislavski and Brecht, Grotowski, and Robert Wilson. Prerequisite(s): course 60A, 60B, and 60 C. This course must be taken prior to student's senior year; required for course 185. (General Education Code(s): A.) P. Mokhoff
161. Theater, Literature and History.

161C. The Theater and Drama of Renaissance Europe. S
An examination of selected plays from Renaissance Europe (1580-1680, Italy, Spain, and France) from an explicit historical viewpoint which will include practical study of some related critical materials. Offered in alternate academic years. (General Education Code(s): A, E) P. Whitworth

161D. Asian Theater: An Anthropological Approach. S
Art serves simultaneously to educate its audience to the group’s traditional values and to test new ideas. Indian, Indonesian, and Javanese forms are studied in relation to their cultural context. Through videotapes, lecture demonstrations, performances, and scenework, students explore the forms. Offered in alternate academic years. (General Education Code(s): A, E) M. Foley

161M. Gender and Performance. *
Analysis of interrelationships between gender and performance on stage and off. Topics include the gendered body; gesture and costume; gender in theories and history of performance, gender, and scripting; and gender and staging choices. Combines study of theoretical texts and scripts with analysis and practice. (General Education Code(s): A) The Staff

161Q. Queer Theatrics: Representations and Sensibilities. S
Search for a queer sensibility through four decades of diverse performances. Provides survey of representations of queers in theater from perspectives of historical context, literary significance, personal expression, social construct, and theatrical and scenic forms. Students cannot receive credit for this course and course 80T. (General Education Code(s): A) The Staff

161R. Theater of American Cultures. F
Interdisciplinary study of the theater of significant American theater groups including the black theater movement, Chicano Teatro, and Asian American theater. May be repeated for credit. (General Education Code(s): A, E) J. Martinez

161S. American Drama: Politics and Theater. S
The dream of group theater, a long-term partnership of actors, directors, and playwrights, has fueled extraordinary and exciting change in the twentieth-century American theater theory and practice. We examine ten exemplary manifestations of this dream. (General Education Code(s): A) The Staff

161T. Women in Theater. *
Explores twentieth-century American female playwrights from textual, historical, and multicultural perspectives. The course progresses from Trifles (1916) through the Harlem Renaissance, Broadway’s Lillian Hellman, and today’s post-Feminist theatrical exploration in lectures, films, dramatizations, and award-winning playwrights’ visits. (General Education Code(s): A) The Staff

161U. Performance of Story in Theater and Film. W
Examination of theory and practice of theater and film comparing and contrasting works having been adapted from one genre to another. Lecture, film, and video viewing. Discussions of materialist, psychoanalytic, and feminist approaches shared. Students cannot receive credit for this course and course 80G. (General Education Code(s): A) P. M. O’Keffe

161V. The Broadway Musical. *
Musical comedy as a distinctly American contribution to theater and film studied through scripts, scores, and film and video viewing. European backgrounds, theatre of Broadway musicals, and Hollywood film in the studio era, works of Rogers and Hammerstein and Sondheim, and changes in popular music from blues to rock to Disney musicals analyzed. Students cannot receive credit for this class and course 80Y. Students are billed a materials fee. (General Education Code(s): A) J. Schae

163. Special Studies in Individual Playwrights.

163A. Shakespeare. *
Focuses on Shakespeare’s Hamlet. Explores the range and variety of interpretations of the play, both in critical writings and in performance. Also studied is the graphic art and other writing created on the subject and themes of Hamlet. Offered in alternate academic years. (General Education Code(s): A) J. Schae

163E. Chekhov and His Impact. *
Delves into the work of Chekhov and the Moscow art theater. Through some work Stanislavski’s acting techniques are related to the scripts. The impact on later Russian innovators, especially Meyerhold, and on the American theater is considered. (General Education Code(s): A) The Staff

163G. Special Studies in Playwrights: Artaud, W
Antonin Artaud through three critical lenses: influence on modern and contemporary theater, subject and site of psychoanalytic and social criticism, and theater practitioners. Exercises cultural, historical, and analytic approaches to his work. Prerequisite(s): course 60C; course 160 recommended. Enrollment limited to 40. (General Education Code(s): A) K. Jannarone

185. Senior Seminar. W
A required seminar in preparation for senior comprehensive examination for majors involving readings and discussions of important texts in dance, drama, design, and film/video. Prerequisite(s): course 160. The Staff

190. Group Projects. F, W, S
Prerequisite(s): petition required, approved by instructor and department. May be repeated for credit. The Staff

192. Directed Student Teaching. F, W, S
Teaching a lower-division seminar under faculty supervision for candidates in teacher education. Prerequisite required, approved by instructor and department. The Staff

193. Proseminar. *
Explores students’ work in an aspect of the theory or practice of theater. Varies. Students submit a work in progress for approval by the instructor. May be repeated for credit. (General Education Code(s): A) The Staff

193F. Tutorial (2 credits). F, W, S
Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199. Tutorial (2 credits). F, W, S
Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

290. Special Topics and Area Concentration. F, W, S
May be repeated for credit. The Staff

291. Field Study. F, W, S
May be repeated for credit. The Staff

292. Teaching-Related Independent Study. F, W, S
May be repeated for credit. The Staff

297. Independent Study. F, W, S
May be repeated for credit. The Staff

Additional Courses of Interest

Anthropology 133, Narratives of the Popular
Art 80A, Introduction to Drawing
Art 80C, Introduction to Visual Arts
Art 80D, Introduction to Photography
Economics 80G, Money and the Arts Two All-Consuming Passions
Economics 137, Performing Arts in the Public and Private Economy
Greek Literature 130, Greek Drama
Music 80G, American Musical Theater
Music 160, University Opera Theater
Physical Education 20A, Dance Ballet
Physical Education 20B, Dance Folk
Western Civilization

Students wishing to pursue a course of study in Western civilization should consult the concentration in pre- and early modern studies under Literature, page 292.

Women’s Studies

180 Kresge College
(831) 459-4324
wst@ucsc.edu
http://humwww.ucsc.edu/wst/

Faculty and Professional Interests

BETTINA APTHEKER, Professor of Women’s Studies and History
Women’s history, women’s culture, African American women’s history, feminist pedagogy, lesbian studies, Jewish women’s studies, women’s spirituality

AMALI ARONDEKAR, Assistant Professor of Women’s Studies
Feminist and postcolonial theory, critical queer/race studies, South Asia studies, and 19th-century studies

GINA DENT, Associate Professor of Women’s Studies and History of Consciousness
African studies, popular culture, and social problems, feminist legal theory, postcolonial and critical area studies

MARGARET M. DOWNEES BASKIN, Research Associate in Women’s Studies
Presidential leadership styles, elections and the media, women’s political and corporate leadership style, intergenerational relations

MARIE FRANTZ, Emerita, Lecturer in American Studies and Women’s Studies

EMILY HONG, Professor of Women’s Studies and History
Gender, sexuality, and ethnicity in modern Chinese history, comparative labor history, Chinese history, nationalism, and sexuality in the Third World, oral history

AKASHA HULL, Emerita, Professor of Women’s Studies and Literature

RADHNA MONGIA, Assistant Professor of Women’s Studies
Feminist theory, critical race studies, Marxist, postcolonial, and poststructuralist theory, critical historiography, history of migration law and the formations of the modern state, cultural studies

ANGELA Y. DAVIS, Professor of History of Consciousness and Women’s Studies
Feminism, African American studies, critical theory, popular music culture and social consciousness, philosophy of punishment (women’s jails and prisons)

CARLA FRECCERO, Professor of French Literature, Women’s Studies, and History of Consciousness
Renaissance studies, French and Italian language and literature, early modern European history and literature, postcolonial theories and literature, contemporary feminist theories and politics, queer theory, pre- and early modern studies, contemporary fiction by women of color in the U.S., identity politics as political formations

ROSA LINDA FREGOSO, Professor of Latin American and Latino Studies, Film and Digital Media, and Women’s Studies
Cultural studies, Latinx culture, film and media; critical race feminisms and transnational feminisms

JOY GREENE, Assistant Professor of Literature and Women’s Studies
17th- and 18th-century British and French literature and culture, pre- and early modern studies, early modern colonialism, gay and lesbian cultural studies, gender studies, history of authorship, history of the book

DONNA J. HARAKEY, Professor of History of Consciousness and Women’s Studies
Feminist theory, cultural and historical studies of science and technology, relation of life and human sciences, and human-animal relations

HELENE MOGLER, Presidential Chair in Literature
The English novel, feminist, cultural, and psychoanalytic theory

AFFILIATED FACULTY

SONIA E. ALVAREZ, Professor of Politics
Latin American politics, the politics of gender, comparative political development, feminist theory, social movements, democratization, contemporary democratic theory, civil society

KAREN BASSI, Associate Professor of Classics (Literature)
Greek and Latin literature, Greek drama, Hellenistic poetics, feminist interpretation, literary and cultural theory, pre- and early modern studies

JULIE BETTIE, Associate Professor of Sociology
Feminist studies, cultural studies, race/ethnic studies, identity, popular culture, educational inequality, critical ethnography

JOYCE BROSINSKI, Professor of Art
Contemporary theory and criticism in the visual arts and in relationship to the practice of art in the 20th century

HEATHER BULDICK, Associate Professor of Psychology
Poverty and economic inequality, welfare policy, feminist psychology, discrimination

JULIANE BURTON-CARVALHO, Professor of Literature
Twentieth- and 21st-century Latin(n) American visual media, particularly film; melodrama as transnational form; gender and authorship; history, culture, and representations of California, particularly the Central Coast

MONICA J. CASPER, Associate Professor of Sociology
Medical sociology, science and technology studies, gender and feminist theory, cultural studies, qualitative research, women’s health, and environmental health

NANCY N. CHEN, Associate Professor of Anthropology
Medical anthropology, visual anthropology, urban anthropology, Asian American identity, traditional medicine, mental health, anthropology of food, China

E. G. CRICHTON, Associate Professor of Art
Interdisciplinary mixed media, electronic arts, photography, installation

FAYE J. CROSSBY, Professor of Philosophy
Gender, social identity, and social justice, especially affirmative action

TERESA LAURENITI, Professor of History of Consciousness
Semiotics, psychoanalysis, feminism, film theory, literary theory, and queer studies

DANA FRANK, Professor of History
U.S. social and economic history, women’s labor and working-class history, contemporary political economy

PASCAL LAITIET, Professor of Literature and Language Studies
Medieval and 20th-century French literature, sociolinguistics, political history, Celine, Genet

MARY-KAY GAMBLE, Professor of Classics and Comparative Literature
Performance studies, ancient Mediterranean performance, Greek and Latin literature, feminist approaches to literature and performance

SUSAN GILLMAN, Professor of American Literature
17th-century American literature and cultural studies; culture, race, and gender; world literature and cultural studies

JENNIFER A. GONZALEZ, Assistant Professor of History of Art and Visual Culture
Contemporary theories of visual culture, semiotics, critical museum studies, photography, public and activist art in the U.S.

JUNE GORDON, Associate Professor of Education
Urban education of working-class and ethnic minority students in East Asia, Britain, and the U.S., and related issues in teacher education

IRENE GUSTAFSON, Assistant Professor of Film and Digital Media
Film and video production, hybridized approaches to genre, production design, issues of gender and sexuality, queer studies

M. L. BETH Haas, Associate Professor of History
U.S.-Mexican borderlands, Chicano and Native American history, visual culture in the colonial Americas, the U.S., West and California; historical memory, theory, and historical methodology

AMELIE HASTIE, Assistant Professor of Film and Digital Media
Film theory, history, feminist film and television; Latin American and Spanish cinemas, issues of authorship, interdisciplinary approaches

MARGO HENDRICKS, Associate Professor of Literature
Early modern English literature and culture, theories and discourses of race, gender, drama, and theater; women playwrights pre- and early modern studies

GAIL B. HERSHATER, Professor of History
Modern Chinese social and cultural history, labor history, gender history, history of sexuality, feminist theory, history, memory, and nostalgia

JOCELYN HOY, Lecturer in Philosophy
Feminist philosophy, 19th- and 20th-century continental philosophy

AYETTE HUGGINS, Assistant Professor of American Studies
Race and class relations within western American history, U.S. labor and immigration history, and comparative ethnic studies
Women’s Studies

DONNA HUNTER, Associate Professor of History
of Art and Visual Culture
European painting (especially French) from 1600 to the 1960s; German art and visual culture between the two world wars; art as social practice; portraiture.

AIDA HURTADO, Professor of Psychology
Social identity, feminist theory, social psychology of education, political consciousness, survey methodology.

VIRGINIA JANSEN, Professor of History and Art
Mediterranean visual culture, urbanism, and secular building; Gothic architecture; campus planning and architecture.

STACY KAMEHIO, Assistant Professor of History of Art
and Visual Culture
Visual cultures of the Pacific; 19th-century Hawaii; nationalism, cultural synergy, textiles.

L. S. KIM, Assistant Professor of Film and Digital Media
Television history and theory; racial discourse; feminist criticism; postfeminism; transnationalism in relation to Asian media genres; such as martial arts films and anime.

NORMA KLAHN, Professor of Literature
Latin American literary and cultural studies (specialization: Mexico); Chicano/Latino literature and culture from a transnational perspective; popular culture and the road; politics and culture; fiction and the history of nation and narration, cultural and feminist theories.

LORI G. KLETZER, Professor of Economics
Employment and wage determination, impact of globalization on the domestic labor market; industrial relations; government labor market policies; higher education, and the labor market.

CAMPBELL LEEPER, Professor of Psychology
Social construction and socialization of gender in childhood, adolescence, and adulthood; self-concept and social identity; language and social interaction; social relationships; gender bias in the schools; images of gender in the media.

CAROLYN MARTIN SHAW, Professor of Anthropology
African societies; colonial discourse; social theory; anthropology of women and sexuality.

LOURDES MARTINEZ-ECHAZABAL, Associate Professor of Latin American Literature
Latin American and Caribbean literatures; Afro-Latin American literatures; cultures; and societies; foundational narratives; Brazilian literature; literatures of Cuba and the Cuban diaspora; critical race theory.

JENNIE LIND McDADE, Professor of Art
Drawing; painting.

MARGARET MORSE, Professor of Film and Digital Media
Digital and electronic media; theory and criticism; media art; media history; technology and theory; film history and theory; documentary and science fiction.

PAMELA PERRY, Assistant Professor of Community Studies
Youth advocacy; empowerment; youth culture; educational inequalities; race and gender; identities; and whiteness.

CATHERINE RAMIREZ, Assistant Professor of American Studies
Chicana/o and U.S. Latin/o literatures; history and culture; popular culture; and cultural studies; critical theory; postcolonial theory; and theory; feminist theory; and visual fiction.

PAMELA ANN ROBY, Professor of Sociology
Sociology of learning; leadership; social change; sociology of emotions; feminist research; women and work; inequality, and social policy.

LISA ROPEL, Associate Professor of Anthropology
Critical theory; anthropology of modernity; popular culture; gender and sexuality; transnational political economy; postcolonial feminism; anthropology; China.

TRICIA ROSE, Professor of American Studies
Twentieth-century African American culture and history; cultural politics; race and gender theory; and race and sexuality.

VANITA SETH, Assistant Professor of Politics
Modern political theory; political movements; feminist theory; history, and practice.

DEANNA SHMEK, Associate Professor of Literature
Italian literature and cultural history; Renaissance studies; early modern popular culture; the novel; Cartesian epoch; women’s studies; literary theory.

MARY W. SILVER, Professor of Ocean Sciences
Biological oceanography; marine plankton; midwater ecology.

GRETA SLOBIN, Emerita; Professor of Russian Literature
Screenplay; stagecraft; criticism and postfeminism; transnationalism in relation to women’s studies; literary theory.

SHELLEY STAMP, Associate Professor of Film and Digital Media
Film history; theory; and criticism; silent cinema; women filmmakers; film censorship; histories of film; gender, masculinity, and social change; cinema; and postfeminist approaches to cinema.

ELIZABETH STEPHENS, Associate Professor of Art
Sculpture; installation; video; performance.

NANCY STOLLER, Professor of Community Studies
Race and gender aspects of health; the AIDS epidemic; community organizing; sexualities; and medical practice.

NEFTI TADIAR, Associate Professor of History and Consciousness
Third World feminisms; postcolonial theory; critical theories of race and racism; literary and social theory; cultural studies of the Asia Pacific region.

JULIE TANNENBAUM, Associate Professor of Philosophy
Ethics; philosophy of mind.

AIVIR THORNE, Associate Professor of Psychology
Identity development through personal memory telling; development of meaning in adolescent self-definition memory narratives; family storytelling and the development of a sense of self; narrative construction of identity and intimacy.

ANNA TSING, Professor of Anthropology
Culture and politics; feminism; theory and gender in the U.S.; social landscapes; and tropical forest ethnociogeny; ethnicity; local power and the state in Indonesia, Southeast Asia, and the U.S.

CANDACE WEST, Professor of Sociology
Language and social interaction; sociology of gender; conversation analysis; microanalysis; and medicine.

MARILYN J. WESFERT M, Professor of History
British colonial and revolutionary America; early modern; and cultural history; U.S. religious history; women’s history; gender.

ROB WILSON, Professor of Literature
Transnational and postcolonial literatures, especially as located in Asia/Pacific; emergences; postmodern; gender; American empire; globalization; cultural politics; America; the sublime; Longinus to Hiroshima; mongrel poetics of experimental writing; especially poetry.

ALICE YANG MURRAY, Associate Professor of History
Historical memory; Asian American history; gender history; race and ethnicity; 20th-century U.S.; oral history.

JUDY YUEN, Emerita; Professor of American Studies
Asian American history; women’s and cultural studies; comparative race and ethnicity; oral history.

PATRICIA ZAVELLA, Professor of Latin American and Latino Studies
The relationship between women’s work and domestic labor; poverty, family sexuality, and social networks; feminist studies; ethnographic research methods; and transnational migration of Mexican workers in the U.S. capital.

EILEEN ZURBRIGGEN, Assistant Professor of Psychology
Sexual aggression; long-term effects of childhood sexual abuse; victimization; sexual decision-making; quantitative models of social cognitive process; motivation, especially power and affiliation-intimacy motives.

Program Description

Women’s studies is an interdisciplinary major that draws its questions and approaches from the humanities, social sciences, natural sciences, and arts. It helps students to develop theoretical, empirical, and methodological perspectives for studying the intersections of gender, race, class, and sexuality as critical categories for understanding the world. Utilizing transnational and internationalist perspectives, women’s studies offers an emphasis on multiracial, multicultural, and Third World feminisms. Likewise, issues in feminism, sexuality, literature, anthropology, history, science and technology, and reproductive freedoms inform our curriculum.

Women’s studies prepares undergraduates for a variety of careers. The B.A. degree in women’s studies, for example, provides excellent grounding for undergraduates with career aspirations in law, health, public administration, community organizations, and social services. Students wishing to pursue doctoral work will also find that interdisciplinary training in women’s studies equips them with theoretical and methodological strengths in most disciplines and applied research fields. Specialists in women’s studies are being hired as consultants in industry, higher education, and human resources. State and federal government agencies employ people who have special training in understanding systems of privilege based on gender, race, class, and sexuality. Educational institutions need specialists to develop and administer women’s studies programs, women’s centers, and other institutional structures designed specifically to study and assist women.

Requirements for the Major

Women’s studies majors must complete 11 courses and a senior comprehensive or exit requirement in the women’s studies program. Students must choose one of the following concentrations within the major: representations; race, class, and ethnicity (within the U.S.); ironies and alliances (outside the U.S.); or comparative feminism. Students must complete a senior comprehensive exit requirement in the women’s studies program. Both the student’s adviser and the Women’s Studies Department chair must approve the proposal for an independent concentration.

Required courses include course 1A, Introduction to Feminisms or 1B, Introduction to Third World Feminisms, course 100, Feminist Theory (must be taken at UCSC); seven upper-division courses from the concentrations (five or six from the student’s chosen concentration, one or two from another); one upper-division course on gender and racial formations or women of color in the U.S.; one women’s history course; and an exit (comprehensive) requirement course.
Because women's studies is an interdisciplinary major and lists courses taught by faculty in other departments, women's studies majors must take a minimum of five courses at UCSC taught directly in the Women's Studies Department, i.e., courses designated W M ST. One interdisciplinary core individual course (Women's Studies 193, 198, or 199) may count automatically as an elective, but as a concentration course only with the chair's or faculty advisor's approval. Two EAP courses may count towards the major; three transfer courses count towards the major; and the total combined number of EAP and transfer courses that may count towards the major is a maximum of three.

Exit requirement options include a senior thesis or a senior project (course 195) or a senior seminar (course 194) taught by core or affiliated faculty. Course 1A or 1B, course 100, and the composition (general education code C) requirement are prerequisites to course 195 and the senior seminars. A fourth option for fulfilling the exit requirement is to develop and teach a student-directed seminar. Only two student-directed seminars may be offered each quarter. Guidelines for completion of the exit requirement are available in the Women's Studies Office or on the web: http://humwww.ucsc.edu/wst.

Transfer Students
Transfer students are encouraged to declare the major as soon as possible in order to be assured entrance into the required core courses. Women's Studies advisors or the chair determine which courses from other institutions are transferable. Course 1A or 1B and course 100 must be completed in the junior year so that the exit requirement may be completed in the senior year.

Graduate Studies
Graduate students may work toward a Ph.D. degree that notes a concentration in women's studies on the graduation documents. The request must originate in the required core courses. Women's Studies advisors or the chair determine which courses from other institutions are transferable. Course 1A or 1B, course 100, and the composition (general education code C) requirement are prerequisites to course 195 and the senior seminars. A fourth option for fulfilling the exit requirement is to develop and teach a student-directed seminar. Only two student-directed seminars may be offered each quarter. Guidelines for completion of the exit requirement are available in the Women's Studies Office or on the web: http://humwww.ucsc.edu/wst.

The following are required for the notation:

• Committee composition. The student must have a designated graduate advisor from women's studies in the department who is a Ph.D. degree or affiliated faculty who serves on the qualifying examination committee or in some other appropriate capacity.

• Writing. The student must prepare a significant piece of writing in the area of women's studies. This writing must be a master's essay or a chapter of the doctoral dissertation.

• Course requirements. The student must take four graduate courses in women's studies/feminist studies. The courses can be selected from among the offerings of any UCSC department, so long as they are taught by core or affiliated women's studies faculty.

• Teaching. The student must be a teaching assistant in at least one women's studies course or teach a women's studies course independently (designated W M ST) in the regular curriculum or in Summer Session.

Graduate Courses
Note Upper-division undergraduates are admitted only with permission of the instructor.

History 204, Engendering China, E, Honig
History 222, History of Gender Research Seminar, A, Yang Murray
History of Consciousness 210A-B, Cultural and Historical Studies of Race and Ethnicity, A, Y. Davis
History of Consciousness 213A-B, Representation, T, de Larderis
History of Consciousness 217A-C, Seminar: Topics in Feminist Theory D, Haraway
History of Consciousness 250A-B, Foundation in Science Studies D, Haraway
History of Consciousness 251, Readings in Science Studies D, Haraway
Sociology 242, Feminist Research Seminar, P, Roby

Lower-Division Courses

1A. Introduction to Feminisms. F
Core course for women's studies. Placing women's experiences at the center of our interpretation, introduces philosophical, historical, political, cultural, and sexual issues from feminist perspectives. Emphasis on diversity of women's lives across class, racial, and ethnic experiences and sexual identities, and on the potential for our unity and empowerment as women. Practical emphasis given to ways of implementing a feminist process and a politics for useful social change. Several short essays and one longer paper required. (General Education Code(s): I.H.) B. Aptaker

1B. Introduction to Third World Feminisms. F
Core course for women's studies. Introduces feminisms by focusing on the Third World instead of beginning with the development of feminism in North America and "looking out" to the Third World. The meanings of feminism are very specific and historical and local contexts. By centering women's experience, feminism forces society to decenter such basic concepts as power, politics, and work. (General Education Code(s): H., E., J.) E. Honig

42. Student-Directed Seminar, F.W.S
Seminars taught by upper-division students under faculty supervision. (See course 192.) T, Staff

805. Women in Music. F
An exploration of the sociopolitical position of women as composers and performers in Western music history with a focus on specific figures from the Middle Ages to present. (Also offered as Music 80S. Students cannot receive credit for both courses.) Offered in alternate academic years. (General Education Code(s): T-4 Humanities and Arts, A.) J. L. Miller

80Y. Violence Against Women of Color. W
Examines violence against women of color in its myriad forms and analyzes the relationship between sexual/domestic violence and institutional structures of violence. Further explores the development of women of color's organizing strategies against violence and their relationship to the mainstream anti-sexual/domestic violence movement. Issues to be covered include domestic sexual violence, colonialism and violence, prisons/INS detention, police brutality, violence and the economy, religion/spirituality and violence, medical experimentation, attacks on the reproductive rights of women of color, and militarism/border violence. Enrollment limited to 40. (General Education Code(s): T-5 Humanities and Arts or Social Sciences, E.) The Staff

Upper-Division Courses

100. Feminist Theories. W
Core course for women's studies. Examines core questions in theory and practice of feminist politics. Is there a common ground for a general theory of the oppression of women? How do feminist questions change from the standpoint of race, gender, class, and sexuality? Focus will change each quarter. Enrollment restricted to sophomores, juniors, and seniors. A. Arondekar

102. Feminist Critical Race Studies. *
Working from the perspective that race is a cultural invention and racism is a political, economic, and social relation, investigates how "race" is produced as a meaningful and powerful social category, examines the effects of racism as a social relation, and argues for the necessity of combining feminist and critical race studies. By considering different historical periods and places, aims to equip students with the tools necessary to critically examine the reproduction of race and racism in the U.S. Prerequisite(s): one course from Women's Studies. Enrollment restricted to juniors and seniors. Enrollment limited to 20. (General Education Code(s): E.) R. Mongia

103. Writing Women's Lives. *
Examines various ways of representing women's lives, including autobiography, oral history, community studies, fiction, etc. Particular attention to intersections of gender, race, ethnicity, class, and sexuality, to the ways in which individuals are situated in communities, and to the relationship between author and subject. Enrollment limited to 40. T, Staff

110. Women Writers of the African Diaspora. *
Advanced introduction to contemporary writings of black women in U.S., Africa, and the Caribbean, focusing on relationships between these different sites of production in context of struggles against colonialism and patriarchy. Organized around theme of perception, divided into three main parts: Part I treats texts directing our attention to different orders of perception; Part II includes three novels with psychological problems at their center; and Part III turns to issue of tradition and conflicts of contemporary black women in relation to gender, class, and national identity. Enrollment limited to 25. (General Education Code(s): E.) G. Dent

112. Women and the Law. F
Interdisciplinary approach to study of law in its relation to category "women" and production of gender. Considers various materials including critical race theory, domestic case law, and international instruments, representations of law, and writings by and on behalf of women living under different forms of legal control. Examines how law structures, offers protections, produces hierarchies, and sexualizes power relations in both public and intimate life. Also offered as Politics 112. Students cannot receive credit for both courses. Enrollment restricted to women's studies, politics, legal studies, and Latin American and Latino studies/politics combined majors during priority enrollment only. T, Staff
132. Gender and Postcoloniality, *
Postcolonial feminist studies. Explores how discourses of gender and sexuality shaped the policies and ideologies of the historical processes of colonialism, the civilizing mission, and anticolonial nationalism. Considers orientalism as a gendered discourse, as well as colonial understandings of gender and sexuality in decolonialization. Explores Western media representations, literature, the law, and the place of gender in the current debate between cultural relativism and universalism. Provides an understanding of some key terms in postcolonial studies and an in-depth examination of the place of gender in these processes. Prerequisite(s): course 151A or Psychology 1, 40, or 157A, or consent of instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 30. The Staff

154. Revolutionary Tales: Women in Modern China, *
Focusing on autobiographical, fictitious, and journalistic narratives about the Chinese revolution, course explores the history of women in China during the twentieth century: how their role in the family structure and work force were affected by the social, economic, and political transformations that accompanied the Chinese revolution. Prerequisite(s): course 1A or 1B; a course in modern Chinese history is recommended as preparation. Enrollment restricted to sophomores, junior, and senior students. Enrollment limited to 20. Offered in alternate academic years. (General Education Code(s): E.) E. Honig

155. Women Workers in Transnational Context, F
Provides an introduction to the defining issues surrounding "women of color" as a conditional term that brings to light the linkages to gender issues in other U.S. communities of color and Latin America. (Also offered as Psychology 145.) Prerequisite(s): courses 1B and 100 or permission of instructor. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 80. (General Education Code(s): E.) B. Aptheker

145. Racial and Gender Formations in the U.S., S
Provides an introduction to the defining issues surrounding "women of color" in the U.S. Explores the term "women of color" as a conditional term that brings together forms of knowledge surrounding our understanding of African American, Chicana, Native American, and Asian American women, with simultaneous focus on our acts of interpretation and critique in looking at "women of color" as an emergent and subjective socio-political phenomenon. (General Education Code(s): E.) A. Arondarck

150. Women's Culture, S
Philosophical, historical, and aesthetic implications of women's consciousness of social reality. Both the sexual division of labor and the subordination of women in society give rise to distinctive categories of thought. Course objectives locate and consider these categories of thought as they are presented in women's expressive culture, red-line culture, beauty, and artistry from a feminist perspective, and propose a praxis for creating and transmitting culture. Prerequisite(s): course 1A or 1B. Recommended for upper-division students with a background in women's studies, cultural, and/or ethnic studies. Enrollment limited to 20. B. Aptheker

151A. Chicana Feminism, *
Students are introduced to the writings of Chicanas to identify the gender issues that produce conflict and cooperation in their communities. The course also makes linkages to gender issues in other U.S. communities of color and Latin America. (Also offered as Psychology 151A.) Students cannot receive credit for both courses. Prerequisite(s): course 1A or 1B or Psychology 3. (General Education Code(s): E.) J. A. Hurtado

151B. Advanced Topics in Chicana Feminism, W
Course is a continuation of course 151A which introduces students to the writings of Chicanas to identify the gender issues that cause conflict and cooperation in their communities. The seminar format allows students an opportunity for extensive discussion. Satisfies seminar requirements. (Also offered as Psychology 157B. Students cannot receive credit for both courses.) Prerequisite(s): course 151A or Psychology 1, 40, or 157A, or consent of instructor. Enrollment restricted to juniors and seniors. Enrollment limited to 30. The Staff

154. Revolutionary Tales: Women in Modern China, *
Provides an introduction to the defining issues surrounding "women of color" as a conditional term that brings to light the linkages to gender issues in other U.S. communities of color and Latin America. (Also offered as Psychology 145.) Prerequisite(s): courses 1B and 100 or permission of instructor. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 80. Offered in alternate academic years. (General Education Code(s): E.) E. Honig

155. Women Workers in Transnational Context, F
Provides an introduction to the defining issues surrounding "women of color" as a conditional term that brings to light the linkages to gender issues in other U.S. communities of color and Latin America. (Also offered as Psychology 145.) Prerequisite(s): courses 1B and 100 or permission of instructor. Enrollment restricted to sophomores, juniors, and seniors. Enrollment limited to 80. Offered in alternate academic years. (General Education Code(s): E.) E. Honig

156. Women: The Philosophical Issues, W
Study of philosophical issues regarding women, including women's roles and women's rights. Such notions as oppression, liberation, sexuality, equality, and autonomy are explored, along with questions concerning the relationship between biological and social facts and moral values. (Also offered as Philosophy 147.) Students cannot receive credit for both courses. (General Education Code(s): E.) E. Honig

185. Psychoanalysis and Feminism, *
Introduction to Freudian and Lacanian theories of sexuality and the construction of the self as well as feminist critiques and rewritings of those theories. An attempt is made to place psychoanalytic theory in socioeconomic, racial, and colonialist contexts. Appropriate prior work in theory is recommended as preparation. Enrollment restricted to junior and senior students. Enrollment limited to 25. H. M. Mogen

189. Advanced Topics in Feminist Theory, S
Focuses on a particular problem in feminist theory. Problems vary each year but might include theorizing the gendered subject, racializing gender, the meeting points of psychoanalysis and social-political analysis in theorizing gender, the relationship between queer theory and feminist theory, postcolonial feminist theory. Prerequisite(s): course 100. Enrollment restricted to junior, senior, and graduate students. Enrollment limited to 20. May be repeated for credit. R. M.onga

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) The Staff

193. Field Study, F,W,S
Individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. Students submit petition to sponsoring agency. The Staff

193F. Field Study (2 credits), F,W,S
Individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. Students submit petition to sponsoring agency. The Staff

194. Senior Seminar, F,W,S
Discussion classes providing a broad overview of some general "area of concentration." Discussion of assigned readings, focus on oral presentations, and a final 20- to 25-page paper. Satisfies the senior comprehensive requirement in women's studies. Enrollment limited to 20. The Staff

194I. Advanced Feminist Philosophy, *
Focuses on issues in epistemology and ontology: the construction of knowledge and objectivity, rationality and emotions, subjectivity and personal identity, and the body and sexuality. (Also offered as Philosophy 194I.) Prerequisite(s): satisfaction of the Subject A and Composition requirements; course 1A or 1B, and 100. Enrollment restricted to senior women's studies majors. Enrollment limited to 22. (General Education Code(s): W.) B. Aptheker

194J. Advanced Feminist Philosophy, *
Focuses on issues related to the politics of sexual identity and sexual rights in the Third World. Explores ways in which sexual identity is articulated and defined; state attempts to control and legislate sexual identity and behavior; and the emergence of movements for gay and lesbian rights in Third World countries. Prerequisite(s): course 100 or 168. Enrollment limited to 20. The Staff

194L. Politics of Sexual Rights and Sexual Identity in the Third World, *
Explores ways in which sexual identity is articulated and defined; state attempts to control and legislate sexual identity and behavior; and the emergence of movements for gay and lesbian rights in Third World countries. Prerequisite(s): course 100 or 168. Enrollment limited to 20. The Staff

195. Senior Thesis or Project, F,W,S
The senior thesis/project which satisfies the major requirement. Course is for independent research and writing. Prerequisite(s): satisfaction of the Subject A and Composition requirements; students submit petition to sponsoring agency. (General Education Code(s): W.) The Staff

196. Feminist Methods of Teaching, F
Practicum for undergraduates assisting in the teaching of course 1A. Introduction to Feminisms, to conduct sections and evaluate student papers. A weekly seminar considers issues relating to experiential and critical thinking, authority in the classroom, effective facilitation of group process, racial diversity, victimization against women, and the emergence of movements for gay and lesbian rights in Third World countries. Prerequisite(s): interview with instructor the quarter before course is offered and course 1A or 1B. Students must be upper-division and have a background in women's studies and/or ethnic studies. Enrollment limited to 25. B. Aptheker

198. Independent Field Study, F,W,S
Provides for individual study program off campus for which faculty supervision is not in person. Students submit petition to sponsoring agency. The Staff

198F. Independent Field Study (2 credits), F,W,S
Provides for individual study program off campus for which faculty supervision is not in person. Students submit petition to sponsoring agency. The Staff
Graduate Courses

205. Feminism, Nationalism, and Sexuality in the Third World. *
Focus on the historical construction and articulation of feminism in the Third World. Explores the relationship of feminist and nationalist movements, considering such questions as whether Third World women's political movements are necessarily "feminist," how these political movements define feminism, and the tensions between nationalism and feminisms. Particular attention to issues of sexuality, the effects of colonial institutions and policies on sexual identities in Third World countries, the notions of womanhood and female sexualities articulated within nationalist ideologies and movements, the consequences of such constructions for women, and the formulation of sexual issues among feminists. Offered every two or three years. Enrollment restricted to graduate students. Enrollment limited to 15. E. Honig

206. Feminism and Psychoanalytic Theory. *
After studying essays by Freud, Lacan, and Melanie Klein which have been central to the construction of feminist theory, considers the writings of such feminist theorists as Jessica Benjamin, Judith Butler, Julia Kristeva, Juliet Mitchell, Jaqueline Rose, Carolyn Steedman, and Maria Torok. Enrollment restricted to graduate students or seniors with permission of instructor, based on narrative evaluations and sample essays. Enrollment limited to 15. H. Mogle

207. Advanced Topics in Queer/Race Studies. *
Explores the interrelated epistemological frameworks of critical race studies and queer studies. Through a study of philosophical, scientific, and literary texts, we historicize and theorize discourses of race and sexuality. Enrollment restricted to graduate students. Enrollment limited to 15. A. Arondekar

212. Feminist Theory and the Law. F
Interrogation of the relationship between law and its instantiating gendered categories, supported by feminist, queer, Marxist, critical race, and postcolonial theories. Topics include hypostatization of legal categories, the context between domestic and international human rights frameworks, overarching civil and communal codes, cultural explanations in the law, the law as text and archive, testimony and legal subjectivity. (Also offered as History of Consciousness 212. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. Enrollment limited to 15. G. Det

232. Topics in Postcolonial Studies. *
Variable topics that could include postcolonial approaches to questions of epistemology and knowledge production, theories of nationalism and nation-state formation, subaltern historiography, analyses of modernization and developmental theory, postcolonial approaches to globalization, and transnationalism. Significant component of feminist contributions to these literatures. Enrollment restricted to graduate students. Enrollment limited to 15. R. Mongia

Writing Program

166 Kresge College
(831) 459-2431
http://humwww.ucsc.edu/writing/index.html

Faculty and Professional Interests

Senior Lecturer
Carol M. Freeman
History, theory and practice of rhetoric, composition theory and pedagogy, the essay as genre

Donald L. Rothman, Director, Central California Writing Project
Literacy education and democracy; UC-K-12 partnerships; writing, persuasion, and nonviolence; writing pedagogy; connections between beauty and justice

Lecturer
Elizabeth Abrams, Chair
Composition and rhetoric; writing across the curriculum; 19th- and 20th-century American literature and culture, especially concerning the Civil War

Jeffrey M. Arnett
DeRede Arthur
Popular culture, cultural studies, 18th-20th-century British literature, theory of the novel

Mark Baker
Media and democracy postmodernism, 20th century literature and culture of the Americas, community participation, writing and social responsibility

Farnaz Fatem
Media analysis; Middle East issues and cross-cultural perspectives, visual culture

Timothy Fitzmaurice
Poetry and politics; writing and publics

Maria Cecilia Freeman, Coordinator, Subject Area
Grammar, English as a second language (ESL), multicultural American literature teacher training, educational partnerships

Writing Program

Roxanne Power Hamilton
Poetry, writing and rhetoric, creative writing, feminist theory, queer studies, American literature

Ellen Louise Hart
Literature and democracy, poetry and the nineteenth-century writer Emily Dickinson

Robin King
Visual arts, media criticism, sociology of learning and emotions

Nancy Krusoe
Postmodern writing practice, theory, and pedagogy, rhetoric and politics

Bri Luinne
Reception studies, cultural studies, popular culture and youth subcultures

Patrick M. Kershner
Virtual reality educational environments, outreach projects, collaborative research with James Burke

Robert Michalski
Composition and rhetoric, popular culture, 19th- and 20th-century British literature

Ellen Newberry, Co-Director, Central California Writing Project
Educational partnerships, writing for transfer/re-entry students, writing and political issues

Sarah Hope Parmeter
Multilingual, multicultural rhetorics; cross-age writing partnerships and public school collaborations

Dan Scripture
Vietnam War popular culture studies, fiction writing

Roswell Spafford
Coordinator, Journalism M inor, Journalism, media criticism, fiction, poetry, service learning, educational partnerships

Judith Todd
Philosophies of nature, ecocriticism, Native American worldviews, visual arts, cross-cultural and interdisciplinary studies

Amy Weaver
Creative nonfiction, writing pedagogy

James Wilson
Modern European literary art, intellectual, and political movements (especially of France, Italy, and Spain); poetry of Ezra Pound; Chinese poetry and philosophy; translation, argument in popular culture; the rhetoric of sports

Professor
Paul N. Skonicky (Literature)
Contemporary U.S. fiction, popular culture (especially detective fiction), practical criticism and reviews, oral history, the teaching of literature, American writers abroad, journalism

Program Description

The campuswide Writing Program offers courses designed to help students at every level of proficiency become more competent and confident writers of prose. The courses offered through this program teach skills in grammar and organization and strategies of invention, composition, and editing. These courses approach writing as one of the most important ways we have of making discoveries about ourselves and the world around us and of communicating these insights to others.

The Writing Program administers the writing component of the campus general education requirements as well as the Subject A requirement, and advises students...
about ways to fulfill these requirements. It offers courses that satisfy the "C" general education requirement and tutorials that prepare students for the writing placement exam. Writing instructors in each college participate in that college's core course and course its students about their writing.

The Writing Program has offered two minors: a minor in journalism (see page 273) and a minor in communication and rhetoric (see page 156), though both are suspended at this time. It also offers instruction in the theory and practice of teaching writing for graduate students and peer tutors.

Courses in creative writing are offered through the Literature Department.

Lower-Division Courses

1. Composition and Rhetoric. F,W,S
A basic composition course, which helps students find specific, practical ways of improving every aspect of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Subject A requirement. May be repeated for credit. T The Staff

11A. Adjunct Tutorial in Writing (2 credits per quarter) (2 credits). F
A tutorial designed to provide follow-up assistance in writing for students who have passed the Subject A requirement, but wish to continue to work on various aspects of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Subject A requirement. May be repeated for credit. T The Staff

11B. Adjunct Tutorial in Writing (2 credits per quarter) (2 credits). W
A tutorial designed to provide follow-up assistance in writing for students who have passed the Subject A requirement, but wish to continue to work on various aspects of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Subject A requirement. May be repeated for credit. T The Staff

11C. Adjunct Tutorial in Writing (2 credits per quarter) (2 credits). S
A tutorial designed to provide follow-up assistance in writing for students who have passed the Subject A requirement, but wish to continue to work on various aspects of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Subject A requirement. May be repeated for credit. T The Staff

20. The Nature of Written Discourse. W
Explores the dynamics of written language: its relationship to speech, thought, and culture; its uses in different personal, academic, professional, and public contexts; its abuses in jargon and propaganda. Course work includes extensive practice in different kinds of writing. Enrollment restricted to first-year students during priority enrollment; may be opened if space allows. Enrollment limited to 22. T The Staff

Explores, via cross-cultural readings, the nature, uses, and abuses of language. Course work includes extensive writing, both take-home and in-class. Emphasis on revising for power of expression and for variety and accuracy at the sentence level. Enrollment restricted to first-year students during priority enrollment; may be opened if space allows. Enrollment limited to 22. M. Freeman

22A. Grammar and Editing Workshop (3 credits). F
Offers instruction on selected topics in grammar and conventions of written English as needed to strengthen the writing skills of students whose primary language is not standard English. Provides students practice in applying these concepts to editing their own writing. Designed for entering first-year students. Enrollment limited to 22. M. Freeman

22B. Grammar and Editing Workshop (3 credits). W
Offers instruction on selected topics in grammar and conventions of written English as needed to strengthen the writing skills of students whose primary language is not standard English. Provides students practice in applying these concepts to editing their own writing. Designed for continuing students who have already taken course 20 and/or 21. Enrollment limited to 22. M. Freeman

42. Student-Directed Seminar.
Seminars taught by upper-division students under faculty supervision. (See course 192.) T The Staff

64. Newswriting Workshop. *
Introduction to the basic techniques of newswriting, including practice in leads, formats, and different kinds of news reporting. Emphasis on developing skills in research, interviewing, and shaping stories. Includes an examination of the contemporary media. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Instructor determination at first class meeting. Enrollment limited to 22. (General Education Code(s): W.) T The Staff

70. Communication and Rhetoric: An Introduction. *
This course introduces the field of contemporary communication studies, locating its roots in rhetoric and showing how key concepts play out in mass media and other settings as well as in everyday life. Prerequisite(s): satisfaction of the Subject A requirement. R. Spafford

93. Field Study. F,W,S
For lower-division students supervised study within commuting distance of campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Prerequisite(s): satisfaction of Subject A; certification of adequate preparation; approval of Writing Program. May be repeated for credit. T The Staff

93F. Field Study (2 credits). F,W,S
For lower-division students supervised study within commuting distance of campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency. May be repeated for credit. T The Staff

99F. Tutorial (2 credits). F,W,S
Individual, directed study for lower-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency. May be repeated for credit. T The Staff

Upper-Division Courses

101. Introduction to the History, Theory, and Practice of Rhetoric. *
A survey of classical and contemporary ideas about rhetoric which explores, practically and theoretically, "the best means of persuasion in any situation whatsoever" and will consider the nature of human discourse in diverse areas of knowledge. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code(s): W.) C. Freeman

102. The Rhetoric of the Social Sciences. *
Develops rhetorical facility in disciplinary writing for upper-division social science majors. Requires critical and disciplinary reading, writing in modes appropriate to social science disciplines, and a substantial research or critical paper within the student's own discipline. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code(s): W.) M. Baker

103. Rhetoric of the Natural Sciences. *
This course explores writing genres within the natural sciences. Emphasis is on the relationships between good science and good writing, clear thinking and clear writing. Frequent papers and substantive revisions required. Prerequisite(s): completion of 10 units coursework in natural sciences, satisfaction of the Subject A and Composition requirements. Enrollment restricted to juniors and seniors during priority enrollment. Enrollment limited to 30. (General Education Code(s): W.) S. Parmeter

104. Writing in the Arts. *
A writing course focusing on the purposes and composition of various genres of writing about and in the performing arts, visual arts, and music such as reviews, program and exhibit notes, journal and magazine articles, grant proposals, and press releases. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 30. (General Education Code(s): W.) E. Abrams

106. Public Speaking. *
Students learn strategies to write, analyze, and deliver effective speeches of various kinds as well as professional presentations using PowerPoint and other visuals. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 25. J. Wilson

An exploration of the conventions and formats of business and technical writing. Course work involves writing effective resumes, proposals, letters, end-user manuals, and the fundamentals of Web site design. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 30. T The Staff

108. Electronic Communication. *
An introduction to the evolving conventions of effective Web site design as well as collaborative writing. Course work includes evaluation of Web site content and structure and creation of hypertext. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 24. T The Staff
109. Argument and Practical Reasoning. * An investigation of contemporary persuasive discourse with special attention to the elements and forms of argument, the nature of evidence, questions of validity and probability, and the workings of rhetorical reasoning. Emphasizes the analysis of arguments rather than the construction. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) The Staff

163. Advanced Workshop in Expository Writing. * A composition course for students who, having mastered basic writing skills, wish to concentrate on increasing their effectiveness as rhetoricians, prose stylist, and editors. Assignments include rewriting and revising essays, responding to other students' work, and reading published essays. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 22. M ay be repeated for credit. (General Education Code(s): W.) D. Arthur

165. Practicum in Reporting. * In-depth, community-based reporting, with an emphasis on skills ranging from interviewing techniques to profiles, integrating research with writing. Students choose a specific area or "desk" of concentration, and all the stories reflect that beat. Prerequisite(s): satisfaction of the Subject A and Composition requirements; a writing sample, completed in class, is required at first class meeting. Enrollment restricted to journalism minors during priority enrollment. Enrollment limited to 22. (General Education Code(s): W.) T. Fitzmaurice

128. Latino Media in the U.S. F An overview of Latino mass media outlets in the U.S. and their role in the face of increased concentration of mainstream media ownership. Focus on development of strategies and writing skills to enable grassroots and community organizations to access print media. Bilingual approach. (Formerly: Journalism and the Latino Community.) (Also offered as Latin American & Latino Studies 128. Students cannot receive credit for both courses.) T. The Staff

159. Grammar for Tutors and Teachers (3 credits), W English grammar from a pedagogical perspective, emphasizing structures, patterns, and conventions of written English that commonly challenge basic writers. Students learn strategies for helping multilingual and other writers improve their writing skills by increasing their awareness of grammar. Prerequisite(s): satisfaction of Subject A and Composition requirements. M. Freeman

161. Academic Writing and Research Methods. * Introduces library and field research methods and also provides instruction and practice in writing from research, addressing issues such as voice, argument, and documentation. Students write four lengthy essays and do considerable informal writing. Course 161A is either a section for re-entry women or a section for students in the EOP Faculty Mentor Program. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) T. The Staff

161A. Academic Writing and Research Methods. * Introduces library and field research methods and also provides instruction and practice in writing from research, addressing issues such as voice, argument, and documentation. Students write four lengthy essays and do considerable informal writing. Course 161A is either a section for re-entry women or a section for students in the EOP Faculty Mentor Program. Prerequisite(s): interview only and satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code(s): W.) The Staff

163. Advanced Workshop in Expository Writing. * A composition course for students who, having mastered basic writing skills, wish to concentrate on increasing their effectiveness as rhetoricians, prose stylist, and editors. Assignments include rewriting and revising essays, responding to other students' work, and reading published essays. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 22. M ay be repeated for credit. (General Education Code(s): W.) D. Arthur

165. Practicum in Reporting. * In-depth, community-based reporting, with an emphasis on skills ranging from interviewing techniques to profiles, integrating research with writing. Students choose a specific area or "desk" of concentration, and all the stories reflect that beat. Prerequisite(s): satisfaction of the Subject A and Composition requirements; a writing sample, completed in class, is required at first class meeting. Enrollment restricted to journalism minors during priority enrollment. Enrollment limited to 22. (General Education Code(s): W.) T. Fitzmaurice

166. Topics in Journalism. Courses under this heading explore fields of newspaper and magazine journalism: feature writing, investigative reporting, reviewing, commentary, etc. Students study published writing and hone their own skills as writers under the supervision of a practicing journalist. See the Syllabus for specific offerings.

166A. Magazine Writing. * Introduces students to the various forms of magazine writing as well as to pertinent reporting techniques. Students work intensively on process, style, and editing, producing numerous formal and informal pieces. Enrollment priority will be given to journalism minors and students who have completed a writing sample on the first day of class. Prerequisite(s): satisfaction of Subject A and Composition requirements; course 64 or permission of instructor. Enrollment limited to 22. (General Education Code(s): W.) T. The Staff

166B. Investigative Reporting. * Students acquire basic investigative and research skills, with particular emphasis on how to develop investigative subjects, obtain data, check accuracy, and convert information into well-written, publishable articles. Priority given to students concentrating in journalism. Prerequisite(s): satisfaction of the Subject A and Composition requirements; interview with instructor to review journalism portfolio. Enrollment limited to 22. (General Education Code(s): W.) T. The Staff

166D. Minorities in Journalism. * Focuses on the minority press and how it has shaped journalism in the U.S., as well as viewing how the media has dealt with this segment of our society. Prerequisite(s): satisfaction of the Subject A and Composition requirements and consent of instructor. Enrollment limited to 22. (General Education Code(s): W.) T. The Staff

166J. Online Journalism. * A course in using electronic sources to report articles for publication, and in publishing journalistic pieces online. Prerequisite(s): course 64 or journalism experience instructor determination at first class meeting. Enrollment limited to 25. T. The Staff

166N. The Rhetoric of Radio. * Examines the theory and practice of radio. Students explore how the formats of radio create its meaning, and investigate radio's place in the landscape of the media, particularly in the U.S. and Mexico. Prerequisite(s): satisfaction of the Subject A and Composition requirements and consent of instructor. Enrollment limited to 25. L. Lopez

167. Making the News. * A writing course examining news and feature articles in popular print media. Students write their own articles and analyze how a particular content is mandated by conventional forms, by the structure of the industries, and by ideas of "newsworthiness." Designed for journalism minors and students for whom a course in media criticism is central to their program. Prerequisite(s): satisfaction of the Subject A and Composition requirements; qualifications determined by instructor at first class meeting. Enrollment limited to 43. (General Education Code(s): W.) R. Spafford, C. Hallinan

169. Theory and Practice of Tutoring Writing. F An introduction to theory and research on the composing process and practical strategies for teaching writing, especially in tutorial situations. Recommended for writing assistants. Prerequisite(s): instructor determination at first class meeting; course intended for writing tutors only. Enrollment limited to 30. T. The Staff

180. Seminar in Editing and Publishing. F, W, S News seminar for City on a Hill editors and writers. Weekly sessions evaluate newspaper in depth, including writing, reporting, and issues in journalism ranging from ethics to legal questions. Prerequisite(s): instructor determination at first class meeting; open only to editors, interns, and writers at City on a Hill Press. Enrollment limited to 40. May be repeated for credit. T. The Staff

191. Internships. Individual work in journalism, publishing, or broadcasting. Internships require a contracted amount of writing or other work, and generally involve group tutorials with faculty in the Writing Program as well as individual conferences. T. The Staff

191A. Internship in Writing. F, W, S Regular writing for newspaper or magazine. Students submit petition to sponsoring agency. May be repeated for credit. T. The Staff

191B. Internship in Editing. F, W, S Work in an editorial position involving critique and guidance of reporters. Students submit petition to sponsoring agency. May be repeated for credit. T. The Staff

191C. Internship in Publishing. F, W, S All phases of work for a publishing house, from manuscript reading to editorial. Students submit petition to sponsoring agency. May be repeated for credit. T. The Staff

191D. Internship in Broadcasting. F, W, S Writing, editing, scheduling, and/or broadcast work for television or radio. Students submit petition to sponsoring agency. May be repeated for credit. T. The Staff
192. Directed Student Teaching. F,W,S  
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students submit petition to sponsoring agency. May be repeated for credit. The Staff

193. Field Study, F,W,S  
For upper-division students supervised study within commuting distance of the campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency. May be repeated for credit.

193F. Field Study (2 credits), F,W,S  
For upper-division students supervised study within commuting distance of the campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency. May be repeated for credit.

A writing, editing, or publishing project undertaken by a small group of students under the direct supervision of a writing instructor. Students submit petition to sponsoring agency. Enrollment limited to 15. May be repeated for credit. The Staff

Individual work on a thesis for any campus major or individual major. Faculty in the Writing Program help students on all phases of work, from selection and focus to development of bibliographies, research techniques, revision, and editing. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

195F. Senior Thesis (2 credits). F,W,S  
Individual work on a thesis for any campus major or individual major. Faculty in the Writing Program help students on all phases of work, from selection and focus to development of bibliographies, research techniques, revision, and editing. Students submit petition to sponsoring agency. May be repeated for credit.

198. Independent Field Study. F,W,S  
Individual study for which faculty supervision is possible only by correspondence. May include internships at newspapers, magazines, publishing houses, or the newsletters of corporations, and civic or service organizations. Prerequisite(s): satisfaction of Subject A requirement; students submit petition to sponsoring agency. May be repeated for credit. The Staff

198F. Independent Field Study (2 credits). F,W,S  
Individual study for which faculty supervision is possible only by correspondence. May include internships at newspapers, magazines, publishing houses, or the newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency. May be repeated for credit.

199. Tutorial. F,W,S  
Individual, directed study for upper-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits). F,W,S  
Individual, directed study for upper-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency. May be repeated for credit.

Graduate Courses

202. Writing and Learning Seminar  
(3 credits). *  
Strategies for teaching assistants to help undergraduates become better learners and writers in disciplinary courses. Topics include using writing to improve reading and thinking, analysis of assignments, avoiding plagiarism, responding to and evaluating papers, ESL writers, peer response, and technological aids. Enrollment restricted to graduate students. Enrollment limited to 30. D. Scripture

203. Teaching Writing. S  
Prepares graduate students to teach Writing 1 at UCSC and elsewhere. Development of a syllabus, teaching strategy, and class plans based on study of composition and rhetorical theories, research on students' writing development, and effective writing pedagogies. Enrollment restricted to graduate students. Enrollment limited to 25. E. Abrams

Additional Course of Interest  
Computer Engineering 185, Technical Writing for Computer Engineers
Teaching Staff
Teaching Staff

Faculty titles for 2004–06 were verified as of June 30, 2004, and subsequent changes may not be reflected in the following list. Please note that inclusion in this list is not a guarantee that the faculty member will be teaching throughout the 2004–06 academic years. In addition, some faculty listed here as emeriti may be recalled to teach courses.

The listing for most faculty members includes college membership, year of arrival at UC Santa Cruz, academic title, degrees, and former affiliations.

MARTIN ABAOJ (2001)
Professor, Computer Science
B.S., M.S., Ph.D., Stanford University. Former affiliations: Systems Research Center, Compaq Bell Labs Research; Lucent Technologies.

RALPH H. ABRAHAM, Kresge College (1968)
Professor Emeritus, Mathematics
B.S.E., M.S., Ph.D., University of Michigan. Former affiliations: Princeton University; Columbia University; University of California, Berkeley.

W. EMMANUEL ABRAHAM, Cowell College (1973)
Professor Emeritus, Philosophy
B.A., University of London; M.A., B.Phil., Oxford University. Former affiliations: Macalester College; University of Ghana; University of California, Berkeley; Stanford University.

ELIZABETH S. ABRAMS, Porter College (2000)
Lecturer, Writing
A.B., University of California, Berkeley; M.A., M.Phil., Yale University. Former affiliation: Harvard Expository Writing Program.

ROBERT F. ADAMS, Crown College (1967)
Professor Emeritus, Economics
B.A., Oberlin College; M.A., Ph.D., University of Michigan. Former affiliations: University of Pittsburgh; University of Maryland.

ANTHONY AGUIRE (2003)
Assistant Professor, Physics
B.A., Brown University; M.A., Ph.D., Harvard University. Former affiliation: Institute for Advanced Study (Princeton).

JULIA M. AGUIRE (2001)
Assistant Professor, Education
B.A., University of California, Berkeley; M.A.; University of California, Berkeley.

FACING PAGE: Professors of molecular, cell, and developmental biology Andrew Chisholm and Yishi Jin both conduct research studying different aspects of a tiny roundworm, Caenorhabditis elegans. In a White House ceremony, Jin received a 1999 Presidential Early Career Award for Scientists and Engineers.

PATRICK AHERNE, Porter College (1966)
Professor Emeritus, Art

JUDITH AISSEN, Stevenson College (1983)
Professor, Linguistics
B.A., Fordham University; M.A., Yale University; Ph.D., Harvard University. Former affiliations: University of California, Los Angeles; Yale University; University of California, Santa Barbara.

JOSHUA ALIZEMAN, College Nine (2001)
Professor, Economics
B.A., M.A., Hebrew University of Jerusalem; Ph.D., University of Chicago. Former affiliations: University of Pennsylvania; University of Chicago; Hebrew University of Jerusalem; Dartmouth College.

RAMAKRISHNA AKULLA (2003)
Professor, Information Systems Management
B.S., Indian Institute of Technology; Ph.D., Indian Institute of Science. Former affiliations: State University of New York at Buffalo; Carnegie Mellon University.

Associate Professor, Psychology
B.S., M.S., Ph.D., Dalhousie University (Canada).

JORGE ALADRO FONT, Merrill College (1992)
Professor, Spanish Literature
M.A., University of Barcelona; Ph.D., State University of New York at Albany. Former affiliations: Skidmore College; State University of New York at Albany.

LUCA DE ALFARO (2001)
Assistant Professor, Computer Engineering
B.S., Ph.D., Politecnico di Torino (Italy); M.S., Ph.D., Stanford University. Former affiliation: University of California, Berkeley.

SONIA E. ALVAREZ, Merrill College (1984)
Professor, Politics
A.B., Smith College; M.A., M.Phil., Ph.D., Yale University. Former affiliation: Yale University.

GEORGE T. AMIS, Cowell College (1965)
Professor Emeritus, English Literature
B.A., Amherst College; M.A., Ph.D., Yale University. Former affiliations: Yale University; Williams College.

ELLIOT W. ANDERSON, Porter College (1997)
Assistant Professor, Art
B.S., Northeastern University; B.A., M.A., San Francisco State University. Former affiliation: San Francisco Art Institute.

JENNIFER K. ANDERSON, College Eight/College Ten (1974)
Lecturer, Environmental Interpretation (Environmental Studies)
B.A., California Life Teaching Credential, University of California, Riverside. Former affiliations: Monterey, Santa Clara, and Riverside County Schools.

MARK ANDERSON (2003)
Assistant Professor, Anthropology
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., University of Texas at Austin. Former affiliation: University of Chicago.

ROGER W. ANDERSON, Porter College (1968)
Professor, Chemistry and Biochemistry
B.A., Carleton College; M.A., Ph.D., Harvard University.

FRANK C. ANDREWS, Merrill College (1967)
Professor, Chemistry and Biochemistry
B.S., Kansas State University; M.A., Ph.D., Harvard University. Former affiliation: University of Wisconsin.

LAWRENCE ANDREWS, Porter College (1991)
Associate Professor, Film and Digital Media

KAREN I. ANDRIE (1993)
Lecturer, Music (Cello)
B.M., Performer’s Certificate, Eastman School of Music. Concurrent affiliations: Cabrillo College; Poper-Keiter Summer Music Conservatory; Santa Cruz Chamber Players; Santa Cruz New Music Works; Monterey Symphony.

DAVID HENRY ANTHONY III, Oakes College (1988)
Associate Professor, History

BETTINA APTHeker, Kresge College/College Ten (1979)
Professor, Women’s Studies and History
B.A., University of California, Berkeley; M.A., San Jose State University; Ph.D., University of California, Santa Cruz. Former affiliation: San Jose State University.

DANE ARCHER, Stevenson College (1972)
Professor, Sociology
B.A., Yale University; M.A., Ph.D., Harvard University.

MANUEL ARES JR., Porter College (1987)
Professor, Molecular, Cell, and Developmental Biology
B.S., Cornell University; Ph.D., University of California, San Diego. Former affiliation: Yale University.

SVEN W. ARNDT (1970)
Professor Emeritus, Economics
B.A., University of Western Ontario; M.A., Ph.D., University of California, Berkeley. Former affiliations: University of California, Los Angeles; Johns Hopkins Center for Advanced International Studies (Bologna, Italy).

JEFFREY M. ARNETT (1987)
Lecturer, Writing
B.A., University of California, Santa Cruz; M.A., University of Colorado, Boulder. Former affiliation: Santa Clara University.
388  Teaching Staff

ANJALI ARODNDEKAR (2000)
Assistant Professor, Women's Studies
I.B., Armand Hammer United World College; B.A., Cornell University; Graduate Certificate, Ph.D., University of Pennsylvania.

ELLIOT ARONSON, Stevenson College (1974)
Professor Emeritus, Psychology
B.A., Brandeis University; M.A., Wesleyan University; Ph.D., Stanford University. Former affiliations: Harvard University; University of Minnesota; University of Texas at Austin.

GABRIELA ARREDONDO, Merrill College (1998)
Assistant Professor, Latin American and Latino Studies
B.A., Reed College; M.A., San Francisco State University; Ph.D., University of Chicago.

DORIS B. ASH, Porter College (2000)
Assistant Professor, Education
B.S., M.S., Cornell University; Ph.D., University of California, Berkeley. Former affiliation: San Francisco Exploratorium.

MARGARITA AZMITIA, Cowell College (1988)
Lecturer, History
B.A., Yale University; M.A., Ph.D., University of Chicago. Former affiliation: Portland State University.

ERIK ASPHAUG (1998)
Associate Professor, Earth Sciences
B.A., Rice University; Ph.D., University of Arizona, Tucson. Former affiliations: SETI Institute; NASA Ames Research Center.

CHARLES ATKINSON, Porter College (1978)
Lecturer, Creative Writing
B.A., Amherst College; M.A., Ph.D., University of California, Santa Cruz. Former affiliation: Hampshire College.

WILLIAM B. ATWOOD (2001)
Adjunct Professor, Physics
B.S., California Institute of Technology; Ph.D., Stanford University. Former affiliation: Stanford Linear Accelerator Center.

MARGARITA AZMITIA, Cowell College/College Ten (1989)
Professor, Psychology
B.A., M.A., University of North Carolina at Greensboro; Ph.D., University of Minnesota. Former affiliation: Florida International University.

IGNACIO AZNAR (1966)
Lecturer Emeritus, Spanish Language
B.A., M.A., University of California, Berkeley. Former affiliation: Pomona College.

NEIL J. BALMORTH (1999)
Professor, Applied Mathematics and Statistics
B.Sc., University of London; Ph.D., University of Cambridge. Former affiliations: University of Nottingham; Woods Hole Oceanographic Institution.

THOMAS BANKS (1986)
Professor, Physics
B.A., Reed College; Ph.D., Massachusetts Institute of Technology. Former affiliations: Stanford Linear Accelerator Center; Tel Aviv University; Institute for Advanced Study (Princeton); Rutgers University.

BRENDA BARCELÓ, Merrill College (1995)
Lecturer, Spanish Language
B.A., M.A., University of California, Santa Barbara. Former affiliations: Cuesta College; Alianza Cultural Uruguay-U.S.A. (Montevideo).

EHUD MOSHE BARUCH (1999)
Associate Professor, Mathematics
B.Sc., M.Sc., Technion University (Israel); Ph.D., Yale University. Former affiliations: Weizmann Institute of Science (Israel); Ohio State University.

KAREN BASS, Cowell College (1988)
Associate Professor, Classics (Literature)
B.A., University of California, Santa Cruz; Ph.D., Brown University. Former affiliations: Syracuse University; University of Rhode Island; Brown University.

DILIP K. BASU, Merrill College/College Nine (1971)
Associate Professor, History
B.A., M.A., Calcutta University; M.A., Harvard University; Ph.D., University of California, Berkeley. Former affiliations: University of Michigan; University of California, Berkeley.

FRANK BAUERLE (1994)
Lecturer, Mathematics
B.A., Technische Hochschule Karlsruhe; M.A., Ph.D., University of California, San Diego. Former affiliations: Monash University; Cornell University.

MURRAY BAUMGARTEN, Kresge College (1966)
Professor, English and Comparative Literature; Neustadt Leun Professor; Holocaust Studies
B.A., Columbia University; M.A., Ph.D., University of California, Berkeley. Former affiliations: Hebrew University of Jerusalem; Williams College; University of California Education Abroad Program (Jerusalem).

AMY C. BEAL, Porter College (2001)
Assistant Professor, Music
B.M., M.M., University of Kansas; M.A., Ph.D., University of Michigan. Former affiliation: Bates College.

TANDY BEAL, Porter College (1973)
Lecturer, Theater Arts (Dance)
Former affiliations: Cabrillo College; University of Utah.

ANJALI ARODNDEKAR (2000)
Assistant Professor, Women's Studies
I.B., Armand Hammer United World College; B.A., Cornell University; Graduate Certificate, Ph.D., University of Pennsylvania.

ELLIOT ARONSON, Stevenson College (1974)
Professor Emeritus, Psychology
B.A., Brandeis University; M.A., Wesleyan University; Ph.D., Stanford University. Former affiliations: Harvard University; University of Minnesota; University of Texas at Austin.

GABRIELA ARREDONDO, Merrill College (1998)
Assistant Professor, Latin American and Latino Studies
B.A., Reed College; M.A., San Francisco State University; Ph.D., University of Chicago.

DORIS B. ASH, Porter College (2000)
Assistant Professor, Education
B.S., M.S., Cornell University; Ph.D., University of California, Berkeley. Former affiliation: San Francisco Exploratorium.

MARGARITA AZMITIA, Cowell College (1988)
Lecturer, History
B.A., Yale University; M.A., Ph.D., University of Chicago. Former affiliation: Portland State University.

ERIK ASPHAUG (1998)
Associate Professor, Earth Sciences
B.A., Rice University; Ph.D., University of Arizona, Tucson. Former affiliations: SETI Institute; NASA Ames Research Center.

CHARLES ATKINSON, Porter College (1978)
Lecturer, Creative Writing
B.A., Amherst College; M.A., Ph.D., University of California, Santa Cruz. Former affiliation: Hampshire College.

WILLIAM B. ATWOOD (2001)
Adjunct Professor, Physics
B.S., California Institute of Technology; Ph.D., Stanford University. Former affiliation: Stanford Linear Accelerator Center.

MARGARITA AZMITIA, Cowell College/College Ten (1989)
Professor, Psychology
B.A., M.A., University of North Carolina at Greensboro; Ph.D., University of Minnesota. Former affiliation: Florida International University.

IGNACIO AZNAR (1966)
Lecturer Emeritus, Spanish Language
B.A., M.A., University of California, Berkeley. Former affiliation: Pomona College.

MARK BAKER (2000)
Lecturer, Writing
B.A., University of California, Irvine; M.A., San Francisco State University. Former affiliation: San Francisco State University.

JONATHAN F. BEECHER, Stevenson College (1970)
Professor, History
B.A., Ph.D., Harvard University. Former affiliations: Harvard University; Ecole Normale d'Instituteurs (France).

DAVID P. BELANGER, College Eight (1984)
Professor, Physics
B.S., M.S., Georgia Institute of Technology; Ph.D., University of California, Santa Barbara.

ILAN BENJAMIN, Stevenson College (1989)
Professor, Chemistry and Biochemistry
B.S., Ph.D., Hebrew University of Jerusalem. Former affiliation: University of California, San Diego.

HARRY BERGER JR., Cowell College (1965)
Professor Emeritus, English Literature and History of Art and Visual Culture
B.A., Ph.D., Yale University. Former affiliation: Yale University.

RALPH BERGER, Cowell College (1967)
Professor Emeritus, Ecology and Evolutionary Biology
B.A., M.A., Cambridge University; Ph.D., University of Edinburgh. Former affiliations: University of Edinburgh; National Institute of Neurological Diseases and Blindness; University of Puerto Rico; University of California, Los Angeles.

ROBERT F. BERKHOFER JR., Merrill College (1991)
Professor Emeritus, History
B.A., State University of New York at Albany; M.A., Ph.D., Cornell University. Former affiliations: University of Michigan; Ann Arbor; University of Wisconsin-Madison; University of Minnesota.

GIACOMO BERNARDI (1994)
Associate Professor, Ecology and Evolutionary Biology
B.S. (Maitrise), M.Sc. (D.E.A.), Ph.D. (These d'Université), University of Paris. Former affiliations: Institute Jacques Monod (Paris); Hopkins Marine Station, Stanford University.

CLAUDE F. BERNASCONE, Merrill College (1967)
Professor, Chemistry and Biochemistry
Diploma, Ph.D., Swiss Federal Institute of Technology (ETH) (Zurich). Former affiliation: Max Planck Institute for Biophysical Chemistry (Göttingen).

GABRIEL BERNS, Cowell College (1965)
Professor Emeritus, Spanish Literature
B.A., M.A., University of Wisconsin; Ph.D., Ohio State University. Former affiliation: University of Wisconsin; Ohio Wesleyan University; Ohio State University; University of California Education Abroad Program (Madrid).

EVA BERTRAM (2003)
Acting Assistant Professor, Politics
B.A., Swarthmore College; M.A., Ph.D., cand., Yale University.

JULIE BETTIE, College Eight (1997)
Associate Professor, Sociology
B.S., Boise State University; M.A., Ph.D., University of California, Davis.
JAMES H. BIERMAN, Cowell College/Porter College (1973)  
Professor, Theater Arts (Drama)  
B.A., Princeton University; Diplôme, University of Paris, Sorbonne; Ph.D., Stanford University.  
Former affiliations: Smith College; Amherst College.

RAOUl BIRNBAUM, Kresge College (1991)  
Patricia and Roundbald Rebele Professor, History of Art and Visual Culture  
B.A., College of the City of New York; M.A., M.Phil., Ph.D., Columbia University. Former affiliations: University of Iowa; Princeton University; Harvard University; Metropolitan Museum of Art.

ROBERTO A. BOGOMOLNI, Porter College (1988)  
B.A., Harvard University; Ph.D., University of California, Los Angeles.  
Professor, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory (1967)

ROBERT BOLTJE (1999)  
Former affiliations: NASA/Space Telescope Science Institute; Graduate Center of the City University of New York.

JOYCE BRODSKY, Porter College (1992)  
B.A., Brooklyn College; M.A., New York University; Ph.D. cand., Yale University; Ecole du Louvre. Former affiliation: University of Connecticut.

JOHN G. BORREGO, Merrill College/College Eight (1974)  
Professor, Latin American and Latino Studies  
B.A., University of California, Berkeley; M.A., Washington University; M.C.E., Massachusetts Institute of Technology; Ph.D., University of California, Berkeley. Former affiliation: University of New Mexico.

MARK BRANDENBURG (1989)  
Lecturer, Music (Clarinet)  
B.M., M.S., Juilliard School of Music.

SCOTT BRANDT, Crown College (1999)  
Associate Professor, Computer Science  
B.S., M.S., University of Minnesota, Minneapolis; Ph.D., University of Colorado, Boulder.

ALEXANDRE BRANDWAJN (1985)  
Professor, Computer Engineering  

DONALD BRENNIE, Cowell College/College Nine (1996)  
Professor, Anthropology  
B.A., Stanford University; Ph.D., Harvard University. Former affiliation: Pitzer College.

BRUCE BRIDGEMAN, College Eight (1973)  
Professor, Psychology and Psychobiology  
B.A., Cornell University; Ph.D., Stanford University. Former affiliations: Free University of Berlin; University of California, Berkeley.

JOSEPH F. BUNNETT, Crown College (1966)  
Professor Emeritus, Mathematics  
B.S., M.S., University of Rochester. Former affiliations: Reed College; University of North Carolina; Brown University.

DONALD BRENNEIS, Cowell College/College Nine (1989)  
Professor, Computer Science  
B.S., M.S., University of Minnesota, Minneapolis; Ph.D., University of Colorado, Boulder.

BOYD BROWN, Crown College (1982)  
Professor, Economics  
B.A., University of Oregon; M.P.A., Ph.D., University of California, Los Angeles. Former affiliation: Virginia Polytechnic Institute and State University.

MICHAEL K. BROWN, Merrill College (1982)  
Professor, Political Science  
B.A., University of Oregon; M.P.A., Ph.D., University of California, Los Angeles. Former affiliation: Virginia Polytechnic Institute and State University.

ALEXANDRE BRANDWAJN (1985)  
Professor, Computer Engineering  

REBECCA BRASLAV, Stevenson College (1991)  
Associate Professor, Chemistry and Biochemistry  
B.A., Reed College; Ph.D., University of Wisconsin-Madison. Former affiliation: Institut für Organische Chemie (Basel, Switzerland).

MICHAEL J. BOULTE (1993)  
Professor, Astronomy and Astrophysics  
B.S., University of Central Florida; M.S., Florida State University; Ph.D., University of Washington. Former affiliations: NASA/Space Telescope Science Institute; Dominion Astrophysical Observatory.

ROBERT BOULTE (1999)  
Associate Professor, Mathematics  
Dipl. Math., University of Munich; Dr. habil., Dr. rer. nat., University of Augsburg.

JOHN G. BORREGO, Merrill College/College Eight (1974)  
Professor, Latin American and Latino Studies  
B.A., University of California, Berkeley; M.A., Washington University; M.C.E., Massachusetts Institute of Technology; Ph.D., University of California, Berkeley. Former affiliation: University of New Mexico.

BARRY BOWMAN, Oakes College (1979)  
Professor, Molecular Cell, and Developmental Biology  
B.A., University of Wisconsin; Ph.D., University of Michigan. Former affiliation: Yale University.

GEORGE S. BROWN, Porter College (1990)  
Professor, Physics  
B.A., Wayne State University; M.A., Ph.D., Harvard University. Former affiliations: Yale University; University of Colorado.

EILEEN BROOKS, College Nine (2001)  
Assistant Professor, Economics  
B.S., Massachusetts Institute of Technology; M.Lit., Oxford University; A.M., Ph.D., Harvard University.

HEATHER BULLOCK, College Ten (1999)  
Associate Professor, Psychology  
B.A., Allegheny College; M.A., Ph.D., University of Rhode Island. Former affiliation: Nebraska Wesleyan University.

NICHOLAS BURGOYNE (1967)  
Professor Emeritus, Mathematics  
B.S., M.S., McGill University; Ph.D., Princeton University. Former affiliations: Princeton University; University of California, Berkeley; University of Illinois, Chicago.

VICTOR BURGIN, Oakes College (1988)  
Professor Emeritus, History of Consciousness  
A.R.C.A., Royal College of Art (London); M.F.A., Yale University. Former affiliation: Polytechnic of Central London.

MICHAEL K. BROWN, Merrill College (1982)  
Professor, Political Science  
B.A., University of Oregon; M.P.A., Ph.D., University of California, Los Angeles. Former affiliation: Virginia Polytechnic Institute and State University.

JAMES H. BIERMAN, Cowell College/Porter College (1973)  
Professor, Theater Arts (Drama)  
B.A., Princeton University; Diplôme, University of Paris, Sorbonne; Ph.D., Stanford University.  
Former affiliations: Smith College; Amherst College.

MICHAEL K. BROWN, Merrill College (1982)  
Professor, Political Science  
B.A., University of Oregon; M.P.A., Ph.D., University of California, Los Angeles. Former affiliation: Virginia Polytechnic Institute and State University.

REBECCA BRASLAV, Stevenson College (1991)  
Associate Professor, Chemistry and Biochemistry  
B.A., Reed College; Ph.D., University of Wisconsin-Madison. Former affiliation: Institut für Organische Chemie (Basel, Switzerland).

JOSEPH F. BUNNETT, Crown College (1966)  
Professor Emeritus, Mathematics  
B.S., M.S., University of Rochester. Former affiliations: Reed College; University of North Carolina; Brown University.

EILEEN BROOKS, College Nine (2001)  
Assistant Professor, Economics  
B.S., Massachusetts Institute of Technology; M.Lit., Oxford University; A.M., Ph.D., Harvard University.

LINDA C. BURMAN-HALL, Porter College (1975)  
Professor, Music  
B.A., University of California, Los Angeles; M.F.A., Ph.D., Princeton University.

JULIANNE BURTON-CARVAJAL, Merrill College (1974)  
Professor, Literature  
B.A., Denison University; M.Phil., Ph.D., Yale University. Former affiliation: University of Texas.
Catherine Byrne (2004)
Associate Professor, Psychology
B.A., Southern Oregon State College, Ashland; M.A., University of Notre Dame; Ph.D., University of Nevada, Reno.

Assistant Professor, Anthropology
B.A., University of Tennessee; M.A., Indiana University; A.M., Ph.D., Harvard University. Former affiliations: Northeastern University; Harvard University.

Carlos Calierno, Merrill College (1990)
Lecturer, Spanish Language
M.A., San Francisco State University; law degree, Facultad De Ciencias Juridicas (Santa Fe, Argentina).

Professor, Psychology
A.B., Mount Holyoke College; Ph.D., Stanford University. Former affiliations: University of Texas at Austin; Lehigh University.

Elisabeth Cameron, Porter College (2001)
Assistant Professor, History of Art and Visual Culture
B.A., Agnes Scott College; M.A., Ph.D., University of California, Los Angeles. Former affiliation: Nelson-Atkins Museum of Art (Kansas City, Missouri).

Kenneth L. Cameron, Crown College (1973)
Professor Emeritus, Earth Sciences
B.S., M.S., University of Houston; Ph.D., Virginia Polytechnic Institute and State University. Former affiliation: State University of New York at Stony Brook.

Walter Campbell (1989)
Lecturer, German Language

Mark H. Carr (1997)
Associate Professor, Ecology and Evolutionary Biology
B.A., University of California, Santa Cruz; M.S., San Francisco State University (Moss Landing Marine Laboratories); Ph.D., University of California, Santa Barbara. Former affiliations: Oregon State University; California Institute of Technology.

Benjamin L. Carson, Merrill College/Porter College (2003)
Assistant Professor, Music
B.A., Willamette University; M.M., University of Washington, Seattle; Ph.D., University of California, San Diego. Former affiliations: University of California, Riverside; University of California, San Diego.

Sue A. Carter, Crown College (1995)
Associate Professor, Physics
B.A., Kalamazoo College; Ph.D., University of Chicago. Former affiliations: AT&T Bell Laboratories; IBM-Almaden Research Center.

Pedro G. Castillo, Merrill College/Oakes College (1975)
Associate Professor, History
B.A., Arizona State University; M.A., Northern Arizona University; Ph.D., University of California, Santa Barbara. Former affiliations: University of California, Santa Barbara; Yale University.

Brian A. Catlos (2002)
Assistant Professor, History
B.A., M.A., Ph.D., University of Toronto. Former affiliation: Boston University.

Giulia Centineo, Cowell College (1987)
Lecturer, Italian Language
Laurea, Università degli Studi di Palermo (Italy); M.A., Ph.D. cand., University of California, Berkeley.

Pak K. Chan, Crown College (1987)
Associate Professor, Computer Engineering
B.Sc., Chinese University of Hong Kong; M.Sc., Ph.D., University of California, Los Angeles. Former affiliation: University of California, Los Angeles.

Martin M. Chemers, Porter College/College Ten (1995)
Acting Chancellor; Professor, Psychology
B.S., M.S., Ph.D., University of Illinois, Urbana-Champaign. Former affiliations: Claremont McKenna College; Claremont Graduate School; University of Utah; University of Delaware.

Nancy N. Chen, Crown College/College Ten (1994)
Associate Professor, Anthropology
B.A., Stanford University; M.A., Ph.D., University of California, Berkeley. Former affiliation: Tufts University.

Shaoqei Chen (2004)
Assistant Professor, Chemistry and Biochemistry
B.S., University of Science and Technology of China; M.S., Ph.D., Cornell University. Former affiliation: Southern Illinois University at Carbondale.

Ai-Ru (Meg) Cheng (2004)
Assistant Professor, Economics
B.A., National Tsing-Hua University; M.S., Ph.D., University of North Carolina at Chapel Hill.

Weidong Cheng, College Nine (1999)
Associate Professor, Environmental Studies
B.S., Northeast Agricultural College (Harbin, China); Ph.D., University of Georgia.

Yin-Wong Cheung, Crown College (1990)
Professor, Economics
B.S., University of Hong Kong; M.A., University of Essex (England); Ph.D., University of Pennsylvania.

Frank C. Child (1983)
Professor Emeritus, Economics
B.A., University of Utah; M.A., Ph.D., Stanford University. Former affiliation: University of California, Davis.

John Brown Childs, College Ten (1987)
Professor, Sociology
B.A., University of Massachusetts-Amherst; M.A., Ph.D., State University of New York at Buffalo. Former affiliations: National Academy of Sciences; Amherst College; Harvard University; Yale University.

Menzie Chinn, Crown College (1991)
Professor, Economics
B.A., Harvard University; M.A., Ph.D., University of California, Berkeley.

Andrew D. Chisholm (1996)
Associate Professor, Molecular, Cell, and Developmental Biology
B.A., Cambridge University; Ph.D., Medical Research Council Laboratory of Molecular Biology (Cambridge, England).

Alan S. Christy, Merrill College (1995)
Associate Professor, History
B.A., Carleton College; M.A., Ph.D., University of Chicago.

Patrick Y. Chuang (2001)
Assistant Professor, Earth Sciences
B.Sc., University of Alberta; M.S., Ph.D., California Institute of Technology. Former affiliation: National Center for Atmospheric Research.

Louis Chude-Sokei, Oakes College (1998)
Associate Professor, Literature
B.A., Ph.D., University of California, Los Angeles. Former affiliations: Bowdoin College; Occidental College.

Sandra Chung, Cowell College (1986)
Professor, Linguistics
A.B., Radcliffe College; Ph.D., Harvard University. Former affiliations: University of California, Los Angeles; University of California, San Diego.

Mark Cioc, Stevenson College/College Nine (1989)
Professor, History
B.S., M.A., University of Wyoming; Ph.D., University of California, Berkeley. Former affiliation: University of Massachusetts-Amherst.

Annette Clear, College Nine (2001)
Assistant Professor, Political Science
B.A., Yale University; M.A., Ph.D., Columbia University. Former affiliations: Asia Foundation; Carter Center for Human Rights; Indonesian Election Watch.

James T. Clifford, Oakes College (1978)
Distinguished Professor, History of Consciousness
B.A., Haverford College; M.A., Stanford University; Ph.D., Harvard University. Former affiliation: Harvard University.

Rena V. Cochlino, Merrill College (1973)
Associate Supervisor, Physical Education
B.A., Barnard College; M.A., Columbia University. Former affiliations: Central Connecticut State College; East Los Angeles College; World Campus Atloat.
ROBERT S. COE, Porter College (1968)
Professor, Earth Sciences
B.A., Harvard University; M.A., Ph.D., University of California, Berkeley. Former affiliations:
University of California, Berkeley; U.S. Geological Survey.

RAY T. COLLETT, Porter College (1965)
Director Emeritus, UCSC Arboretum
B.A., M.A., Ph.D., University of California, Berkeley.

CHRISTOPHER CONNERY, Oakes College (1990)
Associate Professor, Chinese Literature
B.A., University of California, Santa Cruz; M.A., Ph.D., Princeton University.

PAUL D. CONTOS (1997)
Lecturer, Music (Saxophone)
Concurrent affiliations: California State University, Monterey Bay; Monterey Jazz Festival. Former affiliations: Santa Cruz County Symphony; San Jose Civic Light Opera.

CATHERINE R. COOPER, Stevenson College/Collage Nine (1987)
Professor, Psychology and Education
B.A., Pomona College; Ph.D., University of Minnesota at Minneapolis-St. Paul. Former affiliation: University of Texas at Austin.

BRUCE N. COOPERSTEIN, College Eight (1975)
Professor, Mathematics
B.A., Queens College, City University of New York; M.A., Ph.D., University of Michigan. Former affiliation: University of Michigan.

VILASHINI COOOPAN (2003)
Assistant Professor, Literature
B.A., Yale University; Ph.D., Stanford University. Former affiliation: Yale University.

DAVID H. COPE, Porter College (1977)
Professor, Music
B.M., Arizona State University; M.M., University of Southern California. Former affiliations: Miami University (Ohio); Kansas State College.

MARY JANE COPE (1977)
Lecturer, Music (Piano)
B.A., Ohio Dominican College; M.M., Indiana University. Former affiliations: Cottey College; Kansas State College; Cleveland Institute of Music; Miami University (Ohio).

JORGE CORTES MONFORT (2004)
Assistant Professor, Applied Mathematics and Statistics
B.S., University of Basque Country (Spain); M.S., University of Zaragoza (Spain); Ph.D., University Carlos III de Madrid (Spain).

DANIEL P. COSTA, College Eight (1982)
Professor, Ecology and Evolutionary Biology
B.A., University of California, Los Angeles; Ph.D., University of California, Santa Cruz. Former affiliation: Scripps Institution of Oceanography.

EUGENE H. COTA-ROBLES, Crown College (1973)
Professor Emeritus, Molecular, Cell, and Developmental Biology
B.S., University of Arizona; M.A., Ph.D., University of California, Davis. Former affiliations: Pennsylvania State University; University of California, Riverside; Gerber Food Products.

WILLIAM D. COULTER, Porter College (1995)
Lecturer, Music (Classical Guitar)
B.A., M.A., University of California, Santa Cruz; M.A., San Francisco Conservatory of Music.

MICHAEL H. COWAN, Oakes College (1969)
Professor, American Studies
B.A., Ph.D., Yale University. Former affiliation: Yale University.

DONALD COYNE, Porter College (1985)
Adjunct Professor, Physics
B.S., University of Kansas; Ph.D., California Institute of Technology.

DAVID CRANE, Porter College (1999)
Assistant Professor, Film and Digital Media
B.A., University of Wisconsin-Madison; M.A., Ph.D., University of Wisconsin-Milwaukee.

SHEILA R. CRANE (2000)
Assistant Professor, History of Art and Visual Culture
B.A., Smith College; M.A., Ph.D., Northwestern University.

PHILLIP CREWS, Cowell College (1970)
Professor, Chemistry
B.S., University of California, Los Angeles; Ph.D., Princeton University. Former affiliation: University of California, Santa Barbara.

E. G. CRIGHTON, Porter College (1994)
Associate Professor, Art
B.F.A., San Francisco State University; M.F.A., California College of Arts and Crafts. Former affiliation: California State University, Hayward.

DONALD CROH (2000)
Assistant Professor, Ecology and Evolutionary Biology
B.S., University of California, Davis; M.Sc., California State University, Hayward (Moss Landing Marine Laboratories); Ph.D., Scripps Institution of Oceanography, University of California, San Diego.

FAY J. CRUSSBY, Porter College/College Ten (1997)
Professor, Psychology
A.B., Wheaton College; Ph.D., Boston University; LL.D. (Hon.), Ball State University. Former affiliations: Boston University; London School of Economics and Political Science; Yale University; Smith College.

BEN CROW, College Eight (1996)
Associate Professor, Sociology
B.S., University of Westminster (Polytechnic of Central London); Ph.D., University of Edinburgh. Former affiliations: Stanford University; University of California, Berkeley.

ROBERT R. CURRY, College Eight (1979)
Professor Emeritus, Environmental Geology (Environmental Studies)
B.A., M.Sc., University of Colorado; Ph.D., University of California, Berkeley. Former affiliations: University of California, Santa Barbara; University of Montana.

DAVID CUTHBERT, Porter College (2003)
Assistant Professor, Theater Arts
B.A., California State University, Fresno; M.F.A., University of California, San Diego. Former affiliations: Old Globe Theater (San Diego); PCPA Theaterfest; Vortex Lighting (Los Angeles); Sledgehammer Theatre.

WAYNE WEI-MING DAI (1988)
Professor, Computer Engineering
B.A., Ph.D., University of California, Berkeley.

MICHAEL S. DALBEY (1977)
Lecturer, Biology
B.A., San Fernando Valley State College; Ph.D., University of California, Santa Cruz.

CHARLES DANIEL, Cowell College (1965)
Professor Emeritus, Molecular, Cell, and Developmental Biology
B.A., University of New Mexico; M.S., University of Hawaii; Ph.D., University of California, Berkeley.

SHARON DANIEL, Porter College (1996)
Associate Professor, Film and Digital Media
B.M., Baylor University; M.M., University of Texas; M.F.A., University of Tennessee. Former affiliations: Massachusetts Institute of Technology; Maryland Institute College of Art; Rhode Island School of Design.

ANGELA Y. DAVIS, Oakes College (1991)
Assistant Professor, Computer Science
B.S., University of California, Davis; Ph.D., Stanford University. Former affiliation: Honda Research Institute.

WILLIAM JACKSONDAVIS, Stevenson College (1969)
Professor, Ecology and Evolutionary Biology
B.A., University of California, Berkeley; Ph.D., University of Oregon. Former affiliation: University of Oregon.

DAVID W. DEAMER (1994)
Professor Recalled, Biomolecular Engineering
B.S., Duke University; Ph.D., Ohio State University School of Medicine. Former affiliation: University of California, Davis.

CAROLYN DEAN, Porter College (1991)
Professor, History of Art and Visual Culture
B.A., University of Puget Sound; M.A., Ph.D., University of California, Los Angeles. Former affiliation: Texas Tech University.
MARGARET (PEGGY) L. DELANEY, Crown College (1983)  
Interim Campus Provost and Executive Vice Chancellor; Professor, Ocean Sciences  
B.S., Yale University; Ph.D., Massachusetts Institute of Technology.

TERESA DE LAURETIS, Oakes College (1985)  
Professor, History of Consciousness  
Maturita Classica, Liceo-Ginnasio Dante Alighieri (Ravenna); Laurea, Universita Luigi Bocconi (Milan). Former affiliations: University of Wisconsin-Milwaukee; University of California, San Diego.

GUILLERMO DELGADO-P, Merrill College (1989)  
Lecturer, Latin American and Latino Studies  
B.A., Licenciatura, Catholic University of Chile (Santiago); Ph.D., University of Texas at Austin. Former affiliation: Gustavus Adolphus College.

GINA DENT (2002)  
Associate Professor, Women's Studies and History of Consciousness  
B.A., University of California, Berkeley; M.A.; M.Phil., Ph.D., Columbia University. Former affiliations: Columbia University; Princeton University.

JOSEPH M. DEUTSCH, Merrill College (1986)  
Professor, Physics  
B.S., M.Sc., University of California, San Diego; Ph.D., Cambridge University. Former affiliation: University of California, Santa Barbara.

RACHEL J. DEWEY (1999)  
Associate Adjunct Professor, Astronomy and Astrophysics  
A.B., Harvard University; Ph.D., Princeton University.

MARIA ELENA DIAZ, Merrill College (1991)  
Associate Professor, History  
B.A., Syracuse University; M.A., University of Chicago; Ph.D., University of Texas at Austin. Former affiliation: University of Texas at Austin.

MAY N. DIAZ, Merrill College (1974)  
Professor Emerita, Anthropology  
B.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.

MICHAEL DINE, Stevenson College (1990)  
Professor, Physics  
B.S., Johns Hopkins University; Ph.D., Yale University. Former affiliations: City College of the City University of New York; Stanford Linear Accelerator Center.

JOHN DIZIKES, Cowell College (1965)  
Professor Emeritus, American Studies  
B.A., University of California, Los Angeles; Ph.D., Harvard University. Former affiliation: University of Connecticut.

DANIEL F. DOAK, College Eight (1992)  
Professor, Ecology and Evolutionary Biology  
B.A., Swarthmore College; Ph.D., University of Washington. Former affiliations: San Francisco State University; University of Washington.

CARLOS E. DORFEN (2003)  
Assistant Professor, Economics  
B.A., University of California, Santa Cruz; M.A., Ph.D., University of California, Berkeley.

ANDREW E. DOE, Porter College (1973)  
Professor Emeritus, Theater Arts (Drama)  
B.S., University of Vermont; M.A., University of Washington. Former affiliations: Lower Columbia College; University of Iowa; University of Michigan; University of Southern California; Pomona College.

G. WILLIAM DOMHOFF, Stevenson College (1965)  
Professor Emeritus, Psychology  
B.A., Duke University; M.A., Kent State University; Ph.D., University of Miami. Former affiliation: California State College, Los Angeles.

Assistant Professor, Anthropology  
B.A., Johns Hopkins University; Ph.D., University of Hong Kong. Former affiliation: University of Chicago.

CHONGYING DONG, Crown College (1990)  
Professor, Mathematics  
B.S., Xian Telecommunication and Engineering University; Ph.D., Institute of System Science, Academia Sinica. Former affiliation: Rutgers University.

MICHAEL P. DOOLEY, Crown College (1992)  
Professor, Economics  
B.S., Duquesne University; M.A., University of Delaware; Ph.D., Pennsylvania State University. Former affiliations: International Monetary Fund; Federal Reserve Bank.

DAVID E. DORFAN, Oakes College (1968)  
Professor, Physics  
B.Sc., University of Cape Town; Ph.D., Columbia University. Former affiliations: Columbia University; Stanford Linear Accelerator Center.

JOHN M. DORIS, Cowell College (1998)  
Associate Professor, Philosophy  
B.A., Cornell University; M.A., Ph.D., University of Michigan, Ann Arbor.

MARGARET (PEGGY) M. DOWNES BASKIN (1998)  
Research Associate, Women's Studies  
B.A., Vassar College; M.A., University of California, Northridge; Ph.D., Claremont Graduate School of Government.

WILLIAM DOYLE, Crown College (1966)  
Professor Emeritus, Ecology and Evolutionary Biology  
B.A., Ph.D., University of California, Berkeley. Former affiliation: Northwestern University.

FRANK D. DRAKE (1984)  
Professor Emeritus, Astronomy and Astrophysics  
B. Ń., Physics. Cornell University; M.A., Ph.D., Harvard University. Concurrent affiliation: SETI Institute. Former affiliations: Harvard University; National Radio Astronomy Observatory; Jet Propulsion Laboratory; Cornell University.

DAVID DRAPER (2001)  
Professor, Applied Mathematics and Statistics  
B.S., University of North Carolina at Chapel Hill; M.A., Ph.D., University of California, Berkeley. Former affiliations: University of Chicago; RAND Corporation; University of California, Los Angeles; University of Bath (England).

SHERWOOD DUDLEY, Porter College (1968)  
Professor Emeritus, Music  
B.M., B.A., North Texas State University; M.A., Ph.D., University of California, Berkeley. Former affiliation: University of California Education Abroad Program (Grenoble, Montpellier, Marseilles).

WILLIAM DUNBAR (2004)  
Assistant Professor, Computer Engineering  
B.S., Virginia Polytechnic Institute and State University; M.S., University of California, San Diego; Ph.D., California Institute of Technology.

E. MELANIE DUPUIS, Crown College (1997)  
Associate Professor, Sociology  
B.A., Radcliffe College, Harvard University; Ph.D., Cornell University. Former affiliations: State University of New York at Albany; New York State Department of Economic Development; Skidmore College; Rensselaer Polytechnic Institute; Siena College; Hudson Valley Community College.

ROBERT M. DURLING, Cowell College (1966)  
Professor Emeritus, Italian and English Literature  
B.A., M.A., Ph.D., Harvard University. Former affiliations: Haverford College; Cornell University.

ROBERT EDGAR, Crown College (1970)  
Professor Emeritus, Molecular, Cell, and Developmental Biology  
B.S., McGill University; Ph.D., University of Rochester. Former affiliation: California Institute of Technology.

KATE EDMUNDS (2004)  
Assistant Professor, Theater Arts  
B.F.A., Wayne State University; M.F.A., Yale School of Drama. Former affiliation: University of California, Berkeley.

CHRISTOPHER A. EDWARDS (2002)  
Assistant Professor, Ocean Sciences  
B.A. (Hons.), Haverford College; Ph.D., Massachusetts Institute of Technology and Woods Hole Oceanographic Institution. Former affiliation: University of Connecticut.

MICHAEL D. EDWARDS (1982)  
Adjunct Professor, Theater Arts (Drama)  
B.A., University of California, Los Angeles. Former affiliation: State College of Victoria (Australia).

TÖRSTEN EHRHARDT (2004)  
Assistant Professor, Mathematics  
Dipl. Math., Dr. rer. nat., Dr. habil., Chemnitz University of Technology (Germany). Former affiliation: Chemnitz University of Technology.
ÖLOF EINARSDÓTTIR, Crown College (1989)
Professor, Chemistry and Biochemistry
B.A., University of Iceland, Reykjavik; Ph.D., Colorado State University. Former affiliation: Los Alamos National Laboratory.

BERNARD L. ELBAUM, Merrill College (1986)
Associate Professor, Economics
B.A., University of Michigan; Ph.D., Harvard University.

GABRIEL ELKAIM (2003)
Assistant Professor, Computer Engineering
B.S., Princeton University; M.S., Ph.D., Stanford University. Concurrent affiliation: Delta Technology Associates.

JOHN M. ELLIS, Crown College (1966)
Professor Emeritus, German Literature
B.A., Ph.D., University of London. Former affiliations: University of Wales; University of Leicester; University of Alberta.

JOSEPH ELLIS (2002)
Assistant Professor, Philosophy
B.A., Dartmouth College; Ph.D., University of California, Berkeley.

PETER Q. ELSEA, Porter College (1980)
Lecturer, Music
B.M., M.A., University of Iowa. Former affiliation: University of Iowa.

ANGELA ELSEY, Cowell College (1988)
Lecturer, French Language
B.A., Kalamazoo College; M.A.T., University of Michigan. Former affiliations: San Francisco State University; Oregon State University; Hope College.

MARGARET E. ELSEY, Cowell College (1986)
Lecturer, Spanish Language
B.A., Pomona College; M.S., Ph.D., University of Wisconsin. Former affiliation: University of California, Los Angeles.

BARBARA L. EPSTEIN, Oakes College (1973)
Professor, History of Consciousness
B.A., Radcliffe College; M.A., Ph.D., University of California, Berkeley.

SHELLY ERRINGTON, Porter College/Kresge College (1972)
Professor, Anthropology
B.A., Newcomb College, Tulane University; M.A., Ph.D., Cornell University. Former affiliation: Institute for Advanced Study (Princeton).

JAMES ESTES (1978)
Assistant Professor, Ecology and Evolutionary Biology and Ocean Sciences
B.A., University of Minnesota; M.S., Washington State University; Ph.D., University of Arizona.

J. PETER EUBEN, Kresge College (1967)
Professor Emeritus, Politics
B.A., Swarthmore College; M.A., Ph.D., University of California, Berkeley; Certificate, Oxford University.

MARGARET P. EUBEN, Kresge College (1972)
Professor, Chemistry and Biochemistry
B.A., University of California, Santa Cruz; M.M., D.M.A. equivalents, Moscow State Conservatory. Former affiliations: Russian Academy of Musical Arts (Moscow); Moscow State Conservatory; Turkmenian State Institute of Musical Arts (Ashkhabad).

SANDRA M. EUBEN, Porter College (1972)
Professor Emeritus, Astronomy and Astrophysics
Astronomer, UC Observatories/Lick Observatory
B.A., Swarthmore College; Ph.D., Harvard University.

ROBERT W. FAIRLE, College Ten (1994)
Associate Professor, Economics
B.A., Stanford University; M.A., Ph.D., Northwestern University.

DONNA FARKAS, Stevenson College (1991)
Professor, Linguistics
B.A., University of Bucharest (Romania); Ph.D., University of Chicago. Former affiliation: Yale University.

BRYAN H. FARRELL, College Eight (1974)
Professor Emeritus, Geography (Environmental Studies)
B.A., University of Canterbury (New Zealand); M.A., University of Washington; Ph.D., University of Auckland. Former affiliations: Southern Methodist University; University of Auckland; University of Alberta; University of Victoria (Canada).

JOHN FAULKNER, Crown College (1969)
Professor, Astronomy and Astrophysics
B.A., M.A., Ph.D., St. John's College, Cambridge University. Former affiliations: Cambridge University; California Institute of Technology; Institute of Theoretical Astronomy (Cambridge).

DAVID A. FELDHIM, 2002
Assistant Professor, Molecular, Cell, and Developmental Biology
B.A., University of California, San Diego; Ph.D., University of California, Berkeley.

JERRY F. FELDMAN, Crown College (1974)
Professor, Molecular, Cell, and Developmental Biology
B.A., Swarthmore College; M.A., Ph.D., Princeton University. Former affiliations: California Institute of Technology; State University of New York at Albany.

VERONICA FELIU (1999)
Lecturer, Spanish Language
Licenciat, Universidad de Chile; Ph.D., Duke University. Former affiliation: Duke University.

E. JOEL FERGUSON, College Eight (1987)
Professor, Computer Engineering; Provost, Crown College
B.S.E., University of North Carolina at Charlotte; M.S.E.E./C.E., Ph.D., Carnegie Mellon University.

M. KATHLEEN FOLEY, Porter College (1980)
Professor Emeritus, Art
B.F.A., California College of Arts and Crafts.

M. KATHLEEN FOLEY, Porter College (1980)
Professor Emeritus, Art
B.F.A., California College of Arts and Crafts.

THEODORE D. FOSTER, Cowell College (1977)
Professor Emeritus, Marine Sciences
B.A., University of California, Santa Barbara; M.A., Moss Landing Marine Laboratories; Ph.D., Oregon State University. Former affiliation: California Institute of Technology.

J. PETER EUBEN, Kresge College (1967)
Professor Emeritus, Politics
B.A., Swarthmore College; M.A., Ph.D., University of California, Berkeley; Certificate, Oxford University.

M. KATHLEEN FOLEY, Porter College (1980)
Professor Emeritus, Art
B.F.A., California College of Arts and Crafts.

THEODORE D. FOSTER, Cowell College (1977)
Professor Emeritus, Marine Sciences
B.C., Brown University; M.S., M.A., University of Colorado; Ph.D., University of California, San Diego. Former affiliations: Scripps Institution of Oceanography; Yale University.
JONATHAN A. FOX, Merrill College/College Nine (1995)
Professor, Latin American and Latino Studies
B.A., Princeton University; Ph.D., Massachusetts Institute of Technology. Former affiliation: Massachusetts Institute of Technology.

LAUREL R. FOX, Crown College/College Nine (1977)
Professor, Ecology and Evolutionary Biology
B.S., Cornell University; M.A., Ph.D., University of California, Santa Barbara. Former affiliation: Australian National University.

JEAN E. FOX TREE, Porter College (1994)
Associate Professor, Psycholinguistics (Psychology)
A.B., Harvard University; M.Sc., University of Edinburgh; Ph.D., Stanford University. Former affiliations: Stanford University; Max Planck Institute for Psycholinguistics (Nijmegen, Netherlands).

DANA FRANK, Merrill College (1991)
Professor, History
B.A., University of California, Santa Cruz; M.A., Ph.D., Yale University. Former affiliation: University of Missouri at St. Louis.

MARK FRANKO, Porter College (1991)
Professor, Theater Arts (Dance)
B.A., City College of New York; Ph.D., Columbia University. Former affiliations: Columbia University; Universiteit Paul Valéry; Princeton University; Purdue University.

MARGE FRANTZ, Kresge College (1976)
Lecturer Emerita, American Studies and Women's Studies
B.A., University of California, Berkeley; Ph.D., University of California, Santa Cruz. Former affiliation: Institute of International Relations, University of California, Berkeley.

CARLA FRECCERO, Kresge College (1991)
Distinguished Professor, French Literature and Women's Studies
B.A., Harvard University; M.Phil., Ph.D., Yale University. Former affiliation: Dartmouth College.

CAROL M. FREEMAN, Cowell College (1974)
Senior Lecturer, Writing
B.A., Carleton College; Ph.D., Yale University. Former affiliation: Yale University.

MARIA CECILIA FREEMAN, Crown College (1990)
Lecturer, Writing
B.A., University of Maryland; M.S., Georgetown University. Former affiliation: University of California, Berkeley.

ROSA LINDA FREGOSO, Merrill College (2001)
Professor, Latin American and Latino Studies
B.J., University of Texas at Austin; Ph.D., University of California, San Diego. Former affiliations: University of California, Davis; University of California, Los Angeles; University of California, Santa Barbara.

WILLIAM H. FREIDLAND, Merrill College/College Eight (1969)
Professor Emeritus, Community Studies and Sociology
B.A., M.A., Wayne State University; Ph.D., University of California, Berkeley. Former affiliation: Cornell University.

BENJAMIN FREIDLANDER (1999)
Professor, Electrical Engineering
B.S., M.S., Technion University (Israel); M.S., Ph.D., Stanford University. Former affiliation: University of California, Davis.

DANIEL FRIEDMAN, Crown College (1985)
Professor, Economics
B.A., Reed College; M.A., Ph.D., University of California, Santa Cruz. Former affiliations: University of California, Los Angeles; University of California, Berkeley.

SUSAN FRIEDMAN, Porter College (1981)
Lecturer, Art
B.A., University of Buffalo; M.F.A., San Francisco Art Institute. Former affiliation: Cabrillo College.

GREGORY FRITSCH, Porter College (1987)
Lecturer, Theater Arts (Drama)
B.Ed., M.A., University of Miami.

DONALD C. FRITZ (1988)
Lecturer, Art
B.A., University of California, Santa Cruz; M.F.A., University of California, Davis.

WILLIAM H. FRIEDLAND, Merrill College/College Eight (1990)
Professor, Mathematics
B.S., Universidad Iberoamericana (Mexico City); M.S., Ph.D., University of California, Santa Barbara. Former affiliation: Stanford University; Mathematical Sciences Research Institute; Dartmouth College.

ALISON GALLOWAY, Crown College (1990)
Professor, Anthropology; Chair, Academic Senate
B.A., University of California, Berkeley; M.A., Ph.D., University of Arizona. Former affiliation: University of Tennessee.

FRANK GALLUSZKA, Porter College (1995)
Professor, Art
B.F.A., M.F.A., Temple University; Tyler School of Art. Former affiliation: University of the Arts; College of Art and Design (Philadelphia).

ALEXANDER GAMBURD (2004)
Assistant Professor, Mathematics
B.S., Massachusetts Institute of Technology; M.A., Ph.D., Princeton University. Former affiliations: Stanford University; Mathematical Sciences Research Institute; Dartmouth College.

Professor Emeritus, Earth Sciences
B.S., Universidad Iberoamericana (Mexico City); M.S., Ph.D., University of California, Santa Barbara. Former affiliation: Stanford Research Institute International.

ROBERT E. GARRISON, Stevenson College (1968)
Professor Emeritus, English
B.S., University of Maryland; M.A., Ph.D., Stanford University. Former affiliations: University of California, Santa Barbara; University of British Columbia.

GEORGE D. GASPAR, Porter College (1967)
Professor Emeritus, Physics
B.S., DePaul University; Ph.D., University of California, Riverside. Former affiliation: University of Rochester.

CAROLE CHELSEA GEORGE (1989)
Physical Education Instructor
B.A., University of California, Santa Cruz.

INGERBORG GERDES, Porter College (1981)
Lecturer, Art
University of Heidelberg, Germany; M.F.A., San Francisco Art Institute.

RAYMOND W. GIBBS JR., Cowell College (1982)
Professor, Psychology
B.A., Hampshire College; M.A., Ph.D., University of California, San Diego. Former affiliations: Yale University; Stanford University.

MARGARET (GREAT) A. GIBSON, Merrill College (1990)
Professor, Education
B.A., Wheaton College; M.Ed., Ph.D., University of Pittsburgh. Former affiliation: California State University, Sacramento.
DIANE GIFFORD-GONZALEZ, Merrill College/College Nine (1976)
Professor, Anthropology
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliation: University of Nevada.

RICARD GIL (2004)
Acting Assistant Professor, Economics
B.A., Universitat Pompeu Fabra (Spain); M.A.; Ph.D. cand., University of Chicago.

GREGORY S. GILBERT (2000)
Associate Professor, Environmental Studies
B.S., State University of New York, College of Environmental Science and Forestry; M.S., Ph.D., University of Wisconsin-Madison.

JAMES B. GILL, Oakes College (1972)
Professor, Earth Sciences
B.S., Wheaton College; M.S., Franklin and Marshall College; Ph.D., Australian National University.

SUSAN GILLMAN, Oakes College (1986)
Professor, American Literature
A.B., Bryn Mawr College; Ph.D., University of California, Berkeley. Former affiliation: Rice University.

VICTOR GINZBURG, College Eight (1996)
Professor, Mathematics
M.S., Moscow Institute of Steel and Alloys; Ph.D., University of California, Berkeley. Former affiliations: University of California, Berkeley; Princeton University; Stanford University.

PER E. GJERDE, College Nine (1989)
Professor, Psychology
Cand. Psychol., University of Bergen (Norway); Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.

GARY A. GLATZMAIER (1998)
Professor, Earth Sciences
B.S., Marquette University; Ph.D., University of Colorado. Former affiliation: Los Alamos National Laboratory.

STEPHEN R. GLIESSMAN, College Eight/College Nine (1980)
Alfred E. Heller Professor, Agronomy (Environmental Studies)
B.A., M.A., Ph.D., University of California, Santa Barbara. Former affiliation: Colegía Superior de Agricultura Tropical (Mexico).

WLA D B. GODZICH (2000)
Professor, Literature
M.A., Ph.D., Columbia University. Former affiliations: Université de Genève; Università di Torino; University of Montreal; University of Minnesota; Yale University; Columbia University.

LYNDA J. GOFF, Crown College (1975)
Professor, Ecology and Evolutionary Biology
B.S.c., Western Oregon State College; Ph.D., University of British Columbia. Former affiliations: University of Washington, Friday Harbor Marine Station; University of British Columbia; U.S. Forest Service.

ROBERT A. GOFF, Cowell College (1968)
Associate Professor, Philosophy
B.A., Colgate University; Ph.D., Drew University. Former affiliations: Moravian College; Hamilton College.

WALTER L. GOLDRANK, Merrill College/College Eight/College Nine (1968)
Professor, Sociology
B.A., Harvard College; Certificate in Sociology, University of Madrid; Ph.D., Columbia University. Former affiliation: Columbia University.

JENNIFER A. GONZALEZ, Porter College (1997)
Associate Professor, History of Art and Visual Culture
B.A., Yale University; Ph.D., University of California, Santa Cruz. Former affiliation: Rhode Island School of Design.

MÁRIA VICTORIA GONZALEZ-PAGANI, Cowell College/Merrill College (1992)
Lecturer, Spanish Language
A.B., M.A., Universidad Nacional de Tucumán (Argentina). Former affiliations: Northwestern University; University of Michigan; University of Illinois, Chicago.

DAVID E. GOODMAN, College Eight (1990)
Professor, Environmental Studies
B.Sc., London School of Economics and Political Science; Ph.D., University of California, Berkeley. Former affiliations: University College London; University of Manchester.

JUNE A. GORDON, College Nine (1996)
Associate Professor, Education
B.A., Stanford University; M.S., Western Washington University; Ph.D., University of Washington. Former affiliations: University of Washington; Western Washington University.

TERRENCE M. GOSLINER (2001)
Adjunct Professor, Ecology and Evolutionary Biology
A.B., University of California, Berkeley; M.S., University of Hawaii; Ph.D., University of New Hampshire. Concurrent affiliation: California Academy of Sciences.

HERMAN S. GRAY (1991)
Professor, Sociology
B.A., Florida A&M University; M.A., Washington State University; Ph.D., University of California, Santa Cruz. Former affiliation: Northeastern University.

BARRY L. GREEN (1996)
Lecturer, Music (String Bass)
B.M., Indiana University; M.M., University of Cincinnati, Conservatory of Music. Former affiliations: University of Cincinnati; Indiana University.

MARVIN J. GREENBERG, Stevenson College (1967)
Professor Emeritus, Mathematics
B.A., Columbia University; Ph.D., Princeton University. Former affiliations: Rutgers University; University of California, Berkeley; Northeastern University.

JUDY GREENE, Kresge College (1998)
Associate Professor, Literature and Women's Studies
B.A., Yale University; M.A., Ph.D., Cornell University. Former affiliations: Cornell University; Hobart and William Smith Colleges.

M.R.C. GREENWOOD (1996)
Provost and Senior Vice President, University of California Office of the President; Professor, Biology
A.B., Vassar College; Ph.D., Rockefeller University. Former affiliations: University of California, Davis: White House Office of Science and Technology Policy; Vassar College; Columbia University.

RONALD E. GRIESON, Crown College (1980)
Professor, Economics
B.A., Queen's College; M.A., Ph.D., University of Rochester. Former affiliations: Massachusetts Institute of Technology; Columbia University; Princeton University.

GARY B. GRIGGS, College Eight (1968)
Professor, Earth Sciences; Director, Institute of Marine Sciences
B.A., University of California, Santa Barbara; Ph.D., Oregon State University. Former affiliation: Oregon State University.

KIRSTEN SILVA GRUESZ, Oakes College (1996)
Associate Professor, Literature
B.A., Swarthmore College; Ph.D., Yale University. Former affiliation: College of William and Mary.

ISABELL V. GRUHN, Stevenson College (1969)
Professor Emerita, Politics
B.A., Dickinson College; M.A., Johns Hopkins University; Ph.D., University of California, Berkeley. Former affiliation: Oberlin College.

CLAIRE X.-G. GU (1997)
Professor, Electrical Engineering
B.S., Fudan University (China); Ph.D., California Institute of Technology. Former affiliations: Pennsylvania State University; Rockwell International Science Center.

DANIEL GUEVARA, Cowell College (1991)
Associate Professor, Philosophy
B.A., California State University, Los Angeles; C.Phil., Ph.D., University of California, Los Angeles.

PURAGA (RAJA) GUAH, RIKUTAKA (1994)
Professor, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory
B.Sc., St. Xavier's College (Calcutta, India); M.A., Ph.D., Princeton University.

IRENE GUSTAFSON, Porter College (2003)
Assistant Professor, Film and Digital Media
B.A., Evergreen State College; M.F.A., Indiana University; Ph.D., University of Wisconsin-Madison.

JULIE GUTHMAN, College Nine (2003)
Assistant Professor, Community Studies
B.A., University of California, Santa Cruz; M.B.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.
MELISSA GWYN, College Nine (2002)  
Assistant Professor, Art  
B.A., Ohio State University; M.F.A., Yale University. Former affiliation: San Francisco Art Institute.

LISBETH HAAS, Merrill College (1986)  
Associate Professor, History  
B.A., University of California, San Diego; Ph.D., University of California, Irvine.

HOWARD E. HABER, Stevenson College (1982)  
Professor, Physics  
S.B., S.M., Massachusetts Institute of Technology; Ph.D., University of Michigan.

JUDITH A. HABICHT-MAUCHE, Crown College (1990)  
Associate Professor, Anthropology  
B.A., College of William and Mary; M.A., Ph.D., Harvard University. Former affiliation: School of American Research (Santa Fe).

BRENT HADDAD, College Eight (1997)  
Associate Professor, Environmental Studies  
B.A., Stanford University; M.A., Georgetown University; M.B.A., Ph.D., University of California, Berkeley. Former affiliation: Monterey Institute of International Studies.

JAMES B. HALL, Porter College (1969)  
Professor Emeritus, Literature  
B.A., M.A., Ph.D., University of Iowa. Former affiliations: University of Oregon; University of California, Irvine.

GILDAS HAMEL, Cowell College (1984)  
Lecturer, French Language and Classical Studies  
B.A., Université de Haute-Bretagne; Ph.D., University of California, Santa Cruz.

CRAIG W. HANEX, Stevenson College (1977)  
Professor, Psychology  
B.A., University of Pennsylvania; M.A., Ph.D., J.D., Stanford University. Former affiliation: Stanford University.

JORGE HANKEMER, Stevenson College (1980)  
Professor, Linguistics  
B.A., M.A., Rice University; Ph.D., Yale University. Former affiliation: Harvard University.

ROBERT W. HANSEN (1977)  
Physical Education Instructor  
B.S., M.A., San Jose State University.

HARRY HANSON, Porter College (1969)  
Professor Emeritus, Art  
B.F.A., Yale University. Former affiliations: San Fernando Valley State College; University of Southern California.

DONNA J. HARKWAY, Oakes College (1980)  
Professor, History of Consciousness and Women’s Studies  
B.A., Colorado College; M.Phil., Ph.D., Yale University. Former affiliations: University of Hawaii; Johns Hopkins University.

MELISSA GWYN, College Nine (2002)  
Assistant Professor, Art  
B.A., Ohio State University; M.F.A., Yale University. Former affiliation: San Francisco Art Institute.

LISBETH HAAS, Merrill College (1986)  
Associate Professor, History  
B.A., University of California, San Diego; Ph.D., University of California, Irvine.

HOWARD E. HABER, Stevenson College (1982)  
Professor, Physics  
S.B., S.M., Massachusetts Institute of Technology; Ph.D., University of Michigan.

JUDITH A. HABICHT-MAUCHE, Crown College (1990)  
Associate Professor, Anthropology  
B.A., College of William and Mary; M.A., Ph.D., Harvard University. Former affiliation: School of American Research (Santa Fe).

BRENT HADDAD, College Eight (1997)  
Associate Professor, Environmental Studies  
B.A., Stanford University; M.A., Georgetown University; M.B.A., Ph.D., University of California, Berkeley. Former affiliation: Monterey Institute of International Studies.

JAMES B. HALL, Porter College (1969)  
Professor Emeritus, Literature  
B.A., M.A., Ph.D., University of Iowa. Former affiliations: University of Oregon; University of California, Irvine.

GILDAS HAMEL, Cowell College (1984)  
Lecturer, French Language and Classical Studies  
B.A., Université de Haute-Bretagne; Ph.D., University of California, Santa Cruz.

CRAIG W. HANEX, Stevenson College (1977)  
Professor, Psychology  
B.A., University of Pennsylvania; M.A., Ph.D., J.D., Stanford University. Former affiliation: Stanford University.

JORGE HANKEMER, Stevenson College (1980)  
Professor, Linguistics  
B.A., M.A., Rice University; Ph.D., Yale University. Former affiliation: Harvard University.

ROBERT W. HANSEN (1977)  
Physical Education Instructor  
B.S., M.A., San Jose State University.

HARRY HANSON, Porter College (1969)  
Professor Emeritus, Art  
B.F.A., Yale University. Former affiliations: San Fernando Valley State College; University of Southern California.

DONNA J. HARKWAY, Oakes College (1980)  
Professor, History of Consciousness and Women’s Studies  
B.A., Colorado College; M.Phil., Ph.D., Yale University. Former affiliations: University of Hawaii; Johns Hopkins University.

MELISSA GWYN, College Nine (2002)  
Assistant Professor, Art  
B.A., Ohio State University; M.F.A., Yale University. Former affiliation: San Francisco Art Institute.

LISBETH HAAS, Merrill College (1986)  
Associate Professor, History  
B.A., University of California, San Diego; Ph.D., University of California, Irvine.

HOWARD E. HABER, Stevenson College (1982)  
Professor, Physics  
S.B., S.M., Massachusetts Institute of Technology; Ph.D., University of Michigan.

JUDITH A. HABICHT-MAUCHE, Crown College (1990)  
Associate Professor, Anthropology  
B.A., College of William and Mary; M.A., Ph.D., Harvard University. Former affiliation: School of American Research (Santa Fe).

BRENT HADDAD, College Eight (1997)  
Associate Professor, Environmental Studies  
B.A., Stanford University; M.A., Georgetown University; M.B.A., Ph.D., University of California, Berkeley. Former affiliation: Monterey Institute of International Studies.

JAMES B. HALL, Porter College (1969)  
Professor Emeritus, Literature  
B.A., M.A., Ph.D., University of Iowa. Former affiliations: University of Oregon; University of California, Irvine.

GILDAS HAMEL, Cowell College (1984)  
Lecturer, French Language and Classical Studies  
B.A., Université de Haute-Bretagne; Ph.D., University of California, Santa Cruz.

CRAIG W. HANEX, Stevenson College (1977)  
Professor, Psychology  
B.A., University of Pennsylvania; M.A., Ph.D., J.D., Stanford University. Former affiliation: Stanford University.

JORGE HANKEMER, Stevenson College (1980)  
Professor, Linguistics  
B.A., M.A., Rice University; Ph.D., Yale University. Former affiliation: Harvard University.

ROBERT W. HANSEN (1977)  
Physical Education Instructor  
B.S., M.A., San Jose State University.

HARRY HANSON, Porter College (1969)  
Professor Emeritus, Art  
B.F.A., Yale University. Former affiliations: San Fernando Valley State College; University of Southern California.

DONNA J. HARKWAY, Oakes College (1980)  
Professor, History of Consciousness and Women’s Studies  
B.A., Colorado College; M.Phil., Ph.D., Yale University. Former affiliations: University of Hawaii; Johns Hopkins University.
DAVID A. (TONY) HOFFMAN (1990)
Lecturer, Psychology
B.A., Reed College; M.S., Ph.D., University of Oregon.

KAREN D. HOLL (1995)
Pepper-Giberson Associate Professor, Environmental Studies
B.S., Stanford University; Ph.D., Virginia Polytechnic Institute and State University.

ELI E. HOLLANDER, Porter College (1974)
Professor, Film and Digital Media
B.S., Juilliard School of Music; M.F.A., University of California, Los Angeles. Former affiliations: Encyclopaedia Britannica Films; Public Broadcasting Television Network (Los Angeles); Churchill Films; New York Philharmonic Orchestra.

THEODORE HOLMAN, Cowell College (1996)
Associate Professor, Chemistry and Biochemistry
B.A., University of California, San Diego; Ph.D., University of Minnesota at Minneapolis. Former affiliations: Harvard Medical School; Syntex Pharmaceuticals; University of California, Riverside.

PAUL HOLOCHER (1999)
Physical Education Instructor
B.S., Santa Clara University.

EMILY HONIG, Kresge College (1992)
Professor, Women's Studies and History
B.A., Brown University; M.A., Ph.D., Stanford University. Former affiliations: Yale University; Lafayette College.

EDWARD F. HOUGHTON, Porter College (1970)
Professor, Music; Dean, Division of the Arts
B.A., Rutgers University; M.A., University of Nevada; Ph.D., University of California, Berkeley. Former affiliations: University of California Education Abroad Program (Padua, Venice, Bologna); Rutgers University.

DAVID C. HOY, Cowell College (1981)
Distinguished Professor, Philosophy
B.A., Ph.D., Yale University. Former affiliations: Barnard College; Columbia University; University of California, Los Angeles; Princeton University; Yale University.

JOCELYN HOY, Cowell College (1984)
Lecturer, Philosophy
M.Phil., Ph.D., Yale University. Former affiliation: Rider College.

RICHARD HUGHEY, Crown College (1991)
Professor, Computer Engineering

A. YVETTE HUGGINIE, Oakes College (1995)
Assistant Professor, American Studies
B.A., Radcliffe College, Harvard University; M.A., M.Phil., Ph.D., Yale University. Former affiliation: University of Colorado, Boulder.

AKASHA HULL, Kresge College (1988)
Professor Emeritus, Women's Studies and Literature
B.A., Southern University; M.A., Ph.D., Purdue University. Former affiliation: University of Delaware.

FRED A. HUNNICUTT, Porter College (1969)
Professor Emeritus, Art
B.F.A., University of Texas: M.F.A., San Francisco Art Institute. Former affiliations: University of Texas at Arlington; Hornsey College of Art (London); Royal College of Art (London).

DONNA HUNTER, Porter College (1985)
Associate Professor, History of Art and Visual Culture
B.A., Vassar College; M.A., Ph.D., Harvard University. Former affiliation: Harvard University.

aida hurtado, stevenson college (1983)
Professor, Psychology
B.A., Pan American University; M.A., Ph.D., University of Michigan, Ann Arbor. Former affiliation: Pan American University.

Harry d. huskey (1968)
Professor Emeritus, Computer Science
B.S., University of Idaho; M.S., Ph.D., Ohio State University. Former affiliations: University of California, Berkeley; Institute for Numerical Analysis, National Bureau of Standards; Indian Institute of Technology (Kanpur); Delhi University; University of Pennsylvania; Association for Computing Machinery.

Greta Hutchison (1986)
Lecturer, French

Michael M. Hutchison, Cowell College/Crown College (1984)
Professor, Economics; Interim Dean, Division of Social Sciences
B.A., University of California, Santa Cruz; Ph.D., University of Oregon. Former affiliations: Federal Reserve Bank of San Francisco; University of Oregon; Institute for International Economic Studies, University of Stockholm.

Harold A. Hyde, Crown College (1965)
Vice Chancellor Emeritus, Business and Finance
B.A., University of California, Berkeley; M.B.A., Harvard Graduate School of Business Administration.

Garth D. Ellingsworth, Crown College (1988)
Professor, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory
B.Sc., University of Western Australia; Ph.D., Australian National University. Former affiliations: Space Telescope Science Institute; University of California, Berkeley; Kitt Peak National Observatory; Johns Hopkins University.

Robert Iroon (1988)
Lecturer, Science Communication (Science Writing)
B.S., Massachusetts Institute of Technology; Graduate Certificate, University of California, Santa Cruz.

Michael Isaacson (2003)
Professor, Electrical Engineering; Narinder Singh Kapany Professor, Optoelectronics
B.S., University of Illinois, Urbana-Champaign; S.M., Ph.D., University of Chicago. Former affiliations: Brookhaven National Laboratory; University of Chicago; Cornell University.

John W. Isbister, Merrill College/College Ten (1968)
Professor, Economics
B.A., Queen's University (Canada); Ph.D., Princeton University.

ChiyoKo ishibashi, Cowell College (1972)
Lecturer, Japanese Language
B.A., Aoyama Gakuin University (Japan); M.A., Stanford University.

Junko Ito, Stevenson College (1986)
Professor, Linguistics
B.A., M.A., International Christian University (Tokyo); Ph.D., University of Massachusetts-Amherst.

Earl Jackson Jr., Kresge College (1989)
Professor, Literatures
B.A., State University of New York at Buffalo; M.A., Cornell University; M.A., Harvard University; M.A., Ph.D., Princeton University. Former affiliation: University of Minnesota.

Kimberly M. Jannarone, Porter College (2001)
Assistant Professor, Theater Arts
B.A., Emory University; M.F.A., D.F.A., Yale School of Drama. Former affiliations: University of Washington; Smith College; Quinnipiac College.

Virginia Jansen, Cowell College (1975)
Professor, History of Art and Visual Culture
B.A., Smith College; M.A., Ph.D., University of California, Berkeley. Former affiliations: University of Santa Clara; Foothill College; Montreal Museum of Fine Arts.

Yishi Jin (1996)
Professor, Molecular, Cell, and Developmental Biology
B.S., Beijing University; Ph.D., University of California, Berkeley.

Robert P. Johnson, Merrill College (1991)
Professor, Physics
B.S., University of Kansas; Ph.D., Stanford University. Former affiliations: PPE Division, CERN; University of Wisconsin-Madison.

Susanne Jonas, Merrill College (1986)
Lecturer, Merrill College and Latin American and Latino Studies
B.A., Radcliffe College; A.M.T., Harvard Graduate School of Education; M.S., Massachusetts Institute of Technology; Ph.D., University of California, Berkeley.

Burton F. Jones, Crown College (1975)
Professor Emeritus, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory
B.S., M.S., Ph.D., University of Chicago.
DAVID EVAN JONES, Porter College (1988)
Professor Emeritus, Psychology
B.A., M.A., Ph.D., University of California, San Diego. Former affiliations: Dartmouth College; University of York (England); University of California, San Diego.

JOHN O. JORDAN, Kresge College (1968)
Professor, English Literature
B.A., Princeton University; Ph.D., Stanford University.

SUNG-MO (STEVE) KANG (2001)
Professor Emeritus, Psychology
B.S., Arizona State University; M.A., Claremont Graduate School; Ph.D., Stanford University. Former affiliations: University of Pittsburgh; Brookings Institution.

KEVIN KARPLUS, Cowell College (1986)
Assistant Professor, Molecular, Cell, and Developmental Biology
B.S., Montana State University; Ph.D., University of Washington, Fred Hutchinson Cancer Research Center. Former affiliation: Brandeis University.

MELISSA JURICA (2003)
Assistant Professor, Molecular, Cell, and Developmental Biology
B.S., Oregon State University; M.S., Stanford University; Ph.D., University of Michigan. Former affiliations: Oxford University; B.A., M.A., Ph.D., University of California, Berkeley. Former affiliations: Institute for Advanced Study (Princeton); National Academy of Sciences Exchange Fellowship to the USSR.

DOUGLAS R. KELLOGG (1997)
Professor, Molecular, Cell, and Developmental Biology
B.S., Iowa State University; J.D., Harvard University; Ph.D., University of California, Berkeley. Former affiliations: Department of Environmental Conservation, State of Alaska; Department of Fish and Game, State of Alaska.

Dennis D. Kelso (1999)
Pepper-Giberson Assistant Professor, Environmental Studies
B.S., Iowa State University; J.D., Harvard University; Ph.D., University of California, Berkeley. Former affiliations: Oxford University; Massachusetts Institute of Technology.

ALI KARAMI, Stevenson College (1966)
Professor, History; Neufeld Levin Professor, Holocaust Studies
B.A., Princeton University; M.A., Ph.D., Harvard University. Former affiliations: Oxford University; Massachusetts Institute of Technology; Ali Akbar College of Music.

ALAN H. KAWAMOTO, Crown College (1986)
Associate Professor, Psychology
B.S., Stanford University; Ph.D., Brown University. Former affiliation: Carnegie Mellon University.

DAVID KEENAN (2000)
Lecturer, Chinese Language
B.A., Dartmouth College; M.A., Ph.D., Harvard University. Former affiliations: Indiana University; Grinnell College; Colby College.

DAVID EVAN JONES, Porter College (1988)
Professor Emeritus, Psychology
B.A., M.A., Ph.D., University of California, San Diego. Former affiliations: Dartmouth College; University of York (England); University of California, San Diego.

DOUGLAS R. KELLOGG (1997)
Physical Education Instructor
B.S., Clemson University.

SHARON KINOSHITA, Oakes College (1987)
Associate Professor, Literature
A.B., M.A., Ph.D., University of California, Berkeley. Former affiliation: Stanford University.

NOEL Q. KING, Merrill College (1968)
Professor Emeritus, History and Comparative Religion
M.A., Oxford University; Ph.D., University of Nottingham. Former affiliations: University of Nottingham; University of Ghana; University of East Africa (Makerere).

ROBIN KING (1997)
Lecturer, Writing
B.A., M.F.A., University of California, San Diego.

RUSSELL KINGON (2000)
Professor, Economics
B.S., Stanford University; M.S., University of Washington; Ph.D., University of California, Berkeley. Former affiliations: University of California, Davis; Yale University.

JOHN O. JORDAN, Kresge College (1968)
Professor, English Literature
B.A., Princeton University; Ph.D., Stanford University.

ENGEL KLEINER, Stevenson College (1970)
Professor Emeritus, Mathematics
B.S., University of Montana; M.A., Ph.D., University of California, Berkeley. Former affiliations: Institute for Advanced Study (Princeton); National Academy of Sciences Exchange Fellowship to the USSR.

SHARON KINOSHITA, Oakes College (1987)
Associate Professor, Literature
A.B., M.A., Ph.D., University of California, Berkeley. Former affiliation: Stanford University.

NORMA KLAHN, Merrill College (1989)
Professor, Literature
B.A., M.A., Queens College, City University of New York; Ph.D., State University of New York at Stony Brook. Former affiliation: Columbia University.

KENNETH KLETZER, Stevenson College/College Nine (1992)
Professor, Economics
B.S., Stanford University; M.S., University of Washington; Ph.D., University of California, Berkeley. Former affiliations: University of California, Davis; Yale University.

LORI G. KLETZER, Merrill College/College Ten (1993)
Professor, Economics
B.A., Vassar College; Ph.D., University of California, Berkeley. Former affiliation: Williams College.

ROBERT KLEMAN (1998)
Lecturer, Music (Wind Ensemble)
B.M., M.M., University of the Pacific; Ph.D., University of Texas at Austin. Concurrent affiliation: Monterey Peninsula College.

DAVID S. KLINGER, Oakes College (1971)
Professor, Chemistry and Biochemistry; Dean, Division of Physical and Biological Sciences
B.S., Rutgers University; Ph.D., Cornell University. Former affiliation: Harvard University.

ELISE KNITLLE, Kresge College (1988)
Professor, Earth Sciences
A.B., Smith College; Ph.D., University of California, Berkeley.

DAVID E. KAUN, Crow College/College Nine (1966)
Professor, Economics
B.S., Arizona State University; M.A., Claremont Graduate School; Ph.D., Stanford University. Former affiliations: University of Pittsburgh; Brookings Institution.

SUNGU-KAI (STEVE) KANG (2001)
Professor Emeritus, Psychology
B.A., M.A., Ph.D., Harvard University. Former affiliations: Harvard University; Yale University; University of Texas.

ALAN H. KAWAMOTO, Crown College (1986)
Associate Professor, Psychology
B.S., Stanford University; Ph.D., Brown University. Former affiliation: Carnegie Mellon University.

JULIE KIMBALL (1983)
Physical Education Instructor
B.A., University of California, Santa Cruz. Former affiliation: Ramani Iyengar Yoga Institute (India).
PHOKION G. KOLLAFLIS, College Eight (1988)
Professor, Computer Science
Diploma, University of Athens; M.A., Ph.D., University of California, Los Angeles. Former affiliations: Stanford University; Occidental College; University of Chicago.

HARWOOD G. KOLSKY (1985)
Adjunct Professor Emeritus, Computer Engineering
B.S., M.S., University of Kansas; M.A., Ph.D., Harvard University. Former affiliations: IBM Palo Alto Scientific Center; Stanford University.

JOSEPH P. KONOPELSKI, Stevenson College (1984)
Professor, Chemistry and Biochemistry
B.A., M.A., Johns Hopkins University; Ph.D., Stanford University. Former affiliations: Université Louis Pasteur (Strasbourg); University of Pennsylvania.

DAVID C. KOO, College Eight (1988)
Professor, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory

ATHANASIOS KOTTAS (2002)
Assistant Professor, Applied Mathematics and Statistics
B.Sc., M.Sc., University of Ioannina (Greece); Ph.D., University of Connecticut. Former affiliation: Duke University.

ROBERT P. KRAFT, Stevenson College (1967)
Professor Emeritus, Astronomy and Astrophysics; Astronomer Emeritus, UC Observatories/Lick Observatory
B.S., M.S., University of Washington; Ph.D., University of California, Berkeley. Former affiliations: Indiana University; University of Chicago; Hale Observatories.

CONSTANCE KREEMER, Porter College (1990)
Lecturer, Theater Arts
B.A., University of Massachusetts-Amherst; M.S., Smith College.

JACQUELINE KU, Cowell College (1984)
Lecturer, Chinese Language
B.A., Shih-chien College (Taiwan). Former affiliations: Defense Language Institute; Inter-University Program for Chinese Language Studies (Taipei); Stanford University of Asian Languages Summer Language Institute; Middlebury College Summer Language Institute.

RAFAEL KUDELA (1999)
Assistant Professor, Ocean Sciences
B.S., Drake University; Ph.D., University of Southern California. Concurrent affiliation: Monterey Bay Aquarium Research Institute.

FRED KUHNTNER (1996)
Lecturer, Physics
B.S., Massachusetts Institute of Technology; M.B.A., Santa Clara University; M.S., Ph.D., University of California, Santa Cruz. Former affiliations: Litton Industries; Northwestern Polytechnic University.

WILLIAM A. LAUDAW, Cowell College (1984)
Professor, Linguistics; Interim Vice Provost and Dean, Undergraduate Education
B.A., University of Kentucky; M.A., Ph.D., University of Texas at Austin. Former affiliations: University of Connecticut; University of California, Los Angeles; University of Iowa.

EUGENE W. LANDESMAN, Crown College (1966)
Professor Emeritus, Mathematics
B.A., M.A., Ph.D., University of California, Los Angeles. Former affiliation: University of California, Los Angeles.

GLEN G. LANGDON JR. (1987)
Professor Emeritus, Computer Engineering
B.S., Washington State University; M.S., University of Pittsburgh; Ph.D., Syracuse University. Former affiliation: IBM Research; University of São Paulo.

JEAN LANGENHEIM, Stevenson College/Crown College (1966)
Professor Emerita, Ecology and Evolutionary Biology
B.S., University of Tulsa; M.S., Ph.D., University of Minnesota. Former affiliations: Harvard University; University of California, Berkeley; University of Illinois, Urbana-Champaign; San Francisco College for Women; Mills College.

LEO F. LAPORTE, Crown College (1971)
Professor Emeritus, Earth Sciences
B.A., Ph.D., Columbia University. Former affiliation: Brown University.

BRUCE D. LARKIN, Cowell College (1965)
Professor, Politics
B.A., University of Chicago; M.A., Ph.D., Harvard University.

TRACY LARRABEE, College Eight (1990)
Professor, Computer Engineering
B.S., California Institute of Technology; M.S., Ph.D., Stanford University. Former affiliations: Hewlett-Packard Laboratories; Xerox PARC; Digital Equipment Corporation.

GREGORY LAUGHLIN (2001)
Assistant Professor, Astronomy and Astrophysics
B.S., University of Illinois, Urbana-Champaign; M.S., Ph.D., University of California, Santa Cruz. Former affiliation: NASA Ames Research Center.

THORNE LAY, Porter College (1989)
Professor, Earth Sciences; Director, Institute of Geophysics and Planetary Physics
B.S., University of Rochester; M.S., Ph.D., California Institute of Technology. Former affiliations: University of Michigan, Ann Arbor; California Institute of Technology.

COLIN W. LEACH, College Ten (1999)
Associate Professor, Psychology
B.A., M.A., Boston University; Ph.D., University of Michigan. Former affiliation: Swarthmore College.

CAMPBELL LEAPER, Cowell College (1988)
Professor, Psychology; Professor, Colleges Nine and Ten
B.A., Boston University; M.A., Ph.D., University of California, Los Angeles. Former affiliations: Harvard Medical School; California State University, Northridge; California State University, Long Beach.

GARY L. LEASE, Cowell College/Merrill College (1973)
Professor, History of Consciousness
B.A., Loyola University of Los Angeles; D.Sc. Theol., University of Munich. Former affiliations: Loyola University of Los Angeles; John XXIII Institute for Ecumenical Theology.

BURNLEY L. BOEUF, Crown College (1967)
Professor Emeritus, Ecology and Evolutionary Biology
B.A., University of California, Berkeley; M.A., San Francisco State College; Ph.D., University of California, Berkeley. Former affiliations: University of California, Davis; Harvard University.

HERBERT LEE III, Porter College (2002)
Assistant Professor, Applied Mathematics and Statistics
B.S., Yale University; M.S., Ph.D., Carnegie Mellon University. Former affiliation: Duke University.

JIMIN LEE, Porter College (2003)
Assistant Professor, Art
B.F.A., M.F.A., Seoul National University (Korea); M.F.A., San Francisco Art Institute. Former affiliation: California State University, Hayward.

H. M. LEICESTER JR., Cowell College (1967)
Professor, English Literature
B.A., M.A., Ph.D., Yale University. Former affiliation: Yale University.

ANATOLE LEIKIN, Porter College (1989)
Professor, Music
B.A., Gnesin State Conservatory (Moscow); M.A., Gnesin State Musical and Pedagogical Institute (Moscow); Ph.D., University of California, Los Angeles. Former affiliations: Gnesin State Conservatory; University of Los Angeles.

HERVE LE MANSEC, Cowell College (1978)
Lecturer, French Language
Diplôme d’Études Supérieures, Nantes University (France); Diplôme de Conseiller Pédagogique, University of Aix-en-Provence (France). Former affiliations: San Jose State University; Ministry of Education, Addis Ababa, Ethiopia; Stanford University.

DEBORAH K. LETOURNEAU, College Eight (1984)
Professor, Ecology (Environmental Studies)
B.S., M.S., University of Michigan; Ph.D., University of California, Berkeley.

MAX M. LEVIN, Crown College (1967)
Lecturer Emeritus, Psychology
B.A., University of California, Los Angeles; Ph.D., University of California, Berkeley. Former affiliations: Stanford University; Yale University; University of Washington; Washington State University.

BRUCE C. LEVINE (1997)
Professor, History
B.A., University of Michigan, Ann Arbor; M.A., Ph.D., University of Rochester. Former affiliation: University of Cincinnati.
Robert A. Levinson, Stevenson College (1985)
Professor, Computer Science
B.S., University of Minnesota at Minneapolis-St. Paul; Ph.D., University of Texas at Austin. Former affiliations: University of Texas at Austin; University of Minnesota.

Debra Lewis, Crown College (1991)
Professor, Mathematics
B.A., Ph.D., University of California, Berkeley. Former affiliation: Institute for Math and Its Applications, University of Minnesota.

Diane K. Lewis, Kresge College/Oakes College (1972)
Professor Emerita, Anthropology
B.A., M.A., University of California, Los Angeles; M.P.H., University of California, Berkeley; Ph.D., Cornell University. Former affiliations: University of California, Santa Barbara; University of California, Riverside; San Francisco State University.

Frederic Lieberman, Porter College (1983)
Professor, Music
B.M., Eastman School of Music; M.A., University of Hawaii; Ph.D., University of California, Los Angeles. Former affiliations: Brown University; University of Washington.

Peter Limbrick, Porter College (2001)
Assistant Professor, Film and Digital Media
B.A., M.A., University of Otago (New Zealand); Ph.D., La Trobe University (Australia). Former affiliations: Duke University; Stanford University; University of California, Berkeley.

Douglas N. C. Lin, Crown College (1979)
Professor, Astronomy and Astrophysics
B.S., McGill University; Ph.D., Cambridge University. Former affiliation: Harvard University.

Professor, Anthropology
B.A., University of Michigan; M.A., Ph.D., University of California, San Diego. Former affiliation: University of California, San Diego.

Ronnie D. Lipschtuz, Stevenson College/College Nine (1990)
Professor, Politics
B.A., B.S., University of Texas at Austin; M.S., Massachusetts Institute of Technology; Ph.D., University of California, Berkeley.

George Lipsitz, Oakes College (2003)
Professor, American Studies
A.B., Washington University; M.A., University of Missouri, St. Louis; Ph.D., University of Wisconsin. Former affiliations: University of California, San Diego; University of Minnesota; University of Houston at Clear Lake City.

Alan Litke (1984)
Adjunct Professor, Physics
B.A., Johns Hopkins University; M.A., Ph.D., Harvard University. Former affiliation: Stanford University.

Professor, Electrical Engineering
B.S., National Chiao-Tung University; M.S., National Taiwan University; Ph.D., University of Michigan, Ann Arbor. Former affiliation: North Carolina State University, Raleigh.

Norman Locks, Porter College (1977)
Professor, Art
B.F.A., San Francisco Art Institute; M.A., San Francisco State University.

Suresh K. Lodha, Porter College/College Nine (1992)
Professor, Computer Science
M.Sc., Indian Institute of Technology (Kanpur); M.A., University of California, Berkeley; Ph.D., Rice University. Former affiliations: IBM Thomas J. Watson Research Center; IBM Almaden Research Center.

Michael E. Loik (1998)
Assistant Professor, Environmental Studies
B.S., M.Sc., University of Toronto; Ph.D. University of California, Los Angeles. Former affiliations: University of California, Berkeley; California State University, San Bernardino.

R. Scott Lokey (2002)
Assistant Professor, Chemistry and Biochemistry
B.S., Trinity University (San Antonio); Ph.D., University of Texas at Austin.

Professor, Information Systems Management
B.S., San Diego State University; M.S., Ph.D., University of California, San Diego.

Charles (Chip) L. Lord, Porter College (1987)
Professor, Film and Digital Media
B.A., Tulane University. Former affiliation: University of California, San Diego.

Paul M. Lubeck, Merrill College/College Eight/College Nine (1973)
Professor, Sociology
B.A., St. Michael’s College; M.A., Ph.D., Certificate in African Studies, Northwestern University.

Robert A. Ludewig, Crown College (1979)
Professor, Molecular, Cell, and Developmental Biology
B.S., University of Michigan; Ph.D., Yale University. Former affiliation: Massachusetts Institute of Technology.

John P. Lynch, Cowell College (1970)
Professor, Classics (Literature)
B.A., Harvard College; M.A., M.Phil., Ph.D., Yale University.

Bruce E. Lyon (1997)
Associate Professor, Ecology and Evolutionary Biology
B.Sc., McGill University; M.Sc., Queen’s University; Ph.D., Princeton University.

Pavel Machotka, Porter College (1970)
Professor Emeritus, Philosophy
B.A., University of Chicago; M.A., Ph.D., Harvard University; (Hon.) Dr. h. c., Charles University (Prague). Former affiliations: Harvard University; University of Colorado.

Nathaniel E. Mackey, Kresge College (1979)
Professor, Literature
B.A., Princeton University; Ph.D., Stanford University. Former affiliations: University of Southern California; University of Wisconsin-Madison.

Wesley Mackey (1993)
Lecturer, Computer Science
B.S., M.S., Ph.D., University of Manitoba.

Pierro Madal (2000)
Professor, Astronomy and Astrophysics
B.S., University of Florence; Ph.D., International School for Advanced Studies (Trieste). Former affiliation: Cambridge University.

Tara Madhystha (1999)
Assistant Professor, Computer Engineering
B.A., Rutgers University; M.S., Ph.D., University of Illinois, Urbana-Champaign. Former affiliation: Carnegie Mellon University.

Patrice L. Maginnis, Cowell College (1986)
Lecturer, Music (Voice)
B.A., M.A., San Jose State University. Concurrent affiliation: Opera San Jose. Former affiliations: San Jose State University; De Anza College.

Roy T. Malan (1980)
Lecturer, Music (Violin and Viola)
Diplomas, Royal Academy of Music, Juilliard School of Music, and Curtis Institute of Music. Concurrent affiliations: San Francisco Ballet; San Francisco Contemporary Chamber Players; Telluride Chamber Music Festival; Rocky Ridge Music Center. Former affiliations: Ithaca College; San Francisco Conservatory of Music; San Francisco State University; University of Nevada at Reno; Stanford University.

Roberto Manduchi (2001)
Assistant Professor, Computer Engineering
Laurea, Dottorato di ricerca, University of Padova (Italy). Former affiliation: University of Southern California.

Marc S. Mangel, Stevenson College (1996)
Professor, Applied Mathematics and Statistics
B.S., M.S., University of Illinois; Ph.D., University of British Columbia. Former affiliations: University of California, Davis; Simon Fraser University; University of Oxford; Hebrew University of Jerusalem; Weizmann Institute of Science.

Patrick E. Mantey, Merrill College (1984)
Jack Baskin Professor, Computer Engineering; Director, Center for Information Technology Research in the Interest of Society
B.S., University of Notre Dame; M.S., University of Wisconsin; Ph.D., Stanford University. Former affiliations: Stanford University; IBM Research.
DAVID S. MARRIOTT (2003)
Acting Associate Professor, History of Consciousness
B.A. (Hons., 1st class), M.A., Ph.D., University of Sussex. Former affiliation: University of London.

GEORGE E. MARSH (1982)
Lecturer, Music (Percussion)
Concurrent affiliation: Sonoma State University.
Former affiliation: San Francisco Conservatory of Music.

ALMA R. MARTINEZ, Kresge College (2001)
Assistant Professor, Theater Arts
B.A., Whitter College; M.F.A., University of Southern California; Ph.D. cand., Stanford University. Former affiliations: Aquarius Theater; El Teatro Campesino; Universal Studios.

LOURDES MARTINEZ-ECHAZÁBAL, Merrill College (1990)
Associate Professor, Latin American Literature
B.A., M.A., Ph.D., University of California, San Diego. Former affiliation: Rutgers University.

CAROLYN MARTIN SHAW, Kresge College (1972)
Professor, Anthropology
B.S., Ph.D., Michigan State University. Former affiliations: College of San Mateo; University of Nairobi.

PRADIP K. MASCHARAK, Oakes College (1984)
Professor, Chemistry and Biochemistry
B.S., M.S., University of Burdwan (India); Ph.D., Indian Institute of Technology (Kanpur). Former affiliations: Stanford University; Massachusetts Institute of Technology.

GEOFFREY MASON, Kresge College (1973)
Professor, Mathematics
B.Sc., University of London; M.S., Ph.D., University of Illinois, Chicago.

DOMINIC W. MASSARO, Porter College (1979)
Professor, Psychology
B.A., University of California, Los Angeles; M.A., Ph.D., University of Massachusetts. Former affiliation: University of Wisconsin.

MARA MATHER (2001)
Associate Professor, Psychology
A.B., Stanford University; Ph.D., Princeton University.

RICHARD MATHER, Cowell College (1965)
Professor Emeritus, History
B.A., M.A., Ph.D., University of California, Berkeley.

WILLIAM G. MATHIES, Porter College (1970)
Professor, Astronomy and Astrophysics
B.S., University of Washington; M.S., University of Chicago; Ph.D., University of California, Berkeley. Former affiliation: University of California, San Diego.

DEAN MATHLOWETZ, Merrill College (2003)
Assistant Professor, Politics
B.A., University of Minnesota; M.A., Ph.D., University of California, Berkeley.

XENIA MATSCHKE (2003)
Assistant Professor, Economics
Diplom-Okonom, Dr. rer. oec., Ruhr Universität-Bochum (Germany); M.S., Ph.D., University of Wisconsin-Madison.

MARTA MATUSZ-PIETRZYKOWICZ, Merrill College (1988)
Assistant Professor, Computer Science
B.A., M.A., Ph.D., University of Cincinnati.

PHILLIP MCCALMAN, Crown College (1999)
Assistant Professor, Economics

JOAN MCCALLUM (1999)
Physical Education Instructor

MATTHEW McCARTHY (2001)
Assistant Professor, Economics
B.A., M.A., University of Texas at Austin. Former affiliations: University of Texas at Austin; University of California, San Diego. Former affiliations: University of California, San Diego; Lawrence Livermore National Laboratory; Digital Equipment Corporation.

MELANIE J. MAYER, Cowell College (1972)
Assistant Professor, Economics
B.A., Pomona College; M.A., Ph.D., Stanford University.

KATHY J. MAYNARD, Cowell College (1999)
Assistant Professor, Computer Science
B.A., M.A., University of California, Los Angeles. Former affiliation: New York University; College of St. Benedict; St. John’s University.

JENNIFER McCARTHY, Cowell College (1970)
Assistant Professor, History
B.A., University of California, Berkeley.

WILLIAM D. McCUE, Cowell College (1970)
Assistant Professor, Biology
B.S., M.S., University of California, San Diego. Former affiliations: University of California, San Diego; Lawrence Livermore National Laboratory; Digital Equipment Corporation.

CHARLES E. MCDOWELL, Porter College (1985)
Professor Emeritus, Economics
B.S., California Polytechnic State University; San Luis Obispo; M.S., Ph.D., University of California, San Diego. Former affiliations: University of California, San Diego; Lawrence Livermore National Laboratory; Digital Equipment Corporation.

JOSEPH D. MCIDEMAN, Merrill College (1965)
Professor Emeritus, Sociology
B.A., University of California, Santa Barbara; M.A., University of California, Los Angeles; Ph.D., Yale University. Former affiliations: University of Southern California; Northwestern University; University of California Education Abroad Program (Padua).

BARRY MCLENNAN, Merrill College (1966)
Assistant Professor, Economics
B.A., M.S., St. Louis University; Ph.D., Harvard University. Former affiliation: University of California Education Abroad Program (Göttingen).

MARGARET A. McMANUS, Crown College (2000)
Visiting Assistant Professor, Ocean Sciences
B.A., University of Virginia; M.S., Ph.D., Old Dominion University. Former affiliation: University of Rhode Island.

KAREN C. McNALLY, Kresge College (1981)
Professor Emerita, Earth Sciences
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliation: California Institute of Technology.

MARCIA MCNULTY (1998)
Professor, Earth Sciences
B.A., Colorado College; Ph.D., Scripps Institution of Oceanography, University of California, San Diego; (Hon.) D.Sc., Colorado College. Concurrent affiliation: Monterey Bay Aquarium Research Institute. Former affiliation: Massachusetts Institute of Technology.

ROBERT L. MEISTER, Kresge College (1973)
Professor, Psychology
B.A., Princeton University; Ph.D., Harvard University. Former affiliation: Harvard University.

R. ARMIN MESTER, Stevenson College (1989)
Professor, Linguistics
Staatsexamen, University of Göttingen (Germany); Ph.D., University of Massachusetts-Amherst.
JACOB B. MICHAELSEN, Crown College (1965)
Professor Emeritus, Economics
B.A., M.B.A., Ph.D., University of Chicago.
Former affiliation: University of California, Berkeley.

PEYMAN MILANFAR (1999)
Associate Professor, Electrical Engineering
B.S., University of California, Berkeley; Ph.D., Massachusetts Institute of Technology.
Former affiliation: Stanford Research Institute International.

GARY B. MILLS, Cowell College (1971)
Professor Emeritus, History
B.A., Colby College; M.A., Harvard University; Ph.D., Yale University. Former affiliations: Phillips Academy; Wesleyan University; University of Texas.

ETHAN MILLER, Crown College (2000)
Associate Professor, Computer Science
Sc.B., Brown University; M.S., Ph.D., University of California, Berkeley. Former affiliation: University of Maryland, Baltimore County.

JOSEPH S. MILLER, Crown College (1967)
Professor, Astronomy and Astrophysics; Henry Bachmann Professor, Astronomical Instrumentation; Director/Astronomer, UC Observatories/Lick Observatory
B.A., University of California, Los Angeles; M.S., Ph.D., University of Wisconsin.

LETA E. MILLER, Porter College (1978)
Professor, Music (Music History and Flute)
B.A., Stanford University; M.Mus., Hartt College of Music, University of Hartford; Ph.D., Stanford University. Former affiliations: Foothill College; Hartt College of Music.

ROBERT C. MILLER (2001)
Vice Chancellor, Research, and Dean, Graduate Studies; Professor, Molecular, Cell, and Developmental Biology
B.S., Trinity College; M.S., Pennsylvania State University; Ph.D., University of Pennsylvania; F.R.S.C.; Former affiliations: University of Wisconsin; Massachusetts Institute of Technology; University of British Columbia; Université de Genève; University of Washington.

TYRUS MILLER, Cowell College (1999)
Associate Professor, Literature; Provost, Cowell College (beginning January 2005)
B.A., M.A., M.A., Johns Hopkins University; Ph.D., Stanford University.

GLENN L. MILLHAUSER, Cowell College (1988)
Professor, Chemistry and Biochemistry
B.S., California State University, Los Angeles; M.S., Ph.D., Cornell University.

MARCIA MILLMAN (1971)
Professor, Sociology
B.A., Ph.D., Brandeis University.

PATRICIA L. MITCHELL (2002)
Lecturer, Music (Oboe)
B.M., San Jose State University.
MARTA NAVARRO (1990)  
Columbia University. B.M., Eastman School of Music; M.A., Ph.D., Associate Professor, Music

PAUL NAUERT, Porter College (1996)  
Columbia University; Stanford Linear Accelerator Ph.D., Cornell University. Former affiliations: Professor Emeritus, Physics

PAUL L. NIEBANCK, College Ten (1973)  
University of California, Berkeley. B.A., Washington University; M.A., Ph.D., Lecturer, Russian Language

JEROME NEU, Cowell College (1972)  
Professor, Humanities B.A., Princeton University; D.Phil., Oxford University

DARD NEUMAN (2004)  
Assistant Professor, Music B.A., University of Washington; M.Phil., Ph.D., Columbia University

A. TODD NEWBERRY, Cowell College (1965)  
Professor Emeritus, Ecology and Evolutionary Biology B.A., Princeton University; Ph.D., Stanford University

ELLEN NEWBERRY (1997)  
Lecturer, Russian Language B.A., Brown University; M.A., San Francisco State University. Former affiliations: De Anza College; Evergreen Valley College

WILLIAM S. NICKELL (1999)  
Lecturer, Russian Language B.A., Washington University; M.A., Ph.D., University of California, Berkeley

PAUL L. NIEBANCK, College Eight (1973)  
Professor Emeritus, Environmental Planning (Environmental Studies) A.B., Johns Hopkins University; M.C.P., Ph.D., University of Pennsylvania. Former affiliations: University of Pennsylvania; U.S. Department of Health, Education and Welfare

DIANA I. NIEVES (2002)  
Lecturer, Music B.A., M.A., University of California, Santa Cruz

HARRY F. NOLLER, Crown College (1968)  
Robert L. Sinsheimer Professor, Molecular, Cell, and Developmental Biology B.A., University of California, Berkeley; Ph.D., University of Oregon. Former affiliations: Institut de Biologie Moléculaire (Geneva); MRC Laboratory of Molecular Biology (Cambridge, England)

CARLOS G. NORENA, Stevenson College (1967)  
Professor Emeritus, Philosophy B.S., M.S., University of Northern California; M.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley

JEROME NEU, Cowell College (1972)  
Professor, Humanities B.A., Princeton University; D.Phil., Oxford University

DARD NEUMAN (2004)  
Assistant Professor, Music B.A., University of Washington; M.Phil., Ph.D., Columbia University

A. TODD NEWBERRY, Cowell College (1965)  
Professor Emeritus, Ecology and Evolutionary Biology B.A., Princeton University; Ph.D., Stanford University

ELLEN NEWBERRY (1997)  
Lecturer, Writing B.A., Brown University; M.A., San Francisco State University. Former affiliations: De Anza College; Evergreen Valley College

WILLIAM S. NICKELL (1999)  
Lecturer, Russian Language B.A., Washington University; M.A., Ph.D., University of California, Berkeley

PAUL L. NIEBANCK, College Eight (1973)  
Professor Emeritus, Environmental Planning (Environmental Studies) A.B., Johns Hopkins University; M.C.P., Ph.D., University of Pennsylvania. Former affiliations: University of Pennsylvania; U.S. Department of Health, Education and Welfare.
KENNETH PEDROTTI, Porter College (2000)  
B.A., M.A., Lucknow University (India); M.A., Cambridge University; Ph.D., University of Chicago. Former affiliations: Cambridge University; University of Pittsburgh; New York University.

ALEX T. PANG, Merrill College (1990)  
Professor, Computer Science  
B.S., University of the Philippines; M.S., Ph.D., University of California, Los Angeles.

INGRID M. PARKER (1998)  
Associate Professor, Ecology and Evolutionary Biology  
A.B., University of Chicago; Ph.D., Stanford University. Former affiliations: Stanford University.

ELEONORA PASOTTI, Merrill College (2003)  
Assistant Professor, Politics  
M.Sc., London School of Economics; M.Phil., Ph.D., Columbia University.

MANUEL PASTOR JR., Merrill College/College Ten (1995)  
Professor, Latin American and Latin Studies  
B.A., University of California, Santa Cruz; M.A., Ph.D., University of Massachusetts. Former affiliation: Occidental College.

ART PEARL, College Eight (1972)  
Professor Emeritus, Education  
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliations: Howard University; University of Oregon.

JOHN PEARSE, College Eight (1971)  
Professor Emeritus, Ecology and Evolutionary Biology  
B.S., University of Chicago; Ph.D., Stanford University. Former affiliations: American University in Cairo; California Institute of Technology.

LUCINDA PEASE-ALVAREZ (1990)  
Associate Professor, Education  
B.A., Willamette University; M.A., Ph.D., Stanford University. Former affiliations: Stanford University; University of Alabama.

KENNETH PEDROTTI, Porter College (2000)  
Associate Professor, Electrical Engineering  
B.S., M.S., University of California, Berkeley; Ph.D., Stanford University. Former affiliation: Rockwell Science Center.

JAMES E. PEPPER, College Eight (1972)  
Professor Emeritus, Environmental Planning (Environmental Studies)  
B.S., B.Arch., Montana State University; M.L.A., M.C.P., University of California, Berkeley. Former affiliation: California State Polytechnic College, Pomona.

TRUOLKI NATH PANDAY, Crown College (1973)  
Professor, Anthropology  
B.A., M.A., Lucknow University (India); M.A., Cambridge University; Ph.D., University of Chicago. Former affiliations: Cambridge University; University of Pittsburgh; New York University.

ELEONORA PASOTTI, Merrill College (2003)  
Assistant Professor, Politics  
M.Sc., London School of Economics; M.Phil., Ph.D., Columbia University.

MANUEL PASTOR JR., Merrill College/College Ten (1995)  
Professor, Latin American and Latin Studies  
B.A., University of California, Santa Cruz; M.A., Ph.D., University of Massachusetts. Former affiliation: Occidental College.

ART PEARL, College Eight (1972)  
Professor Emeritus, Education  
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliations: Howard University; University of Oregon.

JOHN PEARSE, College Eight (1971)  
Professor Emeritus, Ecology and Evolutionary Biology  
B.S., University of Chicago; Ph.D., Stanford University. Former affiliations: American University in Cairo; California Institute of Technology.

LUCINDA PEASE-ALVAREZ (1990)  
Associate Professor, Education  
B.A., Willamette University; M.A., Ph.D., Stanford University. Former affiliations: Stanford University; University of Alabama.

KENNETH PEDROTTI, Porter College (2000)  
Associate Professor, Electrical Engineering  
B.S., M.S., University of California, Berkeley; Ph.D., Stanford University. Former affiliation: Rockwell Science Center.

JAMES E. PEPPER, College Eight (1972)  
Professor Emeritus, Environmental Planning (Environmental Studies)  
B.S., B.Arch., Montana State University; M.L.A., M.C.P., University of California, Berkeley. Former affiliation: California State Polytechnic College, Pomona.
RALPH H. QUINN, Stevenson College (1984)
Lecturer, Psychology
A.B., Bowdoin College; M.A., Goddard College; Ph.D., Saybrook Institute (San Francisco).

SARAH RABIN (1985)
Lecturer, Environmental Studies
B.A., Harvard University; Graduate Certificate, University of California, Santa Cruz.

HUGH RUFFLES, College Nine (1998)
Associate Professor, Anthropology
B.A., University of Warwick; M.A., University of London; D.F.E.S., Yale University.

PETER T. RAIMONDI, College Eight (1996)
Professor, Ecology and Evolutionary Biology
B.A., Northern Arizona University; Ph.D., University of California, Santa Barbara. Former affiliation: University of Melbourne.

S. RAVI RAJAN, Cowell College (1973)
Associate Professor, Environmental Studies
B.A., Osmania University; B.A., M.Phil., University of Delhi; D.Phil., University of Oxford. Former affiliations: Max Planck Institute (Berlin); Cornell University; University of California, Berkeley; University of Oxford.

CATHERINE RAMIREZ, Oakes College (2002)
Assistant Professor, American Studies
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliation: University of New Mexico.

FRANK A. (PACO) RAMIREZ, Cowell College (1973)
Lecturer, Spanish Language
B.A., Hunter College, City University of New York; M.A., Pennsylvania State University; Ph.D., University of California, Berkeley.

RENYA RAMIREZ, Oakes College (2000)
Assistant Professor, American Studies
B.A., University of California, Berkeley; M.A., Ph.D., Stanford University.

RICHARD R. RANDOLPH, Cowell College (1965)
Professor Emeritus, Anthropology
B.A., Ph.D., University of California, Berkeley. Former affiliation: Rice University.

PAUL RANGELL, Porter College (1983)
Lecturer, Art
B.A., University of California, Santa Cruz; Tamarind Master Printer, Tamarind Institute, University of New Mexico.

DAVID M. RANK, College Eight (1971)
Professor Emeritus, Astronomy and Astrophysics; Astronomer Emeritus, UC Observatories/Lick Observatory
B.S., Pennsylvania State University; M.S., Ph.D., University of Michigan.

TUDOR S. RATTU, Crown College (1987)
Professor Emeritus, Mathematics
B.A., M.A., University of Timisoara (Romania); Ph.D., University of California, Berkeley. Former affiliation: University of Arizona.

A. CHRISTINA RAVELLO, Oakes College (1991)
Associate Professor, Ocean Sciences
B.S., B.S., Stanford University; M.A., M.Phil., Ph.D., Columbia University.

FEDERICO RAVENNA (2001)
Assistant Professor, Economics
B.A., Luiss University of Rome; M.Phil., University of Derby (England); M.A., Ph.D., New York University.

CRAG REINERMAN, College Eight/College Ten (1989)
Professor, Sociology
B.A., Babson College; M.A., San Francisco State University; Ph.D., University of California, Santa Barbara. Former affiliation: Northeastern University.

JOSE RENAU (2004)
Acting Assistant Professor, Computer Engineering
B.S., M.S. Ramon Llull University; Ph.D., University of Illinois, Urbana-Champaign.

ALAN R. RICHARDS, Merrill College (1976)
Professor, Environmental Studies
A.B., A.M., Harvard University; M.A., Ph.D., University of Wisconsin-Madison. Former affiliations: Brooklyn College, City University of New York; University of Wisconsin.

GERHARD RINGEL, Crown College (1967)
Professor Emeritus, Mathematics
Dr. rer. nat., University of Bonn; (Hon.) Dr. rer. pol. h. c., University of Karlsruhe. Former affiliations: University of Bonn; Johann Wolfgang von Goethe University (Frankfurt); Free University (Berlin).

MICHAEL RIODAN (1999)
Adjunct Professor, Physics
S.B., Ph.D., Massachusetts Institute of Technology. Concurrent affiliations: Stanford University; Stanford Linear Accelerator Center.

FORREST G. ROBINSON, Oakes College (1970)
Professor, American Studies
B.A., Northwestern University; M.A., Ph.D., Harvard University. Former affiliation: Harvard University.

PAMELA ANN ROBY, Merrill College (1973)
Professor, Sociology
B.A., University of Denver; M.A., Syracuse University; Ph.D., New York University. Former affiliations: George Washington University; Brandeis University.

CONSTANCE ROCKOSI (2004)
Assistant Professor, Astronomy and Astrophysics; Assistant Astronomer, University of California Observatories/Lick Observatory
B.S.E., Princeton University; Ph.D., University of Chicago. Former affiliation: University of Washington.

LISA ROFEL, Kresge College (1991)
Associate Professor, Anthropology
B.A., Brown University; M.A., Ph.D., Stanford University. Former affiliation: Massachusetts Institute of Technology.

BARBARA ROGOFF, Porter College (1991)
UC Santa Cruz Foundation Professor, Psychology; UC Presidential Chair
B.A., Pomona College; Ph.D., Harvard University. Former affiliations: University of Utah; Center for Advanced Study in the Behavioral Sciences, Stanford University.

CAROL ROHL (2003)
Assistant Professor, Molecular and Environmental Biology
B.A. Rice University, Houston; Ph.D., Stanford University. Former affiliations: University of Washington; University of California, Berkeley.

ALVARO ROMERO-MARCO (2000)
Lecturer, Spanish Language
Licenciatura, Universidad de Zaragoza (España); Ph.D., Universidad Complutense de Madrid. Former affiliation: University of Madrid.

ELAINE YOKOYAMA ROOS, Porter College (1973)
Associate Professor, Theater Arts (Costume Design)

NORVIL J. ROOS, Porter College (1974)
Professor Emeritus, Theater Arts (Design)

JASPER A. ROSE, Porter College (1965)
Professor Emeritus, Art, History, and History of Art and Visual Culture
B.A., M.A., Cambridge University. Former affiliations: Cambridge University; University of Keele (England); Rice University.

TRICIA ROSE, Oakes College (2002)
Professor, American Studies
B.A., Yale University; M.A., Ph.D., Brown University. Former affiliation: New York University.

BRUCE ROSENBLUM, Porter College (1966)
Professor Emeritus, Physics
B.S., New York University; Ph.D., Columbia University. Former affiliations: University of California, Berkeley; Radio Corporation of America.

KEVIN ROSS (2004)
Assistant Professor, Information Systems Management
B.S., University of Canterbury; M.S., Ph.D., Stanford University.

TAMMI ROSSMAN-BENJAMIN (1997)
Lecturer, Hebrew Language
B.A., McGill University; M.A., University of Pennsylvania.

Professor, Philosophy
B.A., Wesleyan University; M.A., Ph.D., University of Chicago. Former affiliation: University of Missouri, St. Louis.
DONALD L. ROTHMAN, Oakes College (1973)
Senior Lecturer, Writing
B.A., University of Michigan; M.A., Ph.D. cand., University of California, Berkeley. Former affiliations: Merritt College; North Oakland Development Center; East Oakland Development Center; University of California, Berkeley; Social Action Research Center.

MICHAEL ROTKIN, College Eight/College Ten (1973)
Lecturer, Community Studies
B.A., Cornell University; Ph.D., University of California, Santa Cruz. Former affiliation: New York State School of Industrial and Labor Relations.

WARREN SACK, Porter College (2002)
Assistant Professor, Film and Digital Media
B.A., Yale University; S.M., Ph.D., Massachusetts Institute of Technology. Former affiliations: University of California, Berkeley; Massachusetts Institute of Technology; University of Paris VIII.

JOHN T. SACKETT (1994)
Lecturer, Music
B.M., San Francisco Conservatory of Music; M.A., Mills College; M.A., Ph.D., University of California, Berkeley.

HAMID SAJJADPOUR (2001)
Assistant Professor, Electrical Engineering
B.S., M.S., Sharif University of Technology (Tehran); Ph.D., University of Southern California. Former affiliation: AT&T Research Laboratories (New Jersey).

HARTMUT F.-W. SADROZINSKI, Crown College (1980)
Adjunct Professor, Physics
Dipl. Phys., University of Hamburg; Ph.D., Massachusetts Institute of Technology. Former affiliation: Princeton University.

CHAD SALTIKOV (2004)
Assistant Professor, Environmental Toxicology
B.S., University of California, Santa Barbara; Ph.D., University of California, Irvine. Former affiliation: California Institute of Technology.

GABRIELA SANDOVAL (2004)
Acting Assistant Professor, Sociology

MATTHEW SANDS, Kresge College (1969)
Professor Emeritus, Physics
B.A., Clark University; M.A., Rice University; Ph.D., Massachusetts Institute of Technology. Former affiliations: Stanford California Institute of Technology; Massachusetts Institute of Technology.

BRUNO SANSO (2002)
Visiting Associate Professor, Applied Mathematics and Statistics
B.Sc., M.Sc., Universidad Simón Bolívar; Ph.D., Universidad Central de Venezuela. Former affiliations: Universidad Simón Bolívar; Duke University.

DONALD T. SAPOSNEK, Stevenson College (1978)
Lecturer, Psychology
B.A., University of California, Los Angeles; M.A., San Jose State University; Ph.D., Ohio State University. Former affiliations: Institute of Juvenile Research (Chicago); University of San Francisco.

THEODORE R. SARBIN, Stevenson College (1969)
Professor Emeritus, Psychology and Criminology
B.A., Ohio State University; M.S., Western Reserve University; Ph.D., Ohio State University. Former affiliation: University of California, Berkeley.

JOHN H. SCHAAR, Kresge College (1970)
Professor Emeritus, Politics
B.A., M.A., Ph.D., University of California, Los Angeles. Former affiliations: University of California, Los Angeles; Mount Holyoke College; University of California, Berkeley.

TERRY L. SCHALK (1975)
Adjunct Professor, Physics
B.S., Ph.D., Iowa State University. Former affiliations: University of California, Riverside; Stanford Linear Accelerator Center.

JOHN M. SCHECHTER, Merrill College/Porter College (1985)
Professor, Music; Provost, Merrill College
A.B., Hamilton College; M.M., Indiana University; Ph.D., University of Texas at Austin. Former affiliations: New England Conservatory of Music; Syracuse University.

DANNY SCHEIE, Kresge College (1987)
Professor, Theater Arts (Drama)
B.A., Indiana University at Bloomington; M.A., Ph.D., University of California, Berkeley.

MARTINE D. F. SCHLAG, College Eight (1988)
Professor, Computer Engineering
B.A., M.S., Ph.D., University of California, Los Angeles. Former affiliation: University of Washington.

STUART A. SCHLEGEL, Merrill College (1968)
Professor Emeritus, Anthropology
B.A., University of California, Los Angeles; M.A., Ph.D., University of Chicago. Former affiliation: University of Chicago.

THOMAS W. SCHLEICH, Crown College (1969)
Professor, Chemistry and Biochemistry
B.S., Cornell University; Ph.D., Rockefeller University. Former affiliations: Dartmouth College; University of Oregon.

ZACK SCHLESINGER, Cowell College (1995)
Professor, Physics
B.A., University of California, Santa Barbara; Ph.D., Cornell University. Former affiliation: IBM Research-Yorktown Heights, New York.

HOLGER SCHMIDT (2001)
Assistant Professor, Electrical Engineering
B.S., University of Stuttgart; M.S., Ph.D., University of California, Santa Barbara.

CHRISTOPHER A. SCHOLIN (1993)
Associate Adjunct Professor, Ocean Sciences
B.A., University of California, Santa Barbara; M.A., Duke University; Ph.D., Massachusetts Institute of Technology and Woods Hole Oceanographic Institution. Concurrent affiliation: Monterey Bay Aquarium Research Institute. Former affiliation: University of South Carolina, Columbia.

MARIA SCHONREK, Crown College (1986)
Professor, Mathematics
Licenciatura, University of Buenos Aires; Ph.D., University of Michigan, Ann Arbor.

BRUCK SCHUMM (1995)
Professor, Physics
B.A., Haverford College; Ph.D., University of Chicago. Former affiliation: Lawrence Berkeley National Laboratory.

HILDE L. SCHWARTZ (1998)
Lecturer, Earth Sciences
B.A., University of California, Santa Barbara; Ph.D., University of California, Santa Cruz. Former affiliation: Museum of Northern Arizona.

SUSAN Y. SCHWARTZ, Cowell College (1989)
Professor, Earth Sciences
B.S., Brown University; M.S., Ph.D., University of Michigan.

TIBOR SCITOVSKY (1978)
Professor Emeritus, Economics
L.L.D., University of Budapest; M.Sc., London School of Economics and Political Science. Former affiliations: London School of Economics and Political Science; Stanford University; Yale University; Development Center, Organization for Economic Cooperation and Development (Paris); University of California, Berkeley.

JUDITH A. SCOTT, Crown College (2000)
Assistant Professor, Education
B.A., University of California, Davis; M.A., Ph.D., University of Illinois, Urbana-Champaign. Former affiliation: Simon Fraser University.

PETER L. SCOTT, Stevenson College (1966)
Professor Emeritus, Physics
B.A., University of California, Berkeley; M.A., University of Michigan; Ph.D., University of California, Berkeley. Former affiliation: Stanford University.

WILLIAM G. SCOTT (1998)
Associate Professor, Chemistry and Biochemistry
B.S., B.S., Bates College; Ph.D., University of California, Berkeley. Former affiliation: Indiana University.

DANIEL SCOTT, Crown College (1986)
Lecturer, Writing
B.A., Goddard College; M.A., San Jose State University; Ph.D. cand., University of California, Santa Cruz. Former affiliation: San Jose State University.
ANA MARIA C. SEARA, Merrill College (1998)
Lecturer, Portuguese Language
B.A., Universidade Federal do Rio de Janeiro; M.A., Ph.D., University of North Carolina. Former affiliations: University of California, Berkeley; Stanford University.

ABRAHAM SEIDEN, Crown College (1976)
Professor, Physics; Director, Santa Cruz Institute for Particle Physics
B.S., Columbia University; M.S., California Institute of Technology; Ph.D., University of California, Santa Cruz.

DANIEL SELDEN, Oakes College (1988)
Associate Professor, Classics (Literature)
B.A., M.Phil., Ph.D., Yale University. Former affiliations: Barnard College; Columbia University; Yale University.

VANITA SETH (2001)
Assistant Professor, Politics
B.A. (Hons., 1st class), University of Sydney; Ph.D., University of Melbourne.

TRAVIS L. SEYMOUR (2001)
Assistant Professor, Psychology
B.A., Northwestern University; M.S., Ph.D., University of Michigan.

ALI SHAHOURI (1998)
Associate Professor, Electrical Engineering
B.S., Ecole Nationale Superieure des Telecommunications (Paris); M.S., Ph.D., California Institute of Technology. Former affiliation: University of California, Santa Barbara.

HELEN SHAPIRO, College Nine (1997)
Associate Professor, Sociology

BUCHANAN SHARP, Stevenson College (1970)
Professor, History
B.A., University of California, Berkeley; M.A., University of Illinois; Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.

B. SIRAM SHASTRY (2003)
Professor, Physics
B.Sc., Nagpur University (India); M.Sc., Indian Institute of Technology (Madras, India); Ph.D., Tata Institute of Fundamental Research (India). Former affiliation: Indian Institute of Science (Bangalore).

JEROME SHAW, College Nine (2003)
Assistant Professor, Education
B.A., M.A., Ph.D., Stanford University. Former affiliation: Science for Linguistic Inclusion Project, WestEd.

PRISCILLA W. SHAW, Stevenson College (1967)
Professor Emerita, English and Comparative Literature
B.A., Swarthmore College; Ph.D., Yale University. Former affiliations: Haverford College; Rutgers University; Yale University.

DEANNA SHEMEK, Cowell College (1990)
Associate Professor, Italian and Comparative Literature; Provost, Cowell College (beginning January 2005)
B.A., University of Nebraska; M.A., Ph.D., Johns Hopkins University. Former affiliations: Yale University; University of Pennsylvania.

CAROL SHENNAN (1997)
Professor, Environmental Studies
B.A., Ph.D., University of Cambridge. Former affiliation: University of California, Davis.

ROBERT J. SHEPHERD (1981)
Lecturer, Economics
B.S., M.A., University of Southern California; California Certified Public Accountant. Former affiliation: Price Waterhouse & Co.

WILLIAM F. SHIPLEY, Stevenson College (1966)
Professor Emeritus, Linguistics
B.A., Ph.D., University of California, Berkeley. Former affiliations: University of California, Berkeley; University of Novi Sad (Yugoslavia).

ELI A. SILVER, Crown College (1973)
Professor, Earth Sciences
B.A., University of California, Berkeley; Ph.D., Scripps Institution of Oceanography, University of California, San Diego. Former affiliations: U.S. Geological Survey; Scripps Institution of Oceanography.

MARY W. SILVER, Oakes College (1972)
Professor, Ocean Sciences
B.A., University of California, Berkeley; Ph.D., Scripps Institution of Oceanography, University of California, San Diego. Former affiliation: San Francisco State College (Moss Landing Marine Laboratories).

BARRY SINERVO (1997)
Professor, Ecology and Evolutionary Biology
B.S., Dalhousie University; Ph.D., University of Washington. Former affiliation: Indiana University.

BAKTHAN SINGARAM, Merrill College (1989)
Professor, Chemistry and Biochemistry
B.Sc., M.Sc., Ph.D., University of Madras (Tamil Nadu, India). Former affiliation: Purdue University.

NIRVAKAR SINGH, Crown College/Cologne Nine (1982)
Professor, Economics
B.Sc., M.Sc., London School of Economics; Ph.D., University of California, Berkeley. Former affiliation: University of Delhi.

ROBERT L. SINHEIMER (1977)
Professor Emeritus, Molecular, Cell, and Developmental Biology; Chancellor Emeritus
B.S., M.S., Ph.D., Massachusetts Institute of Technology; (Hon.) D.S., St. Olaf College; (Hon.) D.Sc., Northwestern University. Former affiliations: Iowa State University; California Institute of Technology; University of California, San Diego. Former affiliation: University of Wisconsin.

PAUL N. SKENAZY, Kresge College (1971)
Professor, American Literature; Provost, Kresge College
B.A., University of Chicago; M.A., Ph.D., Stanford University. Former affiliation: Stanford University.

LISA C. SLOBIN, Crown College (1992)
Professor, Earth Sciences
B.S., Allegheny College; M.S., Kent State University; Ph.D., Pennsylvania State University. Former affiliation: University of Michigan.

GREG SLOGAN, Stevenson College (1988)
Professor Emeritus, Russian Literature
B.A., Wayne State University; M.A., University of Michigan; M.Phil., Ph.D., Yale University. Former affiliations: Amherst College; State University of New York at Albany; Wesleyan University; University of Michigan; Yale University.

DAVID M. SMITH (2003)
Assistant Professor, Physics
S.B., Massachusetts Institute of Technology; M.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.

DONALD R. SMITH, Crown College (1996)
Professor, Environmental Toxicology
B.A., University of California, Santa Cruz; M.A., San Francisco State University (Moss Landing Marine Laboratories); Ph.D., University of California, Santa Cruz.

GREG H. SMITH, Merrill College (1989)
Professor, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory
B.Sc., Ph.D., Australian National University. Former affiliations: Space Telescope Science Institute; Harvard-Smithsonian Center for Astrophysics; Dominion Astrophysical Observatory.

M. BREWSTER SMITH, Stevenson College (1970)
Professor Emeritus, Psychology
B.A., M.A., Stanford University; Ph.D., Harvard University. Former affiliations: University of California, Berkeley; New York University; Vassar College; Harvard University; University of Chicago; Center for Advanced Study in the Behavioral Sciences.

RANDY SMITH (1981)
Physical Education Instructor
Third Degree Black Belt; Member, World Taekwondo Federation.

RUTH L. SOLOMON, Porter College (1970)
Professor Emeritus, Theater Arts (Dance)
B.A., Bard College. Former affiliations: University of Hawaii; Peking Academy; Indiana University; New York University School of the Arts: Chautauqua Institution.

M. BREWSTER SMITH, Stevenson College (1970)
Professor Emeritus, Psychology
B.A., M.A., Stanford University; Ph.D., Harvard University. Former affiliations: University of California, Berkeley; New York University; Vassar College; Harvard University; University of Chicago; Center for Advanced Study in the Behavioral Sciences.
WAYNE J. SOLOMON (2000)  
Lecturer, Music (Trombone)  
B.M., University of Minnesota, Duluth; M.M., San Francisco Conservatory of Music. Concurrent affiliations: California State University, Fresno; Monterey County Symphony; Santa Cruz County Symphony; Napa Valley Symphony; Carmel Bach Festival. Former affiliation: America’s Band in Blue (U.S. Air Force).  

SOONHO SONG (1995)  
Physical Education Instructor  
B.A., Yonsei University (Seoul); M.A., San Jose State University.  

MICHAEL E. SOULE, College Eight (1989)  
Professor Emeritus, Environmental Studies  
B.A., California State University, San Diego; M.A., Ph.D., Stanford University. Former affiliations: University of Michigan; University of California, San Diego.  

CATHERINE M. SOUSLOFF, Cowell College/Porter College (1987)  
Professor, History of Art and Visual Culture  
A.B., Ph.D., Bryn Mawr College. Former affiliations: University of North Carolina at Chapel Hill; University of Connecticut.  

ROSSELL (ROZ) SIFFORD, Kresge College (1978)  
Lecturer, Writing; Provost, College Eight  
B.A., University of California, Santa Cruz; M.A., San Francisco State University. Former affiliation: San Francisco State University.  

SHELLEY STAMP, Porter College (1994)  
Associate Professor, Film and Digital Media  
B.A., University of Toronto; M.A., Ph.D., New York University. Former affiliation: Queen’s University (Canada).  

AUDREY E. STANLEY, Cowell College/Porter College (1969)  
Professor Emerita, Theater Arts (Drama)  
B.A., University of Bristol; M.A., Ph.D., University of California, Berkeley. Former affiliations: University of Victoria (British Columbia); Dalhousie University; City of Birmingham College of Education; Nottinghamshire County College of Education; School of Art (Guildford, England).  

RAYMI SUTA (2002)  
Assistant Professor, Computer Science  
S.B., S.M., Ph.D., Massachusetts Institute of Technology. Former affiliation: Compaq Systems Research Center.  

BRIAN J. STAUFENBIEL, Porter College (1996)  
Lecturer, Music (Voice)  
B.A., University of California, Santa Cruz; M.M., San Jose State University; D.M.A., Eastman School of Music. Former affiliations: Eastman School of Music; Santa Clara University.  

S. PAGE STEGNER, Porter College (1968)  
Professor Emeritus, American Literature  
B.A., M.A., Ph.D., Stanford University. Former affiliation: Ohio State University.  

PETER STEINHART (1995)  
Lecturer, Science Communication (Science Writing)  
B.A., Stanford University; M.A., University of California, Los Angeles. Former affiliation: Stanford University.  

ELIZABETH STEPHENS, Porter College (1994)  
Associate Professor, Art  
B.F.A., Tufts University; M.F.A., Rutgers University; Diploma, School of the Museum of Fine Arts, Boston.  

TRISH STODDART (1993)  
Associate Professor, Education  
B.A., University of Leeds (England); M.A., University of Birmingham (England); Ph.D., University of California, Berkeley. Former affiliations: Michigan State University; University of Utah.  

NANCY STOLLER, College Eight/College Ten (1973)  
Professor, Community Studies  
B.A., Wellesley College; M.A., Ph.D., Brandeis University. Former affiliation: Emmanuel College.  

JOSHUA SYLVEY (2003)  
Assistant Professor, Biomedical Engineering  
B.S., B.A., University of Colorado; Ph.D., Stanford University.  

ELLEN KAPPY SUCKEL, Cowell College (1973)  
Professor, Philosophy; Provost, Stevenson College  
B.A., Douglass College; M.A., Ph.D., University of Wisconsin-Madison. Former affiliations: Florida State University; University of Wisconsin.  

TOUFEH SUDIAN (2004)  
Assistant Professor, Mathematics  
B.S., California Institute of Technology; Ph.D., Princeton University. Former affiliations: Courant Institute of Mathematical Sciences, New York University; Institute for Advanced Study (Princeton).  

WILLIAM T. SULLIVAN, Crown College (1990)  
Professor, Molecular, Cell, and Developmental Biology  
B.A., University of California, San Diego; Ph.D., University of Washington. Former affiliation: University of California, San Francisco.  

UNDANG SUMARNA, Porter College (1976)  
Lecturer, Music (Gamelan)  
Former affiliations: Akadem Seni Tari Indonesia and Konservatori Karawitan (Bandung, West Java); University of California, Berkeley; University of California, Los Angeles.  

JEROME D. SWALEN (1993)  
Adjunct Professor, Physics  
B.S., University of Minnesota; A.M., Ph.D., Harvard University. Former affiliation: IBM Research Laboratories (San Jose).  

DAVID SWANGER, Crown College/Porter College (1971)  
Professor, Education and Creative Writing  

DAVID G. SWEET, Merrill College (1971)  
Professor Emeritus, History  
B.A., Oberlin College; M.A., Ph.D., University of Wisconsin-Madison.  

SEAN LAWRENCE SWEEZEY (1987)  
Associate Adjunct Professor, Environmental Studies  
A.B., B.S., M.A., Ph.D., University of California, Berkeley. Former affiliations: Cornell University; Organization of American States; Food and Agriculture Organization (Rome).  

EUGENIE SWATKES, Crown College (1971)  
Professor, Chemistry and Biochemistry  
B.A., Oberlin College; Ph.D., Harvard University. Former affiliations: Oberlin College; General Electric.  

MARSHALL SYLVAN, Stevenson College (1965)  
Lecturer Emeritus, Mathematics and Statistics  
B.S., Roosevelt University; M.S., University of Chicago; Ph.D., Stanford University.  

ANDREW SZASZ, College Eight (1986)  
Associate Professor, Sociology  
B.A., Harvard University; M.A., University of Chicago; Ph.D., University of Wisconsin-Madison. Former affiliation: Rutgers University.  

NEFERTI TADIAH, Oakes College (1996)  
Associate Professor, History of Consciousness  
B.A., University of the Philippines; M.A., University of Minnesota; Ph.D., Duke University. Former affiliation: University of the Philippines.  

LINCOLN TAIZ (1973)  
Professor, Molecular, Cell, and Developmental Biology  
B.S., University of Utah; Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.  

RENEE TAJIMA-PESA (2003)  
Associate Professor, Community Studies  

DANA Y. TAKAGI, Stevenson College (1987)  
Professor, Sociology  
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Irvine.  

FRANK J. TALAMANTES, Oakes College (1974)  
Professor, Molecular, Cell, and Developmental Biology  
B.A., University of St. Thomas; M.A., Sam Houston State University; Ph.D., University of California, Berkeley.  

HIROTA TAMANO, Stevenson College (1996)  
Associate Professor, Mathematics  
B.S., M.S., University of Tokyo; Ph.D., Johns Hopkins University. Former affiliations: Institut des Hautes Études; University of Kentucky; Max Planck Institut für Mathematik; Rutgers University; Institute for Advanced Study (Princeton).
JOHN W. TAMKUN, Porter College (1989)
Professor, Molecular, Cell, and Developmental Biology
B.A., University of South Florida; Ph.D., Massachusetts Institute of Technology. Former affiliation: University of Colorado.

WANG-CHIEW TAN (2002)
Assistant Professor, Computer Science
B.S., National University of Singapore; M.S., Ph.D., University of Pennsylvania.

JULIE TANNENBAUM (2001)
Assistant Professor, Philosophy
B.A., Ph.D., University of California, Los Angeles.

R. MICHAEL TANNER (1971)
Professor Emeritus, Computer Science
B.S., M.S., Ph.D., Stanford University. Former affiliation: Tennessee State University.

HAI TAO (2001)
Assistant Professor, Computer Engineering
B.S., M.S., Tsinghua University; M.S., Mississippi State University; Ph.D., University of Illinois, Urbana-Champaign. Former affiliation: Sarnoff Corporation.

MARCA TAYLOR (1985)
Lecturer, Theater Arts (Drama)
Neighborhood Playhouse School of the Theater; HB Studio; San Jose State University.

KIP TELLEZ, Stevenson College (2000)
Associate Professor, Education
B.A., California State University, Fullerton; M.A., Ph.D., Claremont Graduate School. Former affiliation: University of Houston; Claremont Graduate School.

RICHARD TREDMAN, Kresge College (1987)
Professor, Literature
B.A., Amherst College; Ph.D., Yale University. Former affiliations: United States International University; University of Hawai'i.

SUSANA TERRELL (1993)
Lecturer, Art
B.A., Principia College; Graduate Certificate, University of California, Santa Cruz; M.A., San Francisco State University.

ROLAND G. THARP, Crown College (1990)
Professor Emeritus, Education and Psychology
B.A., University of Houston; M.A., Ph.D., University of Michigan, Ann Arbor. Former affiliations: United States International University; University of Hawaii.

DAVID J. THOMAS, Stevenson College (1966)
Professor Emeritus, Politics
B.A., Oberlin College; Ph.D., Harvard University.

MEGAN THOMAS, Merrill College (2003)
Assistant Professor, Politics
B.A., Oberlin College; M.S., London School of Economics; Ph.D., Cornell University. Former affiliation: Weatherhead East Asian Institute, Columbia University.

BRUCE THOMPSON, Stevenson College (1990)
Lecturer, History
A.B., Princeton University; M.A., Ph.D., Stanford University. Former affiliations: Stanford University; Santa Clara University.

JOHN N. THOMPSON, Stevenson College (2000)
Professor, Ecology and Evolutionary Biology

AVRI THORNE, Stevenson College (1991)
Professor, Psychology
B.A., University of Utah; M.A., Arizona State University; Ph.D., University of California, Berkeley. Former affiliations: University of California, Berkeley; Emory University; Wellesley College.

STEPHEN E. THORSETT, Crown College (1999)
Professor, Astronomy and Astrophysics

OTHMAR T. TORISCH, Porter College (1968)
Professor Emeritus, Earth Sciences
B.A., M.A., University of California, Berkeley; Ph.D., University of London (Imperial College). Former affiliation: U.S. Geological Survey.

JUDITH TOOD, Porter College (1984)
Lecturer, Writing
B.A., Indiana University; M.S., University of California, Berkeley; M.A., San Francisco State University; Ph.D., University of California, Santa Cruz.

ANDREY TODOROV, Porter College (1991)
Professor, Mathematics
B.A., Ph.D., Moscow State University. Former affiliations: Bulgarian Academy of Sciences.

VERONICA K. TONAY (1989)
Lecturer, Psychology
B.A., University of California, Santa Cruz; M.A., Ph.D., University of California, Berkeley.

MARK TRAUGOTT, Stevenson College (1974)
Professor, History
B.A., Harvard University; M.A., Ph.D., University of California, Berkeley.

NINA TREADWELL (2004)
Assistant Professor, Music
B.A., B.M., University of Melbourne (Australia); M.A., Ph.D., University of Southern California. Former affiliation: Grinnell College.

ANTHONY J. TROMBA, Cowell College (1970)
Professor, Mathematics
B.S., Cornell University; M.A., Ph.D., Princeton University. Former affiliation: Stanford University.

ANA TUSING, Kresge College (1987)
Professor, Anthropology
B.A., Yale University; M.A., Ph.D., Stanford University. Former affiliations: University of Colorado; University of Massachusetts.

SLAWEK M. TULACZYK (2000)
Associate Professor, Earth Sciences
Magister, University of Wroclaw (Poland); Graduate Certificate, University des Saarlandes (Germany); M.Sc., Northern Illinois University; M.Sc., Ph.D., California Institute of Technology. Former affiliation: University of Kentucky.

MICHAEL E. URBAN, Stevenson College/Corpus Christi (1991)
Assistant Professor, Physics
B.A., Seattle University; M.A., University of Alberta; Ph.D., University of Kansas. Former affiliations: Auburn University; State University of New York, College at Oswego; University of Montana.

PHILIP C. VANDENBERG (1972)
Physical Education Instructor
B.A., University of California, Santa Barbara.

OTHER AFILIACTIONS:

ANTHONY J. TROMBA, Cowell College (1970)
Assistant Professor, Mathematics
B.S., Cornell University; M.A., Ph.D., Princeton University. Former affiliations: Stanford University; University of Massachusetts.

JULIE TANNENBAUM (2001)
Assistant Professor, Philosophy
B.A., Ph.D., University of California, Los Angeles.

R. MICHAEL TANNER (1971)
Professor Emeritus, Computer Science
B.S., M.S., Ph.D., Stanford University. Former affiliation: Tennessee State University.

HAI TAO (2001)
Assistant Professor, Computer Engineering
B.S., M.S., Tsinghua University; M.S., Mississippi State University; Ph.D., University of Illinois, Urbana-Champaign. Former affiliation: Sarnoff Corporation.

MARCA TAYLOR (1985)
Lecturer, Theater Arts (Drama)
Neighborhood Playhouse School of the Theater; HB Studio; San Jose State University.

KIP TELLEZ, Stevenson College (2000)
Associate Professor, Education
B.A., California State University, Fullerton; M.A., Ph.D., Claremont Graduate School. Former affiliation: University of Houston; Claremont Graduate School.

RICHARD TREDMAN, Kresge College (1987)
Professor, Literature
B.A., Amherst College; Ph.D., Yale University. Former affiliations: United States International University; University of Hawai'i.

SUSANA TERRELL (1993)
Lecturer, Art
B.A., Principia College; Graduate Certificate, University of California, Santa Cruz; M.A., San Francisco State University.

ROLAND G. THARP, Crown College (1990)
Professor Emeritus, Education and Psychology
B.A., University of Houston; M.A., Ph.D., University of Michigan, Ann Arbor. Former affiliations: United States International University; University of Hawaii.

DAVID J. THOMAS, Stevenson College (1966)
Professor Emeritus, Politics
B.A., Oberlin College; Ph.D., Harvard University.

MEGAN THOMAS, Merrill College (2003)
Assistant Professor, Politics
B.A., Oberlin College; M.S., London School of Economics; Ph.D., Cornell University. Former affiliation: Weatherhead East Asian Institute, Columbia University.
GEORGE E. VON DER MUEHLL, Merrill College (1969)
Professor Emeritus, Politics
B.A., Oberlin College; M.S.C., London School of Economics; Ph.D., Harvard University. Former affiliations: Swarthmore College; University of Chicago; Makerere University College (Uganda).

MERLE F. WALKER (1965)
Professor Emeritus, Astronomy and Astrophysics; Astronomer Emeritus, UC Observatories/Lick Observatory
A.B., Ph.D., University of California, Berkeley. Former affiliations: Mt. Wilson and Palomar Observatories; Yerkes Observatory; Warner and Swasey Observatory; Cerro Tololo Inter-American Observatory (Chile).

CARL E. WALSH, Crown College (1987)
Professor, Economics
B.A., Ph.D., University of California, Berkeley. Former affiliation: Princeton University.

BRIAN WALTON, College Eight (1979)
Lecturer, Environmental Studies; Coordinator, Predatory Bird Research Group
B.S., California Polytechnic State University, San Luis Obispo; M.A., San Jose State University.

HONGYUN WANG (1999)
Assistant Professor, Applied Mathematics and Statistics
B.S., M.S., Beijing University; Ph.D., University of California, Berkeley. Former affiliation: Lawrence Berkeley National Laboratory.

HOWARD H. WANG, Stevenson College (1970)
Professor Emeritus, Molecular, Cell, and Developmental Biology
B.S., California Institute of Technology; Ph.D., University of California, Los Angeles. Former affiliations: University of California, Berkeley; Massachusetts Institute of Technology.

SU-HUA WANG (2003)
Assistant Professor, Psychology
B.S., M.S., National Taiwan University; Ph.D., University of Illinois, Urbana-Champaign.

EDWARD (TED) C. WARRBURTON (2004)
Assistant Professor, Theater Arts
B.A., Boston College; Ed.M., Ed.D., Harvard University. Former affiliations: New York University; Southern Methodist University; Boston Conservatory; Boston Ballet; Houston Ballet; American Ballet Theatre II.

Professor, Computer Science
Vordiplom in Informatik, Friedrich Alexander Universität (Germany); M.Sc., Ph.D., University of Colorado.

MICHAEL J. WARREN, Cowell College (1968)
Professor Emeritus, English Literature
B.A., M.A., Oxford University (Balliol College); Ph.D., University of California, Berkeley. Former affiliation: University of Victoria (British Columbia).

RICHARD A. WASSERSTROM, Stevenson College (1979)
Professor Emeritus, Philosophy
B.A., Amherst College; M.A., Ph.D., University of Michigan; LL.B., Stanford University. Former affiliations: University of California, Los Angeles; Tuskegee Institute; U.S. Department of Justice; Stanford University.

KERSTIN WASSON (2003)
Assistant Adjunct Professor, Ecology and Evolutionary Biology
B.A., Oberlin College; Ph.D., University of California, Santa Cruz. Concurrent affiliation: Elkhorn Slough Foundation.

LEWIS WATTS, Porter College (2001)
Assistant Professor, Art
B.A., M.A., University of California, Berkeley. Former affiliation: University of California, Berkeley.

AMY WEAVER (1998)
Lecturer, Writing
B.A., University of California, Santa Cruz; M.A., Cornell University. Former affiliation: Cornell University.

Gerald E. WEBER, Crown College (1983)
Lecturer Emeritus, Earth Sciences
B.A., University of California, Riverside; M.A., University of Texas at Austin; Ph.D., University of California, Santa Cruz. Former affiliations: De Anza College; U.S. Geological Survey; Union Oil.

Jonathan WEITSMAN (1994)
Associate Professor, Mathematics
S.B., S.B., Massachusetts Institute of Technology; Ph.D., Harvard University. Former affiliation: Columbia University.

David T. WELLMAN (1983)
Professor, Community Studies
B.A., Wayne State University; M.A., Ph.D., University of California, Berkeley. Former affiliations: University of California, Berkeley; University of Oregon.

C. Gordon WELLS, Porter College (2000)
Assistant Professor, Education
B.A., University of Cambridge; Dipl. Appl. Ling., University of Edinburgh; Ph.D., University of Bristol. Former affiliations: University of California, Los Angeles; University of Toronto; University of Bristol.

Randall S. WELLS (1983)
Associate Adjunct Professor, Ocean Sciences
B.A., University of South Florida; M.S., University of Florida; Ph.D., University of California, Santa Cruz.

LINDA WERNER, Porter College (1985)
Lecturer, Computer Science
B.A., Clark University; M.S., Ph.D., University of California, San Diego. Former affiliations: Wang Laboratories; Data General Corporation.

Candace WEST, College Eight (1979)
Professor, Sociology
B.A., M.A., Ph.D., University of California, Santa Barbara. Former affiliations: University of California, Santa Barbara; Florida State University.

Marilyn J. WESTERKAMP, Merrill College (1989)
Professor, History
B.A., Brandeis University; M.A., Ph.D., University of Pennsylvania. Former affiliations: University of Wyoming; Clarion University of Pennsylvania.

Donald L. WEGANDT, Porter College (1967)
Professor Emeritus, Art
B.A., Boston University; M.F.A., University of Illinois. Former affiliations: University of Colorado; San Francisco Art Institute; University of California, Los Angeles.

HAYDEN WHITE, Oakes College (1978)
Professor Emeritus, History of Consciousness
B.A., Wayne State University; M.A., Ph.D., University of Michigan. Former affiliations: Wesleyan University; University of California, Los Angeles; University of Rochester; Wayne State University.

E. James Whitehead III, Porter College (2000)
Assistant Professor, Computer Science
B.S., Rensselaer Polytechnic Institute; M.S., Ph.D., University of California, Irvine.

Paul WHITWORTH, Cowell College/Porter College (1990)
Professor, Theater Arts
M.A. (Hons., 1st class), University of St. Andrews; graduate studies, Oxford University. Former affiliation: Royal Shakespeare Company.

Donald WIBERG (2002)
Professor Emeritus, Electrical Engineering
B.S., M.S., Ph.D., California Institute of Technology. Former affiliations: Institute of Electrical and Electronics Engineers; University of California, Los Angeles.

Harold WIDOM, Stevenson College (1968)
Professor Emeritus, Mathematics
M.S., Ph.D., University of Chicago. Former affiliations: Cornell University; University of Chicago; University of California, Berkeley; Stanford University.

Jane P. Wilhelms, Porter College (1985)
Professor, Computer Science
B.A., University of Wisconsin-Madison; M.A., Stanford University; M.S., Ph.D., University of California, Berkeley. Former affiliation: Mills College.

John Wilkes, Cowell College/Crown College (1974)
Senior Lecturer, Science Communication (Science Writing)
B.A., M.A., Ph.D., University of Colorado, Santa Cruz. Former affiliation: Massachusetts Institute of Technology.

David A. Williams (1987)
Adjunct Professor, Physics
A.B., Washington University; A.M., Ph.D., Harvard University.
QUENTIN C. WILLIAMS, Porter College (1988)
Professor, Earth Sciences
A.B., Princeton University; Ph.D., University of California, Berkeley.

TERRIE M. WILLIAMS, College Eight (1994)
Professor, Ecology and Evolutionary Biology
B.S., Douglass College; M.S., Ph.D., Rutgers University. Former affiliations: Scripps Institution of Oceanography; San Diego Zoo; Sea World Research Institute; Naval Oceans Systems Center Hawaii Laboratories; U.S. Office of Naval Research.

STANLEY M. WILLIAMSON, Cowell College (1965)
Professor Emeritus, Chemistry and Biochemistry; Provost, Cowell College (through December 2004)
B.S., University of North Carolina; Ph.D., University of Washington. Former affiliations: University of California, Berkeley; Cambridge University.

CARTER WILSON, College Nine (1972)
Professor Emeritus, Community Studies
B.A., Harvard University; M.A., Syracuse University. Former affiliations: Stanford University; Harvard University; Tufts University.

JAMES WILSON, Cowell College (1985)
Lecturer, Writing
B.A., California State University, Fresno; M.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Berkeley.

MARGARET L. WILSON (2001)
Assistant Professor, Psychology
B.A., Reed College; Ph.D., University of California, Berkeley.

ROR WILSON, Oakes College (2001)
Professor, Literature
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliation: University of Hawaii at Manoa.

WILLIAM K. WYNANT (1983)
Lecturer, Music (Percussion)

W. TODD WIPKE, Crown College (1975)
Professor, Chemistry and Biochemistry
B.S., University of Missouri; Ph.D., University of California, Berkeley. Former affiliations: University of Missouri; University of California, Berkeley; Harvard University; Princeton University.

DANIEL J. WIRLS, Merrill College (1988)
Professor, Politics
B.A., Haverford College; M.A., Ph.D., Cornell University.

DONALD A. WITTMAN, Merrill College (1969)
Professor, Economics
B.A., University of Michigan; M.A., Ph.D., University of California, Berkeley. Former affiliations: University of Chicago; University of California, Berkeley.

RICHARD WOHLFEILER (1994)
Lecturer, Art
B.A., University of California, Los Angeles; Graduate Certificate, University of California, Santa Cruz.

GREER ELLISON WOLFSON (2002)
Lecturer, Music (Flute)
B.M., Oberlin Conservatory of Music; M.M., University of Michigan, Ann Arbor.

DEBORAH A. WOO, College Eight (1984)
Professor, Community Studies
B.A., Tufts University; M.A., Ph.D., University of California, Berkeley.

STANFORD E. WOOSLEY, Crown College (1975)
Professor, Astronomy and Astrophysics
B.S., M.S., Ph.D., Rice University. Former affiliations: California Institute of Technology; Rice University; Lawrence Livermore National Laboratory.

STEPHEN C. WRIGHT, College Nine (1972)
Professor Emeritus, Theater Arts (Dance)
B.A., Mills College; M.A., Ph.D., Ohio State University. Former affiliations: University of California, Los Angeles; Ohio State University; Ohio University.

KAREN TEI YAMASHITA, Kresge College (1997)
Associate Professor, Literature (Creative Writing)
B.A., Carleton College. Former affiliation: University of California, Los Angeles.

HUBIN YAN (2001)
Assistant Professor, Economics
B.A., Wuhan University (People’s Republic of China); Ph.D., Washington University.

ALICE YANG MURRAY, Merrill College (1993)
Associate Professor, History
B.A., Brown University; M.A., Ph.D., Stanford University.

JOEL YELLIN (1984)
Professor, Natural Sciences (Environmental Science and Law)
B.S., California Institute of Technology; M.S., Ph.D., University of Chicago. Former affiliations: Massachusetts Institute of Technology; Lawrence Radiation Laboratory; University of California, Berkeley; Institute for Advanced Study (Princeton).

FITNAT YILDIZ (2002)
Assistant Professor, Environmental Toxicology
B.S., Hacettepe University (Ankara, Turkey); Ph.D., Indiana University. Former affiliation: Carnegie Institution of Washington.

A. PETER YOUNG, Crown College (1984)
Professor, Physics
M.A., D.Phil., Oxford University. Former affiliations: Oxford University; Institut Laue-Langevin (Grenoble, France); Cornell University; Imperial College (London).

JUDY YUNG, Oakes College (1990)
Professor Emerita, American Studies
B.A., San Francisco State College; M.L.S., Ph.D., University of California, Berkeley. Former affiliations: University of California, Berkeley; Stanford University; San Francisco State University.

JAMES C. ZACHOS, Crown College (1992)
Professor, Earth Sciences
B.S., State University of New York, College at Oneonta; M.S., University of South Carolina; Ph.D., University of Rhode Island. Former affiliation: University of Michigan.

ALAN M. ZAHLER (1994)
Associate Professor, Molecular, Cell, and Developmental Biology
B.S., Carnegie Mellon University; Ph.D., University of Colorado, Boulder.

JACK ZAJAC, Porter College (1969)
Professor Emeritus, Art

ERIKA ZAVALETA (2003)
Assistant Professor, Environmental Studies
B.A., M.A., Ph.D., Stanford University. Former affiliation: University of California, Berkeley.

PATRICIA ZAVELLA, College Eight (1984)
Professor, Latin American and Latino Studies
B.A., M.A., Ph.D., University of California, Berkeley.

JONATHAN ZEHIR (1999)
Professor, Ocean Sciences
B.S., Western Washington University; Ph.D., University of California, Davis. Former affiliation: Rensselaer Polytechnic Institute.

JIN Z. ZHANG, Crown College (1992)
Professor, Chemistry and Biochemistry
B.S., Fudan University (Shanghai); Ph.D., University of Washington. Former affiliation: University of California, Berkeley.

ZHITU ZHU, Stevenson College (1997)
Assistant Professor, Environmental Toxicology
B.S., Nanjing Teachers University (People’s Republic of China); M.S., Zheng Zhou University (People’s Republic of China); Ph.D., University of Wisconsin-Milwaukee.

ADRIENNE L. ZIHLMAN, Oakes College (1967)
Professor, Anthropology
B.A., University of Colorado; Ph.D., University of California, Berkeley.
Teaching Staff

MARTHA C. ZÚÑIGA, Merrill College (1989)
Professor, Molecular, Cell, and Developmental Biology
B.A., University of Texas at Austin; M.Phil., Ph.D., Yale University. Former affiliation: University of Texas at Austin.

EILEEN ZURBRIGGEN, College Ten (2000)
Assistant Professor, Psychology
B.S., M.S., Michigan State University; M.A., Ph.D., University of Michigan.

IN MEMORIAM
We mourn the death of four valued faculty members in the year since the publication of the last catalog.

Professor Emeritus, Sociology
B.A., Boston University; M.A., Ph.D., University of California, Los Angeles.

November 2003. RONALD H. RUBY, Cowell College (1965)
Professor Emeritus, Physics
B.A., Ph.D., University of California, Berkeley.

Professor Emeritus, History
B.A., Yale University; M.A., University of Chicago; Ph.D., University of California, Berkeley.

April 2004. HARRY BEEVERS, Merrill College (1969)
Professor Emeritus, Molecular, Cell, and Developmental Biology
B.Sc., Ph.D., Durham University; (Hon.) D.Sc., Purdue University; (Hon.) D.Sc., University of Newcastle on Tyne.
University Administration
University Administration

The governance of the university is entrusted, under the state constitution, to the Regents of the University of California. The Board of Regents is presently composed of 18 members who are appointed by the governor of California, subject to California State Senate confirmation; seven members who participate because of the offices they hold; and a student member appointed by the board.

The president of the university is the chief executive of the ten-campus system. He is appointed by the Regents and is directly responsible to them.

Each of the ten campuses of the university has a chancellor, its chief administrative officer, who is responsible for the organization and operation of the campus, including academic, student, and business affairs.

The Academic Senate, consisting of the faculty and certain administrative officers, determines the conditions for admission and degrees, subject to the approval of the Regents; authorizes and supervises courses and curricula; and advises the university administration on important matters such as appointments and promotions, budgets, student discipline, and administration of the library.

The Regents

Regents Ex Officio
Arnold Schwarzenegger
Governor of California
Cruz Bustamante
Lieutenant Governor
Fabian Núñez
Speaker of the Assembly
Jack O'Connell
Superintendent of Public Instruction
Mark Novak
President of the Alumni Associations of the University of California
Gary Novack
Vice President of the Alumni Associations of the University of California
Robert C. Dynes
President of the University

Appointed Regents
(Term expires on March 1 of year indicated)
Richard C. Blum (2014)
Ward Connerly (2005)
Judith L. Hopkinson (2009)
Odessa Johnson (2012)
Joanne Corday Kokberg (2010)
Sherry L. Lansing (2010)
David S. Lee (2006)
Monica C. Lozano (2013)

George M. Marcus (2012)
Velma Montoya (2005)
John J. Moores (2009)
Gerald L. Parsky (2008)
Frederick Ruiz (2016)
Peter Preuss (2008)
Haim Saban (2013)
Tom Sayles (2006)
Paul Wachtler (2016)

Student Regent
Jodi L. Anderson (2004–05)
UCLA

Officers of the Regents
Arnold Schwarzenegger
President of the Board
Gerald L. Parsky
Chair of the Board
Richard C. Blum
Vice Chair of the Board
James E. Holst
General Counsel and Vice President, Legal Affairs
Leigh Trivette
Secretary
David H. Russ
Treasurer

University Officers

President
Robert C. Dynes

Provost and Senior Vice President—Academic Affairs
M.R.C. Greenwood

Senior Vice President—Business and Finance
Joseph P. Mullinix

Senior Vice President—University Affairs
Bruce B. Darling

Vice President—Budget
Lawrence C. Hershman

Vice President—Laboratory Management
S. Robert Foley

Vice President—Health Affairs
Michael V. Drake, M.D.

Vice President—Agriculture and Natural Resources
W. R. Gomes

Vice President—Clinical Services Development
William H. Gurtner

Vice President—Financial Management
Anne H. Broome

Vice President—Educational Outreach
Winston C. Doby

Chancellors

UC Berkeley
Robert J. Birgeneau
UC Davis
Larry N. Vanderhoef
UC Irvine
Ralph J. Cicerone
UC Merced
Carol Tomlinson-Keasey
UC Riverside
France A. Córdova
UC San Diego
Marye Anne Fox
UC San Francisco
J. Michael Bishop, M.D.
UC Santa Barbara
Henry T. Yang
UC Santa Cruz
Martin M. Chemers (acting)

University Professors

The title of University Professor is the highest honor UC bestows on a professor in recognition of outstanding scholarship and teaching. The title is reserved for scholars of international distinction who are recognized and respected as teachers of exceptional ability. University Professors—appointed by the Regents—visit other campuses for seminars and meetings with faculty and students and for presentations to more general audiences.

Francisco J. Ayala
Department of Ecology and Evolutionary Biology
UC Irvine

J. Michael Bishop
Chancellor
UC San Francisco

E. Margaret Burbidge (Emerita)
Department of Physics
UC San Diego

Shu Chien
Department of Bioengineering
UC San Diego

Alexandre J. Chorin
Department of Mathematics
UC Berkeley

Marvin L. Cohen
Department of Physics
UC Berkeley

Michael Cole
Department of Communication
UC San Diego

Gerard Debreu (Emeritus)
Departments of Economics and Mathematics
UC Berkeley

Robert B. Edgerton
Departments of Psychiatry and Biobehavioral Sciences and Anthropology
UCLA

University Professors
Emory Elliott  
Department of English  
UC Riverside

Sandra M. Faber  
Department of Astronomy and Astrophysics  
UC Santa Cruz

Arturo Gómez-Pompa  
Department of Botany and Plant Sciences  
UC Riverside

M. Frederick Hawthorne  
Department of Chemistry and Biochemistry  
UCLA

Richard M. Karp  
Department of Electrical Engineering and Computer Sciences  
UC Berkeley

Yuan T. Lee (Emeritus)  
Department of Chemistry  
UC Berkeley

Frank H. Shu  
Department of Astronomy  
UC Berkeley

S. Jonathan Singet (Emeritus)  
Department of Biology  
UC San Diego

Neil J. Smelser (Emeritus)  
Department of Sociology  
UC Berkeley

Gabor A. Somorjai  
Department of Chemistry  
UC Berkeley

Charles H. Townes (Emeritus)  
Department of Physics  
UC Berkeley

Ming T. Tsang  
Department of Psychiatry, School of Medicine  
UC San Diego

John R. Whitteney (Emeritus)  
Department of Electrical Engineering and Computer Sciences  
UC Berkeley

Hayden White (Emeritus)  
Department of History of Consciousness  
UC Santa Cruz

Laurie McCann  
Assistant Chancellor—Operations  
William D. Hyder  
Counselor Provost and Executive Vice Chancellor  
Margaret I. Delaney (interim)*  
Assistant Provost  
Charlotte R. Moreno  
Vice Provost—Academic Affairs  
George S. Brown*  
Vice Provost—Information Technology  
Larry Merkley  
Vice Provost and Dean—Undergraduate Education  
William A. Ladusaw (interim)*  
Vice Provost and Dean—UCSC Extension/Summer Session  
Cathy A. Sandeen*  
Vice Chancellor—Academic Human Resources  
Barbara J. Brogan

Santa Cruz Administration

Chancellor  
Martin M. Chemers (acting)

Associate Chancellor  
Leslie A. Sunell

Director—Equal Employment Opportunity/Affirmative Action  
Patricia Hiramoto

Coordinator—Title IX and Sexual Harassment Officer  
Rita E. Walker

Director—Information Asset Management/Campus Records  
Chuck Piotrowski

Ombudsman

Meredith Michaels*  
Assistant Vice Chancellor—Budget and Resource Management  
Karen Eckert

Director—Academic Planning and Analysis  
Kathleen Detzman

Director—Capital Planning and Space Management  
Fran Owens

Director—Strategic Planning  
Linda Kittle

Assistant Director—Institutional Research  
Julian Fernald

Special Assistant  
Galen Jarvisen

Vice Chancellor—Business and Administrative Services  
Thomas M. Vani  
Associate Chancellor  
Christina L. Valentino

Associate Vice Chancellor—Physical Planning and Construction  
Frank Zwart  
Assistant Vice Chancellor—Financial Affairs  
Kirk Lew

Director—Physical Plant  
Ilse Kolbus

Director—Material Management/Purchasing and Director—Imaging/Printing/Mail/Temporary Support Services  
Lisa A. Rose

Director—Internal Audit and Advisory Services  
Geraldine C. Gail

Director—Staff Human Resources  
Willem M. Quinta

Director—Monterey Bay Education, Science, and Technology Center  
Lora Lee Martin

Associate Director—Silicon Valley Center  
Lisa Akeson

University Police Chief  
Michael A. Aluffi

University Fire Chief  
Charles Hernandez

Vice Chancellor—Student Affairs  
Francisco J. Hernandez*  
Associate Chancellor—Student Affairs  
Gail J. Heit

Associate Vice Chancellor—Colleges and University Housing Services  
Jean Marie Scott

Divisional Administrative Officer  
Elise Herrera-Mahoney

Executive Director—Admissions, and University Registrar  
Kevin M. Browne

Registrar  
Pamela Hunt-Carter

Executive Director—Physical Education, Recreation, Sports, and Wellness  
Daniel T. Wood

*Honorary trustee of the UC Santa Cruz Foundation
Executive Director—Student Academic Support Services
Larry Trujillo

Executive Director—Student Auxiliary and Service Enterprises
Robert F. McCampbell

Executive Director—Student Life
To be appointed

Executive Director—African American Resource and Cultural Center
Paula Powell

Executive Director—American Indian Resource Center
Dennis Tibbetts

Executive Director—Asian American/Pacific Islander Resource Center
Nancy I. Kim

Director—Athletics
Greg A. Harshaw

Director—Campus Orientation Programs
Alex Delgadillo

Director—Career Center
Barbara Bedford

Director—Child Care Services
Wilma Gold

Director—Counseling and Psychological Services
Max Camarillo

Director—Development for Student Affairs
Ronaldo Ramirez

Director—Disability Resource Center
Sharyn Martin

Director—Educational Opportunity Programs
Michelle Handy

Director—Educational Partnership Center
Carrol Moran

Director—Financial Aid
Esperanza L. Nee

Director—Humanities
To be appointed*

Director—Institute for Information Technology
Research in the Interest of Society
Patrick E. Mantey

Director—Institute for Quantitative Biomedical Research
David Haussler

Director—Institute of Geophysics and Planetary Physics
Thorne Lay

Director—Institute of Marine Sciences
Gary B. Griggs

Director—Jack Baskin School of Engineering
Sung-Mo (Steve) Kang*

Director—Lionel Cantú Gay, Lesbian, Bisexual, Transgender, and Intersex Resource Center
Deborah Abbott

Director—Child Care Services
Rosalee Cabrera

Director—College Administrative Officers
Deana Slater, Colleges Nine and Ten
James Carter, Cowell and Stevenson Colleges
Alex Reveles, Crown and Merrill Colleges
Michael Yamauchi-Gleason, Porter and Kresge Colleges
Susan Wëtre, Oakes and College Eight

Dean; Research Units; University Library
Dean—Arts
Edward F. Houghton*

Dean—Humanities
To be appointed*

Dean—Physical and Biological Sciences
David S. Kliger*

Dean—Social Sciences
Michael M. Hutchison (interim)*

Dean—Jack Baskin School of Engineering
Sung-Mo (Steve) Kang*

Director—Center for Information Technology
Research in the Interest of Society
Patrick E. Mantey

Director—Discipline Resource Center

Director—Educational Opportunity Programs
Michelle Handy

Director—Educational Partnership Center
Carrol Moran

Director—Financial Aid
Esperanza L. Nee

Director—Health Services
Wilma Gold

Director—Institute for Information Technology
Research in the Interest of Society
Patrick E. Mantey

Director—University Libraries
Joseph S. Miller

University Librarian
Robert L. White (acting)*

Academic Senate Chair
Alison Galloway*

Provosts

College Eight
Roswell Spafford

College Nine and Ten
Campbell Leaper

Cowell College
Stanley M. Williamson (through December 2004)

Kresge College
John M. Schechter

Merrill College
Paul N. Skenazy

Porter College
John M. Schechter

Oakes College
Pedro G. Castillo

Santa Cruz Institute for Particle Physics
Joseph S. Miller

University Libraries
Robert L. White (acting)*

Ex Officio
Martin M. Chemers, Acting Chancellor
San Jose

Director Trustees
Kenneth A. Feingold, President
Santa Monica

Anuradha Luther Maitra, Vice President
Saratoga

Timothy J. Morgan, Parliamentarian
Santa Cruz

Bruce D. Aitells
Kensington

Sara Bachman Allen
Saratoga

Jack Baskin
Santa Cruz

Narpat Bhandari
Los Gatos

Ramesh H. Bhojwani
Santa Cruz

Betsy W. Bliss
Carmel

Barbara W. Canfield
Santa Cruz

Donald E. Cooley
Watsonville

Harriet L. Deck
Santa Cruz

Mary E. Doyle
Mountain View

Yolanda A. Dybdahl
Santa Cruz

James W. Fuller
San Francisco

Allan J. Goodman
Culver City

Paul J. Hall
Kensington

John M. Halliday
Mendocino

Susan Walker Hammer
San Jose

Kamil Hasan
Saratoga

Paul Irwin
Pajaro Dunes

Stoddard P. Johnston
Pebble Beach

Narinder S. Kapany
Woodside

*Honorary trustee of the UC Santa Cruz Foundation
Frans Lanting  
Santa Cruz

Anne Neufeld Levin  
Santa Cruz

Kiran Malhotra  
Saratoga

Judith L. Martin  
Novato

Stephanie Lynn Mills  
Santa Cruz

Lawrence A. Moskowitz  
Santa Cruz

Adam Nathanson  
Los Angeles

Gary D. Novack  
San Rafael

Leon and Sylvia Panetta  
Carmel Valley

Leticia Quezada  
Cathedral City

Patricia S. Rebele  
Aptos

David B. Regan  
Santa Cruz

Patrick G. Riley  
San Francisco

Gordon M. Ringold  
Los Altos Hills

Richard T. Spieker  
Atherton

Gary Spire  
Pacific Palisades

Loren A. Steck  
Carmel

Lynn M. Stegner  
Santa Fe, New Mexico

Greg Stellenpohl  
Davenport

Kristen Lee Tibbitts  
Capitola

Antonio R. Velasco  
Santa Cruz

Virginia C. Wilson  
Napa

Mary Elizabeth Woolpert  
Watsonville

Samuel L. Wright Jr.  
Corralitos

---

**Emeriti Trustees**

Margaret S. Lyons Giberson  
Los Gatos

Arthur Graham  
Portola Valley

Harold A. Hyde  
Watsonville

Ernest T. Kreuschmer  
Santa Cruz

Burney J. Le Boeuf  
Santa Cruz

George A. Malloch  
Brookdale

Edward C. Thayer  
Berkeley

---

**Honorary Trustees (not previously listed)**

M.R.C. Greenwood  
Professor, Biology, UCSC; Provost and Senior Vice President, Academic Affairs, UCOP  
Oakland

Robert L. Sinsheimer  
Professor Emeritus, Molecular, Cell, and Developmental Biology, UCSC and UCSB; Chancellor Emeritus, UCSC  
Santa Barbara

Robert B. Stevens  
Former Chancellor  
Northleach, Gloucestershire  
England

---

**Emeritus Honorary Trustee**

Karl S. Pister  
Chancellor Emeritus, UCSC; Roy W. Carlson Professor of Engineering Emeritus, UCB  
Lafayette

---

**Officers**

Ronald P. Suduiko, Executive Secretary; Vice Chancellor, University Relations

Thomas M. Vani, Treasurer; Vice Chancellor, Business and Administrative Services

Linda S. Moore, Assistant Executive Secretary; Administrative Coordinator, University Relations

William L. Jump, Assistant Treasurer; Foundation Controller, University Relations
Appendixes

Appendix A: California Residency and Nonresident Tuition Fee 421
Appendix B: University Police 422
Appendix C: Drug-Free Schools and Communities Act 422
Appendix D: Smoking on Campus Policy 422
Appendix E: Policies and Regulations 423
Appendix F: Graduate Student–Faculty Adviser Relationship Guidelines 423
Appendix G: Student Judicial Affairs 423
Appendix H: Ombudsman’s Office 424
Appendix A: California Residency and Nonresident Tuition Fee

If you have not been living in California with intent to make your permanent home for more than one year immediately before the residence determination date for each term in which you propose to attend the university, you must pay a Nonresident Tuition Fee in addition to all other fees (see pages 19 and 51). The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter, and for schools on the semester system, 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 the Standing Orders of the Regents of the University of California. Under these rules, adult citizens and certain classes of aliens can establish residence for tuition purposes. There are particular rules that apply to the residence classification of minors (see below).

Who Is a Resident?

If you are an adult student (at least 18 years of age), you may establish residence in California if: (1) you are a U.S. citizen, (2) you are a permanent resident or other immigrant, or (3) you are a nonimmigrant who is not precluded from establishing a domicile in the U.S. This includes nonimmigrants who hold valid visas of the following types: A, E, G, H-1, H-4, I, K, L, O-1, O-3, R, or V. To establish residence you must be physically present in California for more than one year, and you must come here with the intent to make California your home as opposed to coming to this state to go to school. Physical presence within the state solely for educational purposes does not constitute the establishment of California residency, regardless of the length of stay. You must demonstrate your intention to make California your home by severing your residential ties with your former state of residence and establishing those ties with California. If these steps are delayed, the one-year durational period will be extended until you have demonstrated both presence and intent for one full year. Effective fall 1993, if your parents are not residents of California, you are required to be financially independent in order to be a resident for tuition purposes. Your residence cannot be derived from your spouse or your parent(s).

Requirements for Financial Independence

You are considered “financially independent” if one or more of the following applies: (1) you are at least 24 years of age by December 31 of the calendar year for which you are requesting resident classification; (2) you are a veteran of the U.S. Armed Forces; (3) you are a ward of the court or both parents deceased; (4) you have legal dependents other than a spouse; (5) you are married, or a graduate student or a 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 you 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 years and the current year. Note: Financial independence is not a factor in determining 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 or awarded the equivalent in university-administered funds (e.g., grants, stipends, fellowships) for the term for which resident classification is sought.

Establishing Intent for California Residency

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 indica in other states during any period for which you claim California 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), the residence of the parent with whom you live is considered to be your residence. 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 U.S. under the terms of a nonimmigrant visa which precludes you from establishing domicile in the U.S., you may establish your own residence when both 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/intent requirement.

Specific Rules Applying to Minors

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 your parent(s) departed; (b) you enrolled in a California public postsecondary institution within one year of your parent(s) departure; and (c) once enrolled, you maintain continuous attendance in that institution. Financial independence is not required in this case.

2 Self-support. You may be entitled to resident status if you are a U.S. citizen or eligible alien and a minor and can prove the following: (a) you lived in California for the entire year immediately preceding the residence determination date; (b) you have been self-supporting for that year; and (c) you intend to make California your permanent home.

2 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 residing in California during the one year immediately preceding the residence determination date.

Exemptions from Nonresident Tuition

You may be entitled to an exemption from nonresident tuition if one of the following applies to you:

(1) Member of the military; spouse or child. A student, on active duty as a member of the United States military stationed in California, and their spouses and dependent children.

(2) Child or spouse of a faculty member. To the extent that university funds are available, a student who is the unmarried, dependent child under the age of 21 or the spouse of a University of California faculty member who is a member of the Academic Senate.

(3) Child or spouse of a university employee. A student who is the unmarried, dependent child under the age of 21 or the spouse of a full-time employee of the University of California who is permanently assigned to work outside the state of California (i.e., Los Alamos National Laboratory).

(4) Child of a deceased public law enforcement or fire suppression employee. A student who is the child of a deceased public law enforcement or fire suppression employee, who was a California resident and was killed in the course of law enforcement or fire suppression duties.

(5) Dependent child of a California resident. A student who has not been an adult resident for more than one year and is the natural or adopted dependent child of a California resident who has been a resident for more than one year immediately prior to residence determination date. The student must also maintain full-time attendance in a California public postsecondary institution.

(6) Graduate of a California school operated by the Federal Bureau of Indian Affairs (B.I.A.). A student who is a graduate of a California school operated by the B.I.A. (i.e., Sherman Indian High School) and who enrolls at the University of California.

(7) Employee of California public school district. A student holding a valid credential authorizing...
service in California public schools and employed by a school district in a full-time certificate position may be exempt from nonresident tuition.

8. Student athlete in training at U.S. Olympic Training Center, Chula Vista. An amateur student athlete in training at the U.S. Olympic Training Center in Chula Vista may be exempt from nonresident tuition until he or she has resided in California the minimum time necessary to become a resident.

9. Graduate of California high school. A student who attended high school in California for three or more years (9th grade included) and graduated from a California high school (or attained the equivalent) may be exempt from nonresident tuition.

10. Congressional Medal of Honor recipients. An undergraduate student under age 27 who is the recipient of the Congressional Medal of Honor or a child of a recipient who at the time of his or her death was a California resident.

11. Surviving dependent of California resident killed in 9/11 terrorist attacks. Undergraduate student who is the surviving dependent of a California resident who was killed in the 9/11/01 terrorist attacks on the World Trade Center, the Pentagon Building, or the crash of United Airlines Flight 93.

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 home during non-instructional periods, your presence in the state 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 on 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. Continue to use a California permanent address on all records—educational, employment, military, etc.

2. Continue 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 that you establish your residence in the state, including income earned in another state or country.

3. Retain your California voter’s registration and vote by absentee ballots.

4. Maintain 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.

Petitioning for Change of Classification
You must petition in person at the Office of the Registrar for a change of classification from nonresident to resident status. All changes of status must be initiated prior to the first day of classes for the term for which you intend to be classified as a resident.

Time Limitation on Providing Documentation
If additional documentation is required for residence classification but is not readily accessible, you will have until the end of the applicable term to provide it.

Incorrect Classification
If you are incorrectly classified as a resident, your classification will be corrected and you will be required to pay the nonresident tuition you have not paid. If you concealed information or furnished false information and were classified incorrectly as a result, you are also subject to university discipline. Resident students who become nonresidents must immediately notify the campus residence deputy.

Inquiries and Appeals
Inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the residence deputy, Office of the Registrar, 190 Hahn Student Services Building, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064-1077, (831) 459-2754, or to the Principal Administrative Analyst—Residence Matters, Office of the General Counsel, 1111 Franklin Street, 8th Floor, Oakland, CA 94607-5200. No other university personnel are authorized to supply information relative to residence requirements for tuition purposes.

You are cautioned that this summary is not a complete explanation of the law regarding residence. Note that changes may be made in the residence requirements between the publication of this statement and the relevant residence determination date. Any student, following a final decision on residence classification by the residence deputy, may appeal in writing to the Principal Legal Analyst within 45 days of notification of the residence deputy’s final decision.

Privacy Notice
All of the 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 or not you are a legal resident for tuition purposes. You have the right to inspect university records containing the residence information requested on this form. The records are maintained by the Office of the Registrar, 190 Hahn Student Services Building, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064-1077, (831) 459-2754.

Appendix B: University Police
The University Police have the same authority and responsibilities, by law, as municipal police departments. In emergencies, call 9-1-1, 24 hours a day, from campus or private phones. If you need information, or if you need to report a theft, assault, or other crime, call (831) 459-2231, also 24 hours a day. Officers patrol the campus on foot, bicycle, motorcycle, or by car. They answer calls related to crimes, collisions, injuries, and complaints. The lost-and-found service is located in the Police Office. Office hours are Monday through Friday, 8 A.M. to 5 P.M. The Police Office is located in the “H” Barn on the rise near the main entrance to campus.

The Parking Enforcement Office (for paying parking citations and requesting special parking consideration) is in the same location. Citation payments may be made in person Monday through Friday, 8 A.M. to 5 P.M.

Crime Awareness and Campus Security Act
In compliance with the federal Crime Awareness and Campus Security Act, UCSC publishes information on campus security and crime statistics. The information is on the web: www2.ucsc.edu/police.

Appendix C: Drug-Free Schools and Communities Act
In compliance with the federal Drug-Free Schools and Communities Act, UCSC annually notifies students, faculty, and staff of policies, procedures, and potential consequences related to unlawful possession, use, or distribution of drugs and alcohol on campus. This notice is distributed to students through the colleges and the Graduate Studies Division, and to faculty and staff through campus mail. The university conducts a biannual review of programs related to drugs and alcohol to determine effectiveness, implement changes, and ensure that disciplinary sanctions are consistently enforced. This review is conducted by the Office of the Vice Chancellor for Student Affairs, (831) 459-4446.

Appendix D: Smoking on Campus Policy
To protect the rights of the nonsmoking campus community to breathe smoke-free air, UCSC has adopted a policy that bans smoking in areas occupied by the nonsmoking population, includes all nonresidential university buildings and vehicles, and applies to all individuals on the UCSC campus. This policy prohibits smoking in all indoor areas of all nonresidential public buildings on campus and in common areas such as lobbies, lounges, waiting areas, and rest rooms of residential buildings. Smoking is also prohibited in the outside areas beside all building doorways, windows, and ventilation air intakes: this includes patios underneath building windows or other areas where smoke could enter openings to buildings.
Appendix E: Policies and Regulations

The Student Policies and Regulations Handbook, the Code of Student Conduct, and related appendixes may be accessed at www2.ucsc.edu/judicial. The Student Policies and Regulations Handbook is also available in alternate formats such as enlarged print, braille, audiocassette, or electronic disc from Student Judicial Affairs. Topics include:

- Policy on Nondiscrimination
- Policy on Speech and Advocacy
- Policy on Use of University Properties
- Policy on Campus Emergencies
- Registered Campus Organizations
- University Obligations and Student Rights
- Policy on Student Governments
- Policy on Campus-Based Student Fees
- Policy on Student Conduct and Discipline
- Policy on Student Grievance Procedures
- Policy on Student Participation in Governance
- Policies Applying to the Disclosure of Information from Student Records
- Guidelines Applying to Nondiscrimination on the Basis of Disability
- University of California Authorized Student Governments
- University of California: Use of the University’s Name—State of California Education Code, Section 92000
- Nondiscrimination Policy Statement for University of California Publications Regarding Student-Related Matters
- UCSC Alcohol and Drug Policy
- University of California Policy on Hazing
- UCSC Sex Offense Policy
- UCSC Academic Dishonesty Policy
- UCSC Policy on Sexual Orientation Harassment/Discrimination
- UCSC Guidelines for Speakers and Public Events for Students and Campus Organizations
- UCSC Smoking Policy: Policy for a Smoke-Free Environment
- UCSC Public Nudity and Sexually Offensive Conduct Policy
- UCSC Hate/Bias Incident Policy
- UCSC Procedures for Ensuring Adequate Interim Protection from Retaliation or Intimidation for Complainant(s), Witness(es), and other Individuals
- UCSC Policy on Academic Integrity for Graduate Students

For further information, stop by 245 Hahn Student Services Building or call (831) 459-4446.

Appendix F: Graduate Student–Faculty Adviser Relationship Guidelines

The University of California, Santa Cruz, expects professional, fair, and frequent communication between graduate students and their advisers. Open communication and mutual respect should be the foundation of the relationship between a graduate student and faculty adviser. The graduate adviser and the graduate student should discuss their student-adviser relationship early, and clearly communicate mutual and agreeable expectations from the beginning. Regular interactions, especially face-to-face meetings, are essential in ensuring that expectations and goals are met.

In an optimal learning environment, the faculty adviser should provide timely and constructive feedback on performance and expectations; timely and sufficient warning of inadequate performance; appropriate recognition of a student’s intellectual contributions; and academic and professional advice on all stages of the graduate career. The graduate student should be an active participant in seeking advice and getting feedback on progress, keeping the faculty adviser informed of plans, progress, and obstacles, and contributing during regular progress assessments. The faculty adviser and the student each have the duty and responsibility to initiate meetings as necessary to foster and protect the success of the relationship.

Professionalism and fairness should guide the graduate student–faculty adviser relationship. Graduate students and faculty should avoid relationships that conflict with their particular roles and responsibilities. Faculty advisers and graduate students are bound by policies that prohibit discrimination and harassment. (See page 18, Appendix E, and inside back cover.) Graduate students may be entitled to accommodations under the Americans with Disabilities Act. (See page 18, Appendix E, and inside back cover.) When concerns and conflicts arise, they should be raised and addressed to professionally, honestly, and promptly. Retaliation and discrimination against students for raising concerns are prohibited.

If something happens that upsets the faculty adviser–graduate student relationship and cannot be resolved either by direct or indirect discussion, a graduate student can seek assistance from a trusted faculty member, the dean of graduate studies, the graduate director, the department chair, the ombudsman, and/or counseling and psychological services. Graduate students may request confidentiality. Many departments have developed processes to address a range of potential concerns. For information about grievance and appeal procedures, see page 18 and Appendix E. For a description of additional informal and formal grievance and appeal processes available to UCSC graduate students, please refer to the Graduate Student Handbook at www.graddiv.ucsc.edu.

Appendix G: Student Judicial Affairs

Student Judicial Affairs is responsible for the adjudication of all nonacademic student and student organization misconduct for UCSC. In this capacity, Student Judicial Affairs administers the Policy on Student Conduct and Discipline in accordance with Section 100.00 of the Student Policies and Regulations Handbook. Allegations of misconduct may be brought by students, faculty, staff, police, visitors to the campus, and members of our local community. Allegations should be made in writing and delivered to Student Judicial Affairs.

Upon receipt of an allegation, Student Judicial Affairs will review the merits of the allegation and then conduct an investigation to determine if a violation has occurred. If no violation can be proven, the matter will be dropped. If a violation is proven, then an appropriate sanction will be recommended to the student or student organization for their review and acceptance. If the recommendation is unacceptable, the student or student organization may request a formal hearing or file a written appeal. If you have a question about a possible violation, university policy, or your rights in the discipline process, please feel free to contact the office for a phone consultation or to schedule an appointment.

Student Judicial Affairs serves as the Americans with Disabilities Act (ADA) compliance resolution office for grievances of alleged discrimination based on disability or handicap. In addition, Student Judicial Affairs is the resource office for grievances of alleged discrimination based on race, color, national origin, or sexual orientation, and for incidents of hate/bias.

The Office of Student Judicial Affairs is located in 245 Hahn Student Services Building and can be reached by phone at (831) 459-4446, by fax at 459-3188, or via e-mail at sjd@ucsc.edu. Web: www2.ucsc.edu/judicial.
Appendix H: Ombudsman’s Office

The Ombudsman’s Office is an impartial and confidential resource available to all members of the UCSC community. The office assists students, staff, and faculty in achieving informal resolution of complaints and conflicts that stem from UCSC policies, procedures, practices, and intracampus relationships. The office seeks fair and equitable solutions to problems, using the principles of informality, impartiality, independence, and confidentiality.

The Ombudsman’s Office operates independently of administrative authorities and protects the privacy of all contacts and communications to the office. When appropriate, Ombudsman staff encourage direct interaction between involved parties and may provide mediation services upon request. Ombudsman staff are impartial when listening to concerns, providing options, and resolving complaints.

Ombudsman staff conduct informal, impartial investigations and recommend changes to policies and procedures in a consultative manner. Services include providing information on campus resources, policies, and procedures, making appropriate referrals, and facilitating difficult conversations. The office is not involved in formal grievance or disciplinary processes, and cannot set aside any university policy or rule.

The Ombudsman can be reached at (831) 459-2073. Call for further information or for an appointment. All inquiries are confidential. The Ombudsman’s Office is located at 489 McHenry Library. Web: www2.ucsc.edu/ombudsman.
<table>
<thead>
<tr>
<th>Index</th>
<th>427</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus Map</td>
<td>432</td>
</tr>
</tbody>
</table>
Index

A

Academic advisers/preceptors, 37
Academic Career Development Program, 47
Academic Excellence Program (ACE), 39
Academic integrity, 36
Academic probation, 36
Academic Standing, 36
Accreditation, 7
Adaptive Optics, Center for, 72
Admission, undergraduate, 13–17
Administration, 413–418
Address, campus, 2, inside back cover
Additional courses of interest, 105
Adaptive Optics, Center for, 72
Accreditation, 7
Academic Senate, 18, 415
Academic Resources Center, 39
Academic probation, 36
Academic integrity, 36
Academic advisers/preceptors, 37
Arboretum, 57
Arabic, 119
Apprentice teaching, 105
Applied linguistics, 288
American studies, 105
American literature, 292–294, 295–296, 301–302
American history and institutions requirement, 25
American Indian Resource Center, 97
American literature, 292–294, 295–296, 301–302
American studies, 105
Analysis (mathematics), 304
Alumnae Association, 102
American Chemical Society certification, 148
American history and institutions requirement, 25
American Indian Resource Center, 97
American literature, 292–294, 295–296, 301–302
American studies, 105
Analysis (mathematics), 304
Año Nuevo Island, 66, 68
Anthropology, 109
Applied economics, 178
Applied linguistics, 288
Applied mathematics, 304
Applied Mathematics and Statistics, 193
Apprentice teaching, 105
Arabic, 119
Arboretum, 57
Art, 119
Art galleries,
Porter College, 83
Smith, Eloise Pickard (Cowell College), 76
Art history. See History of art and visual culture
Arts,
Division, 83, 101, 124
general education requirement, 26, 30–31
Arts & Lectures, 101
Arts Instructional Computing Laboratories, 57, 83
Asian American/Pacific Islander Resource Center, 97–98
Asian American studies, 108
Asian studies
East Asian studies, 173
South and Southeast Asian studies, 367
Astronomy and astrophysics, 125
Center for Adaptive Optics, 72
Institute of Geophysics and Planetary Physics, 65
University of California Observatories/Lick Observatory, 72
See also Physics, 333–334
Athletics, 98–99, 330
Auditing of classes, 105
Bachelor’s degree, second, 17
Bachelor’s degrees and requirements, 8–9, 25–35
Banana Slug Bulletin, 102
Baskin School of Engineering, 176–177
Baskin School of Engineering, Jack, 190
Baskin Visual Arts Center, 57–59
Bay Tree Bookstore, 2, 102
Bicycles, 95, 96
Bilingual/cross-cultural emphasis (education), 43, 185–186
Biochemistry and molecular biology, 128
Biobioinformatics, 59, 65, 195
Biological research, 68
Biomedical Research, Institute for Quantitative, 65
Biomolecular engineering, 195
Biomolecular Science and Engineering, Center for, 60, 65
Bookstore, 2, 102
Botany (biology–plant sciences), 136–137
Budget, student
graduate, 51
undergraduate, 19
Business management economics, 176–177
Bus service, 96
Calendar, academic, 10, 35
California Digital Library, 55
California residents
admission, 15–17
criteria for residency, 421–422
Camper park, 48, 95
Campus
broadth requirements, 26–27, 30–31
general education requirements, 26–27
information, 6–7
security, 422
Campus Natural Reserve, 67
Cardiff House (Women’s Center), 98
Career Center, 38
Career preparation, 37–40, 47–48
Catalog Rights, 34
Center for Adaptive Optics, 72
Center for Agroecology & Sustainable Food Systems, 59
Center for Biomolecular Science and Engineering, 60, 65
Center for Cultural Studies, 60
Center for Dynamics and Evolution of the Land-Sea Interface, 65
Center for Global, International, and Regional Studies, 60
Center for Informal Learning and Schools, 60–61
Center for Information Technology Research in the Interest of Society, 61
Center for International Economics, Santa Cruz, 70
Center for Justice, Tolerance, and Community, 61
Center for Molecular Biology of RNA, 61–62
Center for Research on Education, Diversity & Excellence, 62
Center for Origin, Dynamics, and Evolution of Planets, 65
Center for Remote Sensing, 65
Center for Teaching Excellence, 55
Center for the Study of Imaging and Dynamics of the Earth, 65
Center for Tropical Research in Ecology, Agriculture, and Development, 68
Certificate graduate programs, 8–9, 47
Chadwick Garden, Alan (Center for Agroecology), 59
Chancellor’s List and Dean’s List, 36
Chemistry and biochemistry, 145
Chicano/Latino Research Center, 62
Chinese, 152
Chinese, 152
Chineseg, 101
city on a Hill Press, 101
Classical literature. See Greek and Latin literatures
Classical studies, 153
Class size, 105
Cognitive psychology, 349, 352–353
College Eight, 75, 87–88
courses, 154
faculty and staff, 88
graduation requirements, 33
College Nine, 75, 89–91
courses, 154
faculty and staff, 91
graduation requirements, 33
College Ten, 6, 75, 91–93
courses, 155
faculty and staff, 93
graduation requirements, 33
Colleges, 6, 75–93
core courses, 6, 25, 33, 75
graduation requirements, 33
residences, 6, 94, 37 also individual colleges
Communication and rhetoric, 156
Communications and Technology Services. See Information Technology Services
Community and Agroecology, Program In, 95
Community Rentals Office, 48, 95
Natural Reserve, Campus, 67
Natural Reserve System, 67–68
Natural sciences
  general education requirement, 26, 30–31
  See also Physical and biological sciences
Navigators, The (campus handbook), 20, 36, 37
Neuroscience and behavior, 136
New Hampshire Exchange Program, 41
New Mexico Exchange Program, 41
Newspapers, student, 101
New Teacher Center, 68
Nondiscrimination policies, 18, 423, inside back cover
Nonresident Tuition Fee, 19, 51, 421–422
Notations and letter grades, 6, 25, 33, 35–47
Nuclear Magnetic Resonance/Mass Spectroscopy Facilities, 69

O
Oakes College, 75, 86–87
courses, 319
  faculty and staff, 87
  graduation requirement, 33
  Observatories, University of California/Lick Observatory, 72
  Ocean sciences, 320
  Ombudsman's Office, 424
Orchestra, 101, 313
  Organizations, student, 48, 99–101
  Orientation, Summer, 37
  Origin, Dynamics, and Evolution of Planets, 68
  Origin, The (campus handbook), 36

P
Pacific Islander Resource Center, Asian American, 97–98
Painting (art), 119
  Paleomagnetism Laboratory, 69, 165
Parking, 96
Part-Time Program, 40
“Pass/No Pass” course notation, 35
Peace and security studies (politics), 339
Peace Corps, 81
Performing Arts Center, See Theater Arts Center
Phi Beta Kappa, 36–37
Philosophy, 324
Photography (art), 119
Physical and Biological Sciences, Division of, 329
  Research programs and facilities, 68–70
  Physical education, recreation, sports, and wellness, 98–99
courses, 330
  scuba-diving and boating safety, 66–67
Physical Sciences Building, 6
Physics, 352
Santa Cruz Institute for Particle Physics, 70–71
  Placement, See Career preparation
Plagiarism (academic integrity), 36, 47
Plant Growth Facility, 69
Plant sciences (biology), 136
Police, University, 422
Political economy (economics), 175
Politics, 338
Porter College, 75, 83–84
courses, 346
  faculty and staff, 83–84
  graduation requirement, 33
Portuguese, 347

Pre- and early modern studies (literature), 292, 293, 299–300, 302
Predatory Bird Research Group, Santa Cruz, 66
Preworm studies and counseling, 38, 284
Premedical studies and counseling, 38, 39, 42–43, 134–135
Prerequisite policy, 32, 105
Printmaking (art), 119
Privacy of Records, 37
Process Geomorphology Laboratory, 70
Program In Community and Agroecology, 95
Psychobiology
Psychological services, 97
  Psychology, 348
  field-study program, 43, 350–351
  Public policy (economics), 175
  Pure mathematics, 304

Q
Quantitative education general requirement, 26, 31
Quantitative methods (economics), 175
Quarter system, 25

R
Radio station, 101
Rape Prevention Education Program, 97
Ray Film and Study Collection, Satyajit, 70
  Recordings collection, 55
  Recreation, 67, 98–99
Redwood Review, 101
Re-Entry Students, Services for Transfer and, 39–40
  Refunds, fee, 20
  Regent, Student, 38, 415
  Regents, University of California, 415
  Regional History Project, 55
  Registration fees
    graduate, 51
    undergraduate, 19
  Religious studies, 357
  Religious thought (philosophy), 325
  Repeating courses, 36
  Research facilities and resources, 6–7, 55–72
  Reserve, Campus Natural, 67
  Reserve System, Natural, 67–68
  Residence, legal, 421–422
  Residence requirement, 25, 26
  Residences, college, 6, 94
  See also individual colleges
  Retention, student, 13
  Review, UCSC, 102
  Rock Preparation Facility, 70
  Room and board
    graduate, 48, 51, 95
    undergraduate, 19, 20, 94–95
  ROTC and military affairs, 40
  Rule Book, See Student Policies and Regulations Handbook
Russian, 358
  Russian literature, 300
  Russian studies, 358
  See Student Union
  Student-directed seminars (apprentice teaching), 105
  Student Organization Advising and Resources (SOAR), See Student Activities

S
Sacramento, UC Center in, 41
Santa Cruz campus, 6–7
Santa Cruz Center for International Economics, 70
Santa Cruz community, 7, 94
Santa Cruz Institute for Particle Physics, 70–71
Santa Cruz Preceptor Research Group, 66
Schedule of Classes, 2, 26, 33, 105
Scholarships, 21–22
School of Engineering, Jack Baskin, 190
Science & Engineering Library, 55
Science Communication Program, 358
  graduate certificate program, 358
Science facilities, 6–7, 55–72
  See also individual programs
Science illustration, 119, 358
Scientific Discovery through Advanced Computer and the Supernova Science Center, 68
Sculpture (art), 119
Seismological Laboratory, W. M. Keck, 69, 165
Senior citizens (Lifelong Learners), 40
Senior for Transfer and Re-Entry Students, 39–40
  Sequential courses, 105
Sexual assault, 18, 97
Sexual harassment, 18, 97
Seymour Marine Discovery Center, 66
Shakespeare Santa Cruz, 64, 101, 371
  Internship Program, 44
Shakespeare: Text, Interpretation, Performance, 39–40
  Slide collection, 55
Smith Scholaristic Society, Page and Eloise, 40, 102
Smoking on Campus Policy, 422–423
Social psychology (psychology and sociology), 350, 353–354, 360
Social sciences
  Division, 359
  general education requirement, 26, 30
  Media Laboratory, 71
    1 Building, 90, 93
    2 Building, 90, 93
  Sociology, 359
South and Southeast Asian studies, 367
Spanish, 367
  Spanish for Spanish Speakers, 367
Spanish literature, 292–294, 300, 302–303
Special Collections (library), 55
Sports, 67, 98–99, 330
Stable Isotope Laboratory, 69
Statistics, 193, 304
STEPS Institute for Innovation in Environmental Research, 71
Stevenson College, 75, 77–79
courses, 369
  faculty and staff, 78–79
  graduation requirement, 33
  Student Activities, 99
Strongly Correlated Electron Physics Laboratory, 70
Student Center. See Student Union
Student organization advising and resources (SOAR), See Student Activities
Student organizations, 99–101  
*Student Policies and Regulations Handbook*, 18, 36, 47, 423  
Student Regent, 38, 415  
Student-run cooperatives, 85, 95–96, 97  
Student teaching (education), 43, 184  
Student Union, 99  
Student Union Assembly, 100  
Student Volunteer Connection, 99–100  
Subject A: English composition requirement, 25–26, 380  
Subject requirements for admission (a–g), 14–16  
Substance abuse education program, 97  
Summer Language Intensive Program, 43–44  
Summer Orientation, 37  
Summer Session, 16, 43  
Swimming pool, 99  
T  
Teacher education, 43, 62, 68, 184  
Teaching assistantships, 52  
Teaching credential programs, 43, 184  
Teaching Excellence, Center for, 55  
Telephone numbers, campus, inside back cover  
Test of English as a Foreign Language (TOEFL), 17, 50  
Theater arts, 370  
    graduate certificate program, 371  
    Shakespeare Santa Cruz, 44, 64, 101, 371  
    Theater Arts Center, 101, 371  
    Theaters, 101, 371  
    Theoretical linguistics (graduate program), 288  
    Thesis, senior, 6, 25, 33, 36  
Third World (ethnic studies) general education requirement, 26–27, 31  
Third World issues/economic development (economics), 175  
Three-dimensional intermedia (art), 119  
Time-resolved Laser Spectroscopy, 70  
Topical general education requirement, 26, 30  
Tours, campus, 13  
Transcripts, 37  
Transfer Center, 39–40, 85  
Transfer credit, 16–17, 25, 27, 32, 33, 50  
Transfer students  
    admission as, 16–17  
    college requirements for, 33. *See also* individual colleges  
    general education requirements and, 25–27, 32–33  
    Interssegmental General Education Transfer  
    Curriculum (IGETC), 32  
    major requirements for, 32  
Transportation, 96  
Tuition, Sr Fees  
TWANAS, 101  
Two-dimensional intermedia (art), 119  

**U**  
UC Center in Sacramento, 41  
UCDC Program, 26, 41  
UC Santa Cruz Foundation, 417–418  
University Affiliated Research Center, 71–72  
University of California, 6  
    administration, 415  
    center in Sacramento, 41  
    chancellors, 415  
    Extension, 17, 37, 43, 44, 59  
MBEST Center, 67  
Observatories/Lick Observatory, 72  
Professors, 415–416  
program in Washington, D.C., 26, 41  
Regents, 415  
requirements for the bachelor's degree, 25–26  
Student Association, 100–101  
University Police, 422  
U.S. ethnic minorities/non–Western society  
    general education requirement, 26–27, 31  

**V**  
Veteran Services, 22  
Video (film and digital media), 238  
Village, The, 94, 95  

**W**  
Washington, D.C., UCSC Program, 26, 41  
Wellness (fitness) Center, 99  
Western civilization, 376  
Withdrawal (fee refunds), 20  
Women's Center, 98  
Women's studies, 64, 376  
Work-study program, 22, 38  
World literature and cultural studies (literature), 292, 293, 300–301, 303  
Writing  
    communication and rhetoric, 156  
    creative writing (literature), 292, 294–295  
    EOP tutors, 39, 86  
    general education requirement, 26, 31, 380  
    Oakes Learning Center, 86  
    Program, 380  
    science communication, 358  
    Subject A, 25–26, 380  

**Y**  
Younger Lagoon, 68  
Youth programs and child care, 102
Campus Directory

Key phone numbers; campus mailing and web addresses

Admissions, Undergraduate
Applications and Processing ......................................................... (831) 459-2131
Counseling and Campus Visits ...................................................... 459-4008
E-mail .................................................................................. admissions@ucsc.edu

Campus Provost and Executive Vice Chancellor's Office ................. 459-3885
Chancellor's Office ................................................................. 459-2058

Colleges (in order of founding) ...................................................
Cowell College .......................................................... 459-2253
Stevenson College .......................................................... 459-4930
Crown College ............................................................. 459-2665
Merrill College ............................................................... 459-2144
Porter College ................................................................. 459-2273
Kresge College .............................................................. 459-2071
Oakes College ................................................................. 459-2558
College Eight ................................................................. 459-2361
College Nine ................................................................. 459-5034
College Ten ................................................................. 459-5034

Disability Resource Center
Referral number for alternate formats of this catalog .................. 459-2089
TTY (teletypewriter) ............................................................ 459-4446

Educational Opportunity Programs (EOP)
Financial Aid ................................................................. 459-2963

Graduate Studies ................................................................
Community Rentals Office .................................................... 459-4435
Family Student Housing ...................................................... 459-2495
Single Student Housing on Campus ...................................... 459-2462

Office of International Education ........................................
Office of the Registrar ........................................................
Public Information Office .....................................................

Services for Transfer and Re-Entry Students (STARS) ............... 459-2552

Sexual Harassment Officer/Title IX ...................................... 459-2462
Student Affairs .............................................................. 459-4446
For numbers not listed above, call ........................................ 459-0111

Mailing Address
University of California, Santa Cruz
1156 High Street
Santa Cruz, CA 95064-1077

World Wide Web
www.ucsc.edu

University of California, Santa Cruz
General Catalog 2004-06

Cover Design: Jim MacKenzie

Editing: Henrietta Brown, Jeanne Lance, Eric Rice, Diane Sturgeon

Photography, Interior: Ansel Adams, Dan Coyro, Nemai Ghosh, r.r. Jones, Don Kenney, Jeremy Lezin, Jim MacKenzie, Mickey Pfleger, Phil Schermeister, David Sievert/AIRPHOTO, UCSC Photo Services, Tom Van Dyke

Production: Jim MacKenzie, Janice Tetlow

Proofreading: Margie Claxton, Sue Tarjan, Elaine Tringali, Jennifer Wright

Printing: Alonzo Printing Company

Produced by UCSC Publications, and Publications and Scheduling, Office of the Registrar

8/04(04-044/15M)

Nondiscrimination Statement

The University of California, in accordance with applicable federal and state law and university policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related or genetic characteristics), ancestry, marital status, citizenship, sexual orientation, or status as a covered veteran (Vietnam-era veteran, special disabled veteran, recently separated veteran, or any other veteran who served during a war or in a campaign or expedition for which a campaign badge has been authorized). The university also prohibits sexual harassment. This nondiscrimination policy covers admissions, access, and treatment in university programs and activities.

Inquiries regarding the university’s student-related nondiscrimination policies may be directed to Student Judicial Affairs, (831) 459-4446.

Inquiries regarding UCSC’s Sex Offense Policy and Procedures for Reports of Sexual Assault(s) and Sexual Harassment and/or violations of Title IX may be directed to Title IX Coordinator/Sexual Harassment Officer, (831) 459-2462, or e-mail res@ucsc.edu; web www2.ucsc.edu/title9-sh.

Inquiries regarding the university’s affirmative action, equal employment opportunity, and nondiscrimination policies for staff employment may be directed to the Equal Employment Opportunity/Affirmative Action Office, (831) 459-2349, or e-mail hirrmoto@ucsc.edu. For academic employment, contact the Assistant Vice Chancellor for Academic Human Resources, (831) 459-4300, or e-mail hirrmoto@ucsc.edu.

Inquiries regarding Section 504 or the Americans with Disabilities Act may be addressed to the Disability Resource Center, (831) 459-2089 (voice); (831) 459-4806 (TTY); e-mail drc@ucsc.edu; web oasas.ucsc.edu/drc.

ABOUT THE PRINTING: This catalog was printed by the Hayward, California-based Alonzo Printing Company, a pioneer in environmentally friendly printing. The paper used contains a minimum of 30 percent postconsumer waste fiber. The printing inks used are soy-based, rather than petroleum-based. Plating is done via a direct-imaging prepress system, eliminating silver-based film as a waste product.