The W. M. Keck Observatory, which houses the world’s largest optical telescope, is managed by the University of California Observatories/Lick Observatory (UCO/Lick), which is headquartered on the UC Santa Cruz campus.
About the Catalog

This catalog contains the basic information about UC Santa Cruz. A complete list of academic programs and concentrations, both graduate and undergraduate, 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 103–366. 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 367–396.

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 2003–04 academic year.

Updates to catalog information are available in the quarterly Schedule of Classes, which is on the World Wide Web at reg.ucsc.edu/soc/. (Additional web sites are referenced throughout this catalog. However, they are maintained by individual units and may not reflect approved general information, curricula, or course information.) In addition, several publications are available that include detailed information about specific subjects such as graduate programs, housing, and financial aid. Each college issues a handbook.

It is the responsibility of the individual student to become familiar with the announcements and regulations of the university that are printed in this catalog and other campus publications. The catalog is the document of record for undergraduate major requirements and is updated annually. It is also available on the web at reg.ucsc.edu/catalog.

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 4 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

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From the Chancellor

Welcome to UC Santa Cruz, noted for its outstanding scholarship and commitment to excellence in undergraduate and graduate education. By choosing our campus, you join a distinguished community of faculty, students, and alumni. You are among some of the most capable and talented scholars in California and the United States, scholars who will become leaders in the new millennium.

Through your experiences and learning at UCSC, your life will change, and you will change the lives of others. To inform your academic experience and planning, this catalog presents information about educational programs and policies, faculty, and the campus community.

Exceptional faculty serve as knowledgeable guides and resources on your academic journey. Many are members of prestigious professional organizations such as the National Academy of Sciences and the American Academy of Arts and Sciences. Not only are faculty esteemed scholars and researchers; they are dedicated teachers, engaged in all aspects of teaching and learning. They are in the classrooms, research laboratories, performance halls, and at field sites. You will benefit from this rich panorama of educational venues and may have the opportunity to participate in cutting-edge research.

Remarkable for the sheer splendor of its physical setting, UC Santa Cruz overlooks Monterey Bay and encompasses meadows, redwood forest, and a marine research laboratory. This campus provides an inspirational and environmentally unique setting in which to pursue a world-class education. Sustaining and enhancing our environment is a key challenge for the future. The knowledge that you gain in your studies, and application of that knowledge, may contribute to the stewardship of our campus environment that will benefit future generations of students.

Not only the natural environment, but our campus social community also commands our stewardship. Our college-centered grouping fosters interdependence, along with the independence of residency away from home. Social consciousness and civility are central to fostering cooperation and harmony in interrelationships. As the campus grows in size and diversity, we are cognizant of the need for affirmation and appreciation of diversity.

According to the latest U.S. census, there is no longer a majority ethnic group in California; in 50 years there will be no majority ethnic group in the United States. This demographic phenomenon has implications for individuals and society. There is a wealth of potential in diversity, in different perspectives, new ideas, and innovation. Living and studying at UC Santa Cruz is preparation for the future— as well as the present.

Again, you are the catalyst for the integration of knowledge. The caliber of your intellectual mettle, the refinement of your critical thinking and love of learning, are forged through intellectual rigor. I am heartened by the potential for scholarship, innovation, and contribution that you bring to our university.

A measure of the quality of UC Santa Cruz’s academic programs is the accomplishments of its graduates. Although the university was inaugurated only 38 years ago, alumni have achieved distinction in every field, profession, scholarly discipline, and artistic expression.

Congratulations on your choice of UC Santa Cruz as the setting for your studies in the new millennium. I look forward to congratulating you again on the occasion of your commencement, a culminating event of your years here at UC Santa Cruz, and a distinct milestone in your life’s adventure.

M.R.C. Greenwood
Chancellor

Facing page: The Chancellor’s Office is located in McHenry Library, which houses the campus’s collections in the humanities, arts, and social sciences. The photograph was taken in 1965—UCSC’s first year—by the late Ansel Adams.
Welcome to 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 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 30.5 million volumes, is among the best in the country.

The University of California faculty, more than 7,600 in number, is distinctive in its 23 Nobel Laureates and 322 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 485.

There are over 141,000 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 11 members of the National Academy of Sciences, 20 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, 101 Fulbright scholarships have been awarded to UC Santa Cruz students and alumni. Three UC Santa Cruz alumnae have been awarded Pulitzer Prizes.

The planned enrollment of the campus for 2003–04 is about 15,000 students, of whom some 1,400 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. The Dining Commons for Colleges Nine and Ten and the new University Center for faculty, staff, alumni, and friends of the campus opened in the 2002–03 year. The Student Union opened in the Quarry Plaza in 2002 as did the Interdisciplinary Sciences Building on Science Hill.

UCSC ranked 15th among more than 60 graduate or professional school. In a 1999 survey, UCSC ranked 15th among more than 60 elite universities in the ratio of bachelor’s degree recipients who went on to receive doctorates.

Undergraduate education.

The campus offers more than 50 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 6–9, and detailed descriptions begin on page 103.

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.

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 page 42).

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 43–45).

Furthermore, individual research is encouraged, and hundreds of research papers co-authored 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.

Graduate education.

The UCSC campus offers 27 graduate programs, including recently established programs in bioinformatics, education, electrical engineering, and environmental toxicology. 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 49.

**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 57).

**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 42).

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 95501, (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.

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<td>B.A.</td>
<td>B.S.</td>
<td>M.A.</td>
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<tr>
<td>Legal studies (pp. 270–273)</td>
<td>✫</td>
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<tr>
<td>Linguistics&lt;sup&gt;4&lt;/sup&gt; (pp. 274–277) <em>(see also Language studies)</em></td>
<td>✫</td>
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<tr>
<td>Applied linguistics</td>
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<td>Computational linguistics</td>
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<td>Psycholinguistics</td>
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<tr>
<td>Theoretical linguistics</td>
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<tr>
<td>Literature&lt;sup&gt;6&lt;/sup&gt; (pp. 277–290)</td>
<td>✫</td>
<td>✫</td>
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<tr>
<td>American, British, and other English literatures</td>
<td>c</td>
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<td>Creative writing</td>
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<td>French literature</td>
<td>c</td>
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<td>German literature</td>
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<tr>
<td>Greek and Latin literatures</td>
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<td>Italian literature</td>
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<td>Modern literary studies</td>
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<td>Pre- and early modern studies</td>
<td>c</td>
<td>c</td>
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<tr>
<td>Spanish/Latin American/Latino literatures</td>
<td>c</td>
<td>c</td>
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<tr>
<td>World literature and cultural studies</td>
<td>c</td>
<td>c</td>
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<tr>
<td>Marine biology (p. 134)</td>
<td>✫</td>
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<tr>
<td>Marine sciences: see Ocean sciences (pp. 306–309)</td>
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<td>Biology (see also Marine biology)</td>
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<td>Chemistry</td>
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<td>Earth sciences</td>
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<td>Physics</td>
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<td>Mathematics&lt;sup&gt;6&lt;/sup&gt; (pp. 291–297)</td>
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<td>✫</td>
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<td>Applied mathematics</td>
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<td>Computational mathematics</td>
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<td>Mathematics education</td>
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<td>Pure mathematics</td>
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<td>Molecular, cell, and developmental biology (pp. 134–155) <em>(see also Biology)</em></td>
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<td>Music&lt;sup&gt;8&lt;/sup&gt; (pp. 298–305)</td>
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<td>Electronic music</td>
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<td>Jazz</td>
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<td>Neuroscience and behavior (p. 135) <em>(see also Biology)</em></td>
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<tr>
<td>Ocean sciences (pp. 306–309) <em>(see also Marine biology: Marine sciences)</em></td>
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<tr>
<td>Biological oceanography</td>
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<td>Chemical oceanography</td>
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<td>Geological oceanography</td>
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<td>Physical oceanography</td>
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<td>Philosophy (pp. 310–315)</td>
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<tr>
<td>Religious thought</td>
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<td>Photography: see Art</td>
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<tr>
<td>Physics (pp. 317–323)</td>
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<td>✫</td>
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<tr>
<td>Applied physics</td>
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<td>Geophysics</td>
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<td>Plant sciences (p. 136) <em>(see also Biology)</em></td>
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<td>Playwriting: see Theater arts</td>
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<tr>
<td>Cognitive psychology</td>
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<td>Developmental psychology</td>
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<td>Sociology (pp. 343–350)</td>
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<tr>
<td>South and Southeast Asian studies&lt;sup&gt;8&lt;/sup&gt; (pp. 350–351)</td>
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<td>Asian theater</td>
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<td>Dance</td>
<td>c</td>
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<td>Design and technology</td>
<td>c</td>
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<td>Drama</td>
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<td>Dramatic literature</td>
<td>c</td>
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<td>Playwriting</td>
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<td>Women's studies (pp. 359–363)</td>
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<tr>
<td>Movements, institutions, policy, and legal studies</td>
<td>c</td>
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<tr>
<td>Nations and cultures</td>
<td>c</td>
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<td>Race, class, and ethnicity</td>
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<td>Representations</td>
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<td>Theory</td>
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<tr>
<td>Writing (pp. 363–366)</td>
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</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 35).

- **c** = concentration, or emphasis, within a program. Some programs give students the option of following a general course of study or selecting a concentration; other programs require students to choose a concentration. Consult the particular program description on the page indicated.
- **i** = individual major. A group of faculty with interests in this area is available to assist students who want to declare an individual major in this cross-disciplinary program, which is described on the page indicated. Further information about individual majors appears on page 36.

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. 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 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. UCSC offers the CLAD and BCLAD single subjects credentials, which are earned postbaccalaureate.
4. An intensive major is also available.
5. A combined B.A./M.A. program in linguistics is also available.
6. Prospective students should contact the department before applying to the M.A. and Ph.D. programs.
7. A B.M. degree in music is also available.
8. A minor is available in Southeast Asian studies only.
Academic Calendar

Fall Quarter 2003
Fall quarter begins.................September 20
Instruction begins................September 25
*Veterans Day..........................November 11
*Thanksgiving recess................November 27–28
Instruction ends.......................December 5
Final examinations...............December 8–11
Fall quarter ends....................December 11
Campus closure......................December 24–January 1

Winter Quarter 2004
Winter quarter begins..............January 5
Instruction begins..................January 5
*Birthday of
  Martin Luther King Jr.............January 19
*Presidents’ Day.....................February 16
Instruction ends.....................March 12
Final examinations.................March 15–18
Winter quarter ends.................March 18

Spring Quarter 2004
Spring quarter begins..............March 29
Instruction begins..................March 29
*Memorial Day holiday..............May 31
Instruction ends........................June 4
Final examinations................June 7–10
Spring quarter ends................June 10
Commencements......................June 11–13

*Academic and administrative holiday.
Web: reg.ucsc.edu/calendar/

Many undergraduate classes at U C Santa Cruz are taught in a seminar format.
### Undergraduate Admission and Financial Information

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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 26,000 applications for 3,400 places in the freshman class and 1,100 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 admissions.ucsc.edu/campustours to view a current Campus Tour schedule, then call (831) 459-4008 or e-mail ucsvisit@ucsc.edu to make a reservation. 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 39–42). 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 39–42.

Admission by Exception. Special consideration may be given to some applicants who do not meet standard admission requirements. Admission by Exception is limited to a 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-five percent of the students who entered as freshmen in 1998 graduated after four years; 61 percent of those who entered in 1997 graduated after five years; and 67 percent of those who entered in 1996 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.

Admission Procedures

The University of California Application for Undergraduate Admission and Scholarships is available online at UC’s PATHWAYS web site at www.ucop.edu/pathways.

To apply online, you must have access to the web via a computer that meets certain minimum requirements. Details are available online. The application can also be printed from the following web address: www.ucop.edu/pathwaysgetapp.html.

In addition to the application, PATHWAYS includes a wealth of information for prospective UC students about undergraduate education, admission, and financial aid.

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 shall 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 wish 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 2004 November 1–30, 2003
Winter quarter 2005 July 1–31, 2004

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 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 qualified students who otherwise would be unable to apply for admission. To be accepted for the fee waiver program, you must meet specific requirements related to your family income and size. The fee waiver program 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 using PATHWAYS. PATHWAYS can determine if an applicant is eligible for the fee waiver program as soon as the online fee waiver form is complete.

• 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 18–19.) 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 writing strategies and techniques. Your reading experience should include original works in their entirety, not just textbooks and anthologies, and should encompass a wide variety of forms and topics.

**Writing.** Effective critical thinking and profi-
**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 (non–introductory level courses), history, social science, English, advanced mathematics, laboratory science, and language other than English (a third year in the language used for the "e" requirement or two years of another language).

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Your high school math courses should include (a) basic operations with numerical and algebraic functions; (b) operations with exponents and radicals; (c) linear equations and inequalities; (d) polynomials and polynomial equations; (e) functions and their graphs; (f) trigonometry, logarithms, and exponential functions; and (g) applications and word problems.

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**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. The following information describes two phases of the admission and selection process. The first is establishing eligibility. The three pathways to achieving eligibility are described below. However, meeting the minimum eligibility requirements for the university does not guarantee you admission as a freshman. Students are encouraged to achieve well beyond these minimum requirements to enhance opportunities for selection, the second phase of the admissions process. (See the discussion of selection criteria beginning on page 17 for more information.)

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**California Residents**

There are three pathways to satisfying the university’s minimum eligibility requirements for freshman students: eligibility in the statewide context, eligibility in the local context, and eligibility by examination alone.

**Eligibility in the Statewide Context**

Eligibility in the statewide context is the pathway by which most students attain UC eligibility. To be eligible in the statewide context you must satisfy the subject, scholarship, and examination requirements described below.

**Subject requirement.** To satisfy this requirement, you must complete the 15 units of high school course work listed in the box on this page. (A unit is equal to an academic year, or two semesters, of study.) These courses are also known as the "a–g" subjects or requirements.

At least 7 of the 15 units must be taken in your last two years of high school.
If you attend high school in California, the courses you take to fulfill the subject requirement must be certified by the university as meeting the requirement and must be included on your high school’s UC-certified course list. Your counselor or principal will have a copy of this list. In addition the lists are available online at [www.ucop.edu/pathways/infoctr/](http://www.ucop.edu/pathways/infoctr/).

**Scholarship requirement.** The scholarship requirement defines the grade-point average (GPA) you must attain in the “a–g” subjects and the SAT I (or ACT) and SAT II test scores you must earn to be eligible for admission to the university.

If your GPA is 2.8 or above, you satisfy the minimum scholarship requirement if you achieve the test score total indicated in the Eligibility Index at right.

The university calculates your GPA in the “a–g” subjects by assigning point values to the grades you earn, totaling the points, and dividing the total by the number of “a–g” course units. Points are assigned as follows: A=4 points, B=3 points, C=2 points, D=1 point, and F=0 points.

Only the grades you earn in “a–g” subjects in the 10th, 11th, and 12th grades are used to calculate your GPA. Courses you take in ninth grade can be used to meet the subject requirement if you earn a grade of C or better, but they will not be used to calculate your GPA.

**Honors courses.** The university assigns extra points for up to 4 units of university-certified honors-level and advanced placement courses taken in the last three years of high school: A=5 points, B=4 points, C=3 points. No more than 2 units of UC–approved honors-level courses taken in the 10th grade may be given extra points. A grade of D in an honors or advanced placement course does not earn extra points.

The courses must be in the following “a–g” subjects: history, English, advanced mathematics, laboratory science, and foreign language, and they must be certified as honors courses by the university. In these fields, and in the fields of computer science, social science, and the visual and performing arts, courses that are designed to prepare students for an Advanced Placement Examination of the College Board or a Higher Level Examination of the International Baccalaureate, and college courses that are transferable to the university, are acceptable honors-level courses.

**D and F grades.** D and F grades in the “a–g” courses must be repeated or validated. Consult your counselor to determine how these grades can be improved and how the university will use them in evaluating your scholarship record. Grades for repeated courses in which you initially earned a grade of C or better will not be used.

**Examination requirement.** You must submit the following test scores:

- Either the Scholastic Assessment Test I: Reasoning Test (SAT I) or the American College Test (ACT). The verbal and mathematics scores on the SAT I must be from the same sitting. The ACT composite score must be submitted.

- Three Scholastic Assessment Test II: Subject Tests (SAT II), including Writing, Mathematics Level 1 or Level 2, and one test in one of the following areas: English

**Eligibility Index: California Residents**

<table>
<thead>
<tr>
<th>“a–g” GPA</th>
<th>Test Score Total*</th>
<th>“a–g” GPA</th>
<th>Test Score Total*</th>
</tr>
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<tbody>
<tr>
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<td>4640</td>
<td>3.20–3.24</td>
<td>3408</td>
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<tr>
<td>2.85–2.89</td>
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<td>3.24–3.29</td>
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</tr>
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<td>2.90–2.94</td>
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<td>3.30–3.34</td>
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<td>2.95–2.99</td>
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<td>3.35–3.39</td>
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<td>3.00–3.04</td>
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<td>3.40–3.44</td>
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<td>3.05–3.09</td>
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<td>3.15–3.19</td>
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<td></td>
</tr>
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</table>

*Test score total equals \( [\text{SAT I composite score}] + [2 \times (\text{SAT II Writing score} + \text{SAT II Mathematics score} + \text{third required SAT II score})] \). SAT I composite is highest combined mathematics and verbal scores from a single sitting. Highest individual SAT II scores, from any sitting, will be considered. An ACT to SAT I conversion table is provided below.

**ACT to SAT I Conversion Table**

<table>
<thead>
<tr>
<th>ACT Score</th>
<th>Equivalent SAT I Score</th>
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</thead>
<tbody>
<tr>
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<td>1000</td>
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<tr>
<td>35</td>
<td>980</td>
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<tr>
<td>34</td>
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<td>24</td>
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</table>

<table>
<thead>
<tr>
<th>ACT Score</th>
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</tr>
</thead>
<tbody>
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<td>36</td>
<td>1070</td>
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<td>25</td>
<td>630</td>
</tr>
<tr>
<td>24</td>
<td>590</td>
</tr>
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</table>
Eligibility in the Local Context
Under the eligibility in the local context (ELC) pathway, the top 4% of students at each participating California high school are designated UC eligible and guaranteed admission to one of UC's nine general campuses.

To be considered for ELC, you must complete 11 specific units of the subject requirement by the end of your junior year. With the assistance of each participating high school, the university will identify the top 4% of students on the basis of GPA in the required course work.

The 11 units include 1 unit of history/social science, 3 units of English, 3 units of mathematics, 1 unit of laboratory science, 1 unit of language other than English, and 2 units chosen from among the other subject requirements.

The university will notify ELC students of their status at the beginning of their senior year. If you are designated UC eligible through ELC, you must submit the university’s undergraduate application during the November filing period and complete any remaining eligibility requirements—including the subject and examination requirements—to enroll.

ELC students are guaranteed a spot at one of UC’s nine undergraduate campuses, though not necessarily at their first-choice campus.

Eligibility by Examination Alone
If you do not meet the requirements for eligibility in the statewide context or eligibility in the local context, you may be able to qualify for admission to the university by examination.

To satisfy the minimum requirements for eligibility by examination alone, you must achieve a composite score of 31 or higher on the ACT, or a total score on the SAT I of at least 1400. You must earn a composite score of 31 or higher on the ACT, or a total score on the SAT I of at least 1400. Your total score on the three SAT II: Subject Tests must be at least 1850, with a minimum score of 530 on each test.

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/sat/scores/sending.html
(800) 728-7676

For the ACT:
Web: www.act.org/aap/scores/howrequest.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 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.

Selection Criteria
Once they have established eligibility for admission, students will be selected on the basis of academic preparation and achievement, as assessed by review of the following factors:

1. High school grade-point average* calculated on courses completed in the “a–g” subject areas, with additional grade points given for UC-approved honors courses, College Board Advanced Placement courses, International Baccalaureate Higher Level courses, and transferable college courses completed.

2. Test scores on the SAT I or ACT and the third required SAT II tests

3. The number of, content of, and performance in courses completed, in progress, or planned in academic subjects beyond the minimum eligibility requirements

4. The number of UC-approved honors courses, College Board Advanced Placement courses, International Baccalaureate courses, and transferable college courses completed, in progress, or planned

*Definition of grade-point average: Grade points are computed according to the standard that the letter grade A equals 4 points, B equals 3 points, C equals 2 points, D equals 1 point, and F equals no points. Your grade-point average is determined by dividing the total number of acceptable units you have attempted into the number of grade points you earned on those units.
In addition to the above, freshmen may be selected on the basis of academic and personal achievement, promise, and experience—as assessed through a comprehensive review of all information provided on the application, including academic performance as described above—plus the following:

1. Outstanding performance in one or more academic subject areas, special projects, or programs
2. Talents, achievements, experiences, or interests that will contribute to the vitality and educational environment of the campus
3. Special circumstances or personal challenges, especially as they relate to the social or educational environment, that have affected the applicant’s life experience

**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.

Admission requirements are different for California residents and nonresidents. Nonresidents must meet higher scholarship requirements.

**UC Minimum Eligibility Requirements: California Residents**

The requirements for admission as a transfer student vary according to your high school record. Therefore, when requested, you must submit transcripts of your high school work as well as transcripts from all collegiate institutions you have attended. The transcript you submit from the last college you attended must show that at minimum you were in good standing and that you earned a grade-point average* of 2.00 or better. (A student is considered to be in good standing unless he or she has been dismissed, suspended, or placed on probationary status, or has had other restrictions imposed based on financial obligation or disciplinary action.) If your grade-point average was below 2.00 at any college you attended, you may have to meet additional requirements for admission.

1. If you were eligible for admission to the university when you graduated from high school—meaning you satisfied the subject, scholarship, and examination requirements—you are eligible to transfer to the university provided you have earned a C (2.00) average in UC–transferable course work.

2. If you met the scholarship and examination requirements but did not satisfy the subject requirement, you must take UC–transferable college courses in the missing high school subjects to be eligible to transfer. A grade of C (2.00) or better must be earned in each of the required subject areas, and an overall C (2.00) average is required in all UC–transferable work.

3. If you did not meet the scholarship and examination requirements as a freshman, you must do the following:
   a. complete 60 semester (90 quarter) units of UC–transferable course work;
   b. attain an overall grade-point average of at least 2.40; and
   c. complete a course pattern that includes the following requirements. A grade of C (2.00) must be earned in each of the required courses in this pattern.
      (1) Two UC–transferable college courses (3 semester or 4–5 quarter units each) in English composition
      (2) One UC–transferable college course (3 semester or 4–5 quarter units) in mathematical concepts and quantitative reasoning
      (3) Four UC–transferable college courses (3 semester or 4–5 quarter units each) chosen from at least two of the following subject areas: arts and humanities; social and behavioral sciences; and physical and biological sciences.

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*Definition of grade-point average: Grade points are computed according to the standard that the letter grade A equals 4 points, B equals 3 points, C equals 2 points, D equals 1 point, and F equals no points. Your grade-point average is determined by dividing the total number of acceptable units you have attempted into the number of grade points you earned on those units.

**UC Minimum Eligibility Requirements: Residents of Other States**

If you met the requirements for admission as a nonresident freshman (see page 17), you must have a grade-point average of 2.80 or better in college courses that are accepted for transfer credit by the University of California. If you are a nonresident applicant who graduated from high school with a grade-point average of less than 3.40 in the “a–g” subjects or did not meet the Eligibility Index for Residents of Other States required for freshman admission, you must have completed at least 60 semester units (90 quarter units) of UC–transferable course work with a grade-point average of 2.80 or better and have completed the subject requirements for California residents outlined above.

**Selection Criteria**

UC Santa Cruz gives highest priority to junior-level transfers from California community colleges. UC intercampus transfers have second priority, followed by other advanced-standing applicants. UC Santa Cruz does not accept students who have completed 90 transferable semester units (135 quarter units) or more. Students who have earned all of their credits at community college are not affected by this limit because UC accepts a maximum of 70 semester units (105 quarter units) in transfer from community college.

Once they have established eligibility for admission, students will be selected primarily on the basis of academic performance and preparation, as assessed by a thorough review of the following:

1. Grade-point average for all UC–transferable courses
2. Completion of and performance in lower-division prerequisite courses in the applicant’s proposed major
3. Completion of a specified pattern of courses that meet general education requirements
4. Participation in academically selective honors programs and performance in honors courses

Other factors that may be assessed include:

1. Outstanding performance in one or more academic subject areas, special projects, or programs
2. Talents, achievements, experiences, or interests that will contribute to the vitality and educational environment of the campus
3. Special circumstances or personal challenges, especially as they relate to the social or educational environment, that have affected the applicant’s life experience

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 UCSC 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 UCSC 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 UCSC as a nonmatriculant student are available through Summer Session, Concurrent Enrollment through UC Extension, and Interssegmental Cross-Enrollment (see page 46).

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 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: www.ucsc-extension.edu/main/english/.

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 42.

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 from your college office and should be filed, along with the nonrefundable $40 application fee, 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 UCSC 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, 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 27–28). 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 local high school student, 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**

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 on active duty during a war or in a campaign for which a campaign badge has been authorized). 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 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/.

The university under California is an affirmative action/ equal opportunity employer. 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.

**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 against harassment. The university will not tolerate sexual harassment. Employers, 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 Harassment must contact Rita E. Walker, Title IX/Sexual Harassment Officer, 29 Clark Kerr Hall, (831) 459-2462 or via email 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/titleix.html. 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 53–54. 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 until after registration and enrollment each quarter. If you do not pay your required registration 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 its scholarships, and free-fare use of the local transit systems. Campus fees paid by graduate students are provided on page 53.

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 found on the web at www2.ucsc.edu/healthcenter/billing/insurance.html 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 2003–04 is available in the quarterly Schedule of Classes and the online UCSC Fee 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: Only U.S. citizens and holders of immigrant visas may become qualified for resident classification, regardless of how long they live in California.

Undergraduate Budget, 2003–04

<table>
<thead>
<tr>
<th></th>
<th>California Residents</th>
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<th>Nonresidents</th>
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<tbody>
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<td>F-W-S Quarters</td>
<td>One Quarter</td>
<td>F-W-S Quarters</td>
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<tr>
<td>Required Fees</td>
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<td>Books and supplies</td>
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<tr>
<td>Miscellaneous</td>
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<tr>
<td>Subtotal</td>
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<td>California Residents</td>
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</tr>
<tr>
<td>Nonresident Tuition</td>
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<td>Total Budget</td>
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<td>$32,525.95</td>
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</table>

*Two quarters at $238 and one quarter at $237.

* A proposed $1,200 increase in the annual Educational Fee is included. For California residents, the annual amount for the Educational Fee is $3,916 (with two quarters at $1,305 and one quarter at $1,306). Nonresidents of California pay an annual Educational Fee of $4,416 (with three quarters at $1,472). 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.

* Estimated personal expenses for students living off campus total $3,816 per quarter or $11,448 for three quarters. Estimated personal expenses for students living with family total $2,020 per quarter or $6,060 for three quarters.

Two quarters at $4,327 and one quarter at $4,326.
To bridge the gap between the cost of a UCSC education and what parents and students can reasonably afford to pay, the campus offers a wide variety of financial aid packages, including grants, scholarships, loans, and part-time employment. Each student requesting financial aid is assigned an adviser.

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 residences are expected to range from about $7,500 to $10,925 per year, depending on the type of accommodation and meal plan. The room and board amount of $10,419 in the Undergraduate Budget table on page 21 includes an allowance for additional meals and phone service. Although anticipated rates for college apartments are considerably less—from about $6,956 to $8,336—expenses are comparable once food costs are added; students in college apartments can expect to spend approximately $3,220 for food and phone service.

Rates are paid quarterly. The rate ranges listed above do not cover periods of academic recess, nor does the budget on page 21. Housing charges are normally payable at the beginning of each quarter. However, students may arrange with the Campus Housing Office to pay monthly.

More detailed information on room and board expenses for the individual colleges appears in a brochure distributed as part of the admission process or available from the Campus Housing Office, 104 Hahn Student Services Building, (831) 459-2394.

Miscellaneous. This budget item covers a broad range of expenses including clothing, laundry, personal grooming, recreation, and health maintenance. It also covers minimum expenses for modest travel to visit family.

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, 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, (www.graddiv.ucsc.edu/handbook.html). 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 darinfo@ucsc.edu, or visit the web site at www2.ucsc.edu/accounts/reg.

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 your family’s financial strength, considering such variables as net income, number of dependents, allowable expenses, indebtedness, and assets (excluding the home you live in). Nationally established procedures and campus policies are used in the evaluation. The same policies apply to married and independent students.

Application Deadlines

Financial aid applications may be filed beginning on January 1 preceding the academic year in which you wish to enroll. The deadline for applications is March 2. If you are an entering or continuing student seeking financial assistance for fall, winter, or spring enrollment, you must file a completed Free Application for Federal Student Aid (FAFSA) or Renewal FAFSA no later than March 2 preceding the academic year for which you are requesting aid. The FAFSA is available in high school guidance and college financial aid offices throughout the country. 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 earlier you will receive an offer. All other 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 $3,824 in 2003–04 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 2003–04. In 2003–04, to help offset mandatory registration fees and aid with annual living expenses, this grant is expected to provide $5,385 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 provide a maximum of $4,050 during 2003–04.

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 2002–03 was $3,671.

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 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 5 percent per year.

**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 $8,500. Students may borrow up to $23,000 for undergraduate study and up to $65,500 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 2002–03 for students in repayment was 3.46 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 is variable and is the same as for Federal Direct Subsidized Student Loans. The cap is 8.25 percent. (The interest rate for 2002–03 was 3.46 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 21). Loan limits for dependent students are the same as for the Federal Direct Subsidized Student Loans. Federal Direct Subsidized and Unsubsidized Student Loans are added together for students who have both types to determine if the limit has been reached. Independent students have higher combined Federal Direct Subsidized and Unsubsidized Student Loan limits than do dependent students. The annual limits for independent 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 Subsidized Student Loans immediately, pay only interest immediately, or defer both principal and interest until they are no longer enrolled in school at least half-time. Through the **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 2002–03 was 4.86 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 are posted on the web for the academic year beginning September 20, 2003, 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](http://www2.ucsc.edu/careers).

**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/](http://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 home 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) 459-2754 or by e-mail at registrar@ucsc.edu.
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 39–42).

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 39–42).

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 IBH History of Americas 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 score of 5, 6, or 7 on the IBH English Language A1 Examination

*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.
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 university-wide 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 32–33. 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>Introductions to disciplines— humanities and arts area*</td>
</tr>
<tr>
<td>Introductions to disciplines— natural sciences and engineering area*</td>
</tr>
<tr>
<td>Introductions to disciplines— social sciences area</td>
</tr>
<tr>
<td>Topical courses (one course from each of the three academic areas)</td>
</tr>
<tr>
<td>Quantitative course</td>
</tr>
<tr>
<td>Composition course</td>
</tr>
<tr>
<td>Writing-intensive course</td>
</tr>
<tr>
<td>Arts course</td>
</tr>
<tr>
<td>U.S. Ethnic minorities/non-Western society course</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, history of art and visual culture, film and digital media, 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 123; Engineering, page 185; Humanities, page 257; Physical and Biological Sciences, page 315; and Social Sciences, page 342; see also the list of courses on pages 32–33. 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 27 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, history of art and visual culture, film and digital media, music, and theater arts.

Ethnic 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-cultural awareness, and explore relationships between ethnicity and other aspects of a liberal arts
Advanced Placement (AP)/International Baccalaureate Higher Level (IBH) Examinations, 2003–04

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 AP Studio Art Drawing, 2-D Design, or 3-D Design</td>
<td>8</td>
<td>Satisfies the A. 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 AP Latin Virgil or Literature</td>
<td>8</td>
<td>Either IBH exam satisfies one IH**.</td>
</tr>
<tr>
<td>IBH Computer Science AP Computer Science A</td>
<td>8</td>
<td>Satisfies one IN.</td>
</tr>
<tr>
<td>IBH Economics AP Economics Microeconomics or Macroeconomics</td>
<td>8</td>
<td>Satisfies one IS.</td>
</tr>
<tr>
<td>IBH English Language A1 AP English Language and Composition or Literature and Composition</td>
<td>8</td>
<td>Either AP exam satisfies one IH**. Subject A and the C.</td>
</tr>
<tr>
<td>IBH History Africa, Americas, East &amp; Southeast Asia/Oceania, South Asia/Middle East, Europe, or Islamic</td>
<td>8</td>
<td>Satisfies one IH.</td>
</tr>
<tr>
<td>AP History European, United States, or World</td>
<td>8</td>
<td>Any AP exam satisfies one IH.</td>
</tr>
<tr>
<td>IBH Language A1, A2, B Second Language AP French, German, Spanish Language</td>
<td>8</td>
<td>Does not satisfy any GE. All earn credit.</td>
</tr>
<tr>
<td>AP French, Spanish Literature</td>
<td>8</td>
<td>Satisfies one IH.</td>
</tr>
<tr>
<td>IBH Mathematics AP Mathematics Calculus AB Calculus BC</td>
<td>8</td>
<td>Satisfies one IN† and the Q.</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 AP Physics B C Mechanics or C. Electricity and Magnetism</td>
<td>8</td>
<td>Satisfies one IS.</td>
</tr>
<tr>
<td>IBH Psychology AP Psychology</td>
<td>8</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>IBH Theatre 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 theatre arts. **Only one IH will be granted from classics, English, and literature.
†Only one IN will be granted from mathematics and statistics.

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.

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 transferable quarter credits, two courses waived; 105 or more transferable quarter credits, all three courses waived. If one topical course is required

(continued on p. 34)
## Advanced Placement (AP)/International Baccalaureate Higher Level (IBH) Examinations: Prerequisite Course Waivers, 2003–04

Certain departments allow prospective majors to obtain waivers for prerequisite courses. Please note that approval is not automatic; a 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: Art, 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>IBH Biology</td>
<td>5, 6, 7</td>
<td>Biochemistry and Molecular Biology, Bioinformatics, Biological Sciences: General Biology, Ecology and Evolution, Marine Biology, Molecular, Cell, and Developmental</td>
<td>May substitute for Biology 3 (exempt from Biology placement exam). Contact the Biological Sciences Department.</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, Marine Biology, Molecular, Cell, and Developmental</td>
<td>May substitute for Biology 3 (exempt from Biology placement exam). Contact the Biological Sciences Department.</td>
</tr>
<tr>
<td>AP Chemistry</td>
<td>4</td>
<td>Biochemistry and Molecular Biology, Biological Sciences: General Biology, Ecology and Evolution, Marine Biology, Molecular, Cell, and Developmental</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 Environmental Studies Dept.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Biochemistry and Molecular Biology, Biological Sciences: General Biology, Ecology and Evolution, Marine Biology, Molecular, Cell, and Developmental</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><strong>Calculus AB</strong></td>
<td>3</td>
<td>Biochemistry and Molecular Biology</td>
<td>May substitute for Mathematics 3. Contact the Mathematics Department.</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>4, 5</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>Biochemistry and Molecular Biology</td>
<td>May substitute for Mathematics 11A or 19A (although enrollment in Mathematics 19A is recommended for proposed majors in mathematics or the physical and biological sciences). Contact the Mathematics Department.</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>4, 5</td>
<td>Psychology</td>
<td>May satisfy the precalculus requirement and prerequisite for Psychology 2. Contact the Psychology Department.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biochemistry and Molecular Biology</td>
<td>May substitute for Mathematics 11A and 11B or Mathematics 19A and 19B. Contact the Mathematics Department.</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>4, 5</td>
<td>Psychology</td>
<td>May substitute for Mathematics 19A and 19B. Contact the School of Engineering.</td>
</tr>
<tr>
<td><strong>AP Psychology</strong></td>
<td>4, 5</td>
<td>Psychology</td>
<td>May substitute for Psychology 1 (although enrollment in Psychology 1 is recommended). Contact the Psychology Department.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></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

**Introductions 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. 

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
Linguistics 20, 51, 52, 53, 55
Literature 1, 61A, 61D, 61E, 61F, 61M, 61P
Spanish Literature 60
Music 11
Philosophy 9, 11, 22, 24, 26, 28
Portuguese 60B, 65A, 65B
Russian 4, 5, 6
Spanish 4, 5, 6, 12
Spanish for Spanish Speakers 61, 62, 63
Theater Arts 19, 20, 30, 32, 33, 36, 40, 60A, 60B, 60C, 122, 136
Women’s Studies 1A, 1B

**Introductions to disciplines, natural sciences and engineering (IN code)—two courses from different departments required (10 credits)**

For general education purposes, anthropology and environmental studies courses designated IN are considered to be from the Biology Department. Transfer courses designated IN from anatomy, botany, physiology, and zoology departments are considered to be biology courses.

Anthropology 1
Astronomy and Astrophysics 2, 3, 4, 5, 8, 11, 12, 13, 14, 16, 18
Biology 20A, 21A, 70
Biomolecular Engineering 60
Chemistry and Biochemistry 1A, 1B, 1C
Computer Engineering 3, 12C
Computer Science 2, 10, 12A, 12B, 13H, 60C, 60N
Earth Sciences 1, 3, 5, 6, 7, 10, 20, 65, 119
Engineering 5, 7
Environmental Studies 23, 24
Mathematics 11A, 11B, 19A, 19B
Ocean Sciences 1
Physics 1, 2, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B

**Introductions to disciplines, social sciences (IS code)—two courses from different departments required (10 credits)**

Anthropology 2, 3, 4
Community Studies 10, 100A, 100E, 100J, 100K, 100M, 100P, 100Q, 100S, 100T, 100Y
Economics 1, 2
Education 92A, 92B
Environmental Studies 25
Latin American and Latino Studies 1, 126A, 126B
Legal Studies 10
Politics 1, 4, 5, 7, 10, 20, 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:

2–Natural Sciences Area
3–Social Sciences Area
4–Humanities and Arts Area
5–Humanities and Arts or Social Sciences Area
6–Natural Sciences or Humanities and Arts Area
7–Natural Sciences or Social Sciences Area

**T2—Natural Sciences**

Astronomy and Astrophysics 80A, 80B, 80D
Biochemistry and Molecular Biology 80A
Biology 80A, 80D, 80F, 80H, 80J, 80L, 80N, 80P
Biomolecular Engineering 80G
Chemistry and Biochemistry 80A, 80G, 80H
Computer Engineering 80N
Computer Science 80B, 80C, 80G, 80Y
Crown College 80S
Earth Sciences 80A, 80B, 80C, 80D, 80F, 80G
Electrical Engineering 80T
Environmental Toxicology 80E
Linguistics 80G
Ocean Sciences 80A, 80B, 80C
Philosophy 80G
Physics 80A
Science Communication 80A

**T3—Social sciences**

Anthropology 80B, 80C, 80D, 80F, 80G, 80I, 80J, 80K, 80M, 80O, 80Y
College Eight 80
College Nine 80A, 80B, 80H
College Ten 80A, 80B, 80H
Community Studies 80A, 80B, 80F, 80H, 80L, 80Q
Economics 80A, 80F, 80G, 80H
Education 80
Environmental Studies 80C
Latin American and Latino Studies 80A, 80B, 80C, 80D, 80F, 80G, 80H, 80L, 80M, 80N, 80Q
Merrill College 80, 80B, 80Y
Politics 80T
Psychology 80A, 80B, 80E
Sociology 80E, 80I, 80Z

**T4—Humanities and arts**

Art 80A, 80C, 80D
Cowell College 80
Environmental Studies 80D
Film and Digital Media 80A, 80B, 80C, 80D
French 80
Hebrew 80
History 80K, 80W, 80Y
History of Consciousness 80A, 80B, 80E, 80L
Krege College 80B
Language Program 80D, 80E
Linguistics 80V
Literature 80A, 80L, 80M, 80N, 80O
Merrill College 80Y
Music 80A, 80B, 80D, 80F, 80G, 80H, 80J, 80K, 80M, 80N, 80P, 80Q, 80S, 80T, 80V, 80W, 80X
Philosophy 80B, 80D, 80H, 80T
Porter College 80
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

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

American Studies 80A, 80B, 80C, 80D
Film and Digital Media 80A
History 80M
History of Art and Visual Culture 80A, 80B, 80D, 80E, 80F, 80G, 80H, 80J, 80K, 80M, 80N, 80Q, 80T, 80V
History of Consciousness 80C, 80F, 80J, 80K, 80Q, 80Y
Krege College 80, 80T
Latin American and Latino Studies 80X
Linguistics 80C, 80D
Merrill College 80C
Oakes College 80
 Philosophy 80L
Stevenson College 80A, 80B
Women’s Studies 80Y

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

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

**T7—Natural sciences or social sciences**

Environmental Studies 80A, 80B
Philosophy 80C
GRADUATION REQUIREMENTS 33

Quantitative courses (Q code)—one
course required (5 credits)
Astronomy and Astrophysics 2, 3, 4, 5, 8, 11, 12,
13, 14, 16, 18, 80A, 80B, 118
Biology 186
Biomolecular Engineering 60
Chemistry and Biochemistry 1A, 1B, 1C
Computer Engineering 16, 16H
Computer Science 80B
Earth Sciences 1, 10, 80A, 80B, 80C, 80D
Economics 11A, 11B, 113
Engineering 3, 5, 7, 11A, 11B, 113
Environmental Toxicology 80E
Mathematics 3, 11A, 11B, 19A, 19B, 21, 110
Ocean Sciences 1
Physics 1, 2, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7B, 80A
Psychology 2, 181
Sociology 103A, 103B

Composition courses (C code)—one
course required (5 credits)
Merrill College 80Z
Stevenson College 80B-C (for specific sections)
Writing 1

Writing-intensive courses (W code)—
one course required (5 credits)
American Studies 100, 105A
Anthropology 150, 152, 170, 172, 194A, 194B,
194D, 194E, 194F, 194H, 194I, 194J, 194K,
194L, 194M, 194N, 194O, 194P, 194Q, 194R,
194S, 194V, 196A, 196B
Biology 141, 165A, 169L
Chemistry and Biochemistry 122
Community Studies 121, 194
Computer Engineering 185
Crown College 123
Earth Sciences 120, 140L (concurrent enrollment
in 140 required)
Economics 106, 107, 128, 142, 165, 183, 184,
195
Education 185B
Environmental Studies 100L (concurrent enrollment in 100 required), 104A, 129, 140, 149,
156, 157, 172
Environmental Toxicology 151
Film and Digital Media 120, 150, 194B, 194C,
194D, 196B
History 194C, 194E, 194J, 194M, 194O, 194R,
194V, 194W, 194X, 194Y, 195B, 196A, 196B,
196D, 196F, 196K, 196R, 196Y, 196Z
History of Art and Visual Culture 100A
Information Systems Management 158
Kresge College 80T
Latin American and Latino Studies 100B, 194P, 195A
Legal Studies 128, 149, 183, 196
Linguistics 52, 55, 101, 113
Literature 1, 101
Music 180B
Philosophy 190L, 190M
Physics 195A-B (Students must complete both
courses to satisfy the W code.)
Politics 100
Psychology 100C, 100K, 100L, 100N, 113, 125
Sociology 103B, 134, 195C
Stevenson College 80T
Theater Arts 157, 159

Women’s Studies 194I, 195
Writing 64, 101, 102, 103, 104, 110A, 161, 163,
165, 166A, 166B, 166D, 167

Courses with W code for specific sections
Biology 20L
History of Art and Visual Culture 125, 164

Arts courses (A code)—one 5-credit
course or equivalent required
Art 10G, 10H, 10J, 20, 21, 23, 24, 26, 28, 30, 40,
60, 70, 80A, 80C, 80D, 80F, 102, 107, 112,
113, 114, 118, 119, 123, 126, 135, 136, 141,
150B, 152
Cowell College 21, 22, 70
Film and Digital Media 20A, 20B, 20C, 20P, 80A,
80B, 80C, 80D, 132A, 132B, 136A, 136B, 151,
160, 165A, 170A, 170B, 176, 185D
History of Art and Visual Culture 10D, 10E, 10F,
10G, 80A, 80B, 80D, 80E, 80F, 80G, 80I,
80K, 80L, 80M, 80N, 80P, 80Q, 80T, 80V,
100A, 100E, 105E, 105F, 105H, 105P, 105U,
106A, 106B, 107A, 107B, 110A, 110B, 114,
120A, 121A, 121C, 121D, 124, 125, 127, 129,
131, 136, 137, 138, 139, 140, 141, 147, 149A,
149B, 150A, 151A, 153, 154A, 154B, 155,
159B, 160, 161, 163A, 164, 165A, 165B,
166C, 167, 168, 169, 170, 171, 173, 174B,
175, 176, 177, 180, 181, 182, 185A, 185B,
189A, 189N, 189Q, 189U, 189V, 189W,
190B, 190C, 190D, 190G, 190H, 190J, 190K,
190L, 190M, 190N, 190O, 190P, 190Q, 190R,
190S, 190T, 190U, 190W, 191A, 191C, 191D,
191P
Kresge College 80B
Latin American and Latino Studies 110A, 110B,
151A, 194W
Literature/Creative Writing 10, 52, 53, 170, 180,
183
Music 1A, 1C, 2, 3, 4A, 4B, 5A, 5B, 5C, 8, 9, 11,
51, 54, 75, 80A, 80B, 80C, 80D, 80E, 80F,
80G, 80H, 80J, 80K, 80L, 80M, 80N, 80P,
80Q, 80R, 80S, 80T, 80V, 80W, 80X, 159A,
159B, 160, 166, 170, 180A, 180B
Philosophy 152
Porter College 14, 20A, 20C, 20D, 21A, 21B,
22A, 22F, 23A, 23B, 23C, 28, 30, 33, 33A,
34B, 35, 38B, 39, 80G, 120, 121C, 121D
Science Communication 80A, 104A, 106A, 107,
109, 110
Theater Arts 10, 12, 14, 17, 18, 19, 20, 21, 22, 23,
30, 31, 32, 33, 36, 40, 50, 60A, 60B, 60C, 80B,
80E, 80G, 80H, 80L, 80M, 80N, 80O, 80S,
80T, 80U, 80V, 80W, 80X, 80Y, 80Z, 104,
110, 113, 114, 115, 116A, 116B, 117, 118,
119, 121, 122, 124, 126, 130, 131, 132, 133,
133A, 134, 135, 136, 137, 138, 139, 142, 151,
155, 157, 159, 160, 161C, 161D, 161M,
161Q, 161R, 161S, 161T, 161U, 161V, 163A,
163E, 193, 193F
Women’s Studies 80S, 138

U.S. ethnic minorities/non–western
society courses (E code)—one course
required (5 credits)
American Studies 1, 2, 80A, 80B, 80C, 80D, 101,
121C, 123F, 123H, 123M, 123T, 123X, 123Z,
125A, 125E, 125G, 126B, 127A, 127D, 127E,
127F, 127K
Anthropology 80B, 80D, 80G, 80I, 130A, 130B,
130C, 130D, 130E, 130G, 130I, 130K, 130L,
130N, 130Q, 130S, 130U
Art 150B
Community Studies 80A, 80B, 80F, 80H, 80Q,
100A, 100E, 100J, 100P, 100R, 114, 126, 134,
182, 183
Economics 120, 128
Education 92C, 128, 140, 141, 151, 155, 164,
175, 181
Film and Digital Media 132C, 162A, 163, 165B,
165D, 185B
History 29, 34B, 37, 40, 80W, 80Y, 110, 121A,
121B, 141, 141A, 141B, 144, 145, 149, 150C,
151, 152, 155, 156A, 156B, 158, 159C, 170,
171A, 175B, 177, 186, 190, 194J, 194M,
194O, 194V, 194W, 196B, 196D, 196Y
History of Art and Visual Culture 10E, 80B, 80F,
80G, 80M, 80N, 80P, 80T, 100E, 105E, 105P,
106A, 107A, 107B, 121C, 121D, 139, 151A,
155, 160, 161, 182, 185A, 185B, 189U, 190B,
190C, 190L, 190O, 190R, 190U, 191C, 191F,
191P
History of Consciousness 80F, 80Y, 118, 125, 127
Kresge College 80B
Language Program 80E
Latin American and Latino Studies 1, 80A, 80B,
80C, 80D, 80F, 80G, 80H, 80I, 80M, 80N,
80Q, 80X, 100A, 100B, 101, 111, 112, 120,
123A, 123B, 125, 126A, 126B, 127, 129, 140,
142A, 142B, 143, 144, 145, 146, 147, 148,
150, 151A, 160, 165, 166, 167, 168, 169, 170,
173, 175, 176, 177, 178, 179D, 180, 194C,
194D, 194G, 194J, 194K, 194M, 194N, 194P,
195A
Legal Studies 127, 128, 136
Literature 61E, 80L
American Literature 102A, 102B, 102C, 102E,
190A, 190E, 190J
French Literature 134
Other English Literatures 105
Modern Literary Studies 125A, 125D, 144A,
144B, 144D, 144G, 152D, 180F
Spanish Literature 60, 102B, 130D, 130E, 130F,
134G, 134M, 134N
World Literature and Cultural Studies 109, 117,
123, 124, 135, 136, 140, 190A, 190B, 190E
Merrill College 80, 80X
Music 80A, 80B, 80D, 80E, 80F, 80Q, 80X,
180A, 180B
Oakes College 80
Politics 127, 140C, 140E, 141, 156
Porter College 80
Psychology 100D, 100G, 113, 143, 158
Sociology 15, 20, 80I, 133, 162, 169, 170, 174,
175, 188
Stevenson College 80C, 80H, 80T
Theater Arts 22, 80M, 161D, 161R
Women’s Studies 1B, 80Y, 102, 110, 132, 138,
139, 145, 151A, 154, 155


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 satisfy 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 enrollment 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 transfer 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 colleges, 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 continuing 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 courses 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 requirements or UCSC course prerequisites should contact the sponsoring department for review.

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 in the list on page 35. The core courses are described more fully in the individual college descriptions, pages 75–93.

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Courses 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>One course in English composition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and one course in critical thinking/English composition. (Students transferring to CSU must take an additional course in oral communication.)</td>
<td></td>
<td></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>Three courses with at least one from the arts and one from the humanities.</td>
<td></td>
<td></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>Three courses from at least two disciplines or an interdisciplinary sequence.</td>
<td></td>
<td></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>One physical science course and one biological science course, at least one of which includes a laboratory.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Language Other Than English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proficiency equivalent to two years of high school in the same language. (Not required of students transferring to CSU.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</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.
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, Cultural Intersections, 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, Values 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-C, Self and Society, fall, winter, and spring quarters; all three 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 105–366.) Academic advisers can offer considerable assistance in selecting courses appropriate to your individual needs (see pages 39–42).

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 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 229), 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 as 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 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. Normally, the courses required for a minor follow the same pattern as those for the corresponding major, except that the number of courses required is reduced by two 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

- 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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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 27], 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 below 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. 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).

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 35.)

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

Campus Honors Program

In 2003–04, the University of California, Santa Cruz, is beginning its first campuswide Honors Program. Entry to the first year of the program is by invitation only, although a process will be established whereby students will be able to apply to the program in the future. Details of the Honors Program are being discussed, and the students taking part in its first year will be instrumental in providing suggestions about how it should develop. Additional information about the program will be publicized as it is available.

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. Each year the chapter elects a few outstanding students to membership.

To be elected to Phi Beta Kappa, you must (a) be majoring in one of the liberal arts or sciences, (b) have demonstrated a knowledge of mathematics and a foreign language “at least minimally appropriate for a liberal education,” (c) be noteworthy for the number and variety of courses you have taken outside your major, and (d) be judged by members of the chapter to be distinguished in cultural interests, scholarly achievements, and excellence of character.

The foreign language requirement may be satisfied by passing three one-quarter courses in a language at UCSC, or the equivalent at another university, or by demonstrating close knowledge of another culture (which may include speaking another language at home). The mathematics requirement may be satisfied
by a single course in mathematics or statistics or by a science course that requires mathematics. See your college academic preceptor for details. (Notice of membership in Phi Beta Kappa does not appear on your transcript or diploma.)

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.

When ordering transcripts by mail or fax, you should include the name under which you were registered and your birth date, your student ID number, last quarter of attendance, college affiliation, and date of graduation. You should also indicate the complete mailing address to which the transcript should be sent, the number of copies needed, and any deadline. Transcript requests should be sent to

**Office of the Registrar**

Attention: Transcripts

University of California, Santa Cruz

1156 High Street

Santa Cruz, CA 95064-1077

For transcript fees, please refer to our web site: reg.ucsc.edu. A check for the appropriate amount, payable to UC Regents, or credit card authorization/information, should accompany your request.

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 courses and majors, the opportunity to ask important questions regarding financial aid and housing, and the option of enrolling in classes on site.

In addition to facilitating initial advisement and registration, 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. A similar program is held in December for students admitted for winter quarter.

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 orientation is the next step in your orientation and advising process. Fall orientation is your welcome to UCSC and occurs over the first week of fall quarter. Fall orientation 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: www2.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 also will assist with resume preparation, interviewing skills, apply-
ing for an internship, and job-search strategies. Many students find that participation in internships and field programs, described on pages 43–45, gives them a practical basis for making career decisions. The Career Center offers workshops, an online database, and publications on many internship opportunities. The office’s Career Advice Network (CAN) will connect you with UCSC alumni professionals who help students achieve their career goals.

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 prepare you 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
- 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 403–407. 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-Search Skills, 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.

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—an online site that lists job openings targeted to UCSC graduates. You may connect to MonsterTRAK 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, Rooms 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 support programs designed to promote the retention, academic success, and graduation of California residents who are first-generation college students from low-income and educationally disadvantaged backgrounds. EOP programs and services are designed to ensure that students successfully complete their undergraduate education and acquire the skills that will prepare them for future careers and graduate or professional school opportunities.

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 activities for new students, academic advising and personal counseling, tutorial assistance, study-skills development, peer advising, and social and cultural programs. EOP also sponsors pregraduation programs—the Faculty Mentor Program and the Graduate Information Program—designed to promote graduate and professional school interests and preparation.

Tutorial assistance and other learning-support services are offered through the EOP Learning Center, located at the Academic Resources Center, with satellite centers at Crown, Merrill, and Oakes Colleges. Individual tutoring in all subjects is available to EOP, Disability Resource Center, transfer, Oakes, Crown, and Merrill students. Peer-guided study-group sessions (MSI) are offered to all UCSC students for identified introductory undergraduate courses that students have traditionally considered difficult. Two-credit courses in academic reading, research, and writing are offered for incoming transfer students. 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 workshops are sponsored by the Coalition for Student Academic Success each quarter on topics such as note taking, time and stress management, exam preparation, academic reading, 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 Resources 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 professional schools in biomedical sciences. The program seeks students from groups that have traditionally been denied equal access to educational opportunities in the science professions.

Continuing students who have successfully completed specific introductory courses in biology, 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 opportunity to work in a faculty lab for the following academic 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 admission process. In addition, the staff maintains an information file on summer enrichment programs, 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 encourages 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 mbmbrs@biology.ucsc.edu. Web: marcmarb.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, science, and engineering. ACE provides discussion sections for selected mathematics, science, and engineering 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, mathematics, and engineering.

Helping students excel in introductory math and science courses is ACE’s focus. The program achieves this goal by providing a structured, workshop setting where students learn by teaching each other. This collaborative method reinforces critical thinking and problem-solving skills. ACE sections are limited to 16 students. A professional section leader with an academic background in the subject facilitates these workshops. In addition, an undergraduate coleader who has excelled in the course assists the section leader. This brings the student to teacher ratio to 8:1. Students also meet with a peer mentor, who helps them strengthen their study techniques. Other opportunities available through ACE include drop-in homework centers, study groups, and career counseling.

Applications are accepted quarterly for the upcoming term. For more information, call (831) 459-5280 or visit our 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), students who are parents regardless of age, and military veterans. These services include admissions information, orientations for new students, academic seminars and study-skills workshops, tutorial services, informal academic advising, drop-in assistance, social, recreational, and cultural programs, scholarships, newsletters, and study centers with computer workstations. STARS also acts as a clearinghouse for information about campus and community resources for UCSC’s large transfer and re-entry student populations.

STARS oversees two resource centers housed in different locations on campus. All current and prospective re-entry and transfer students are invited to visit. Hours are 9 A.M. to 5 P.M., Monday through Friday. STARS main offices are in the Academic Resources Center, Rooms 206 and 216. STARS at Kresge is located at the entrance to Kresge College.

STARS coordinates the Lifelong Learners program, a UC/community organization dedicated to continuing education. The organization hosts monthly meetings with university...
faculty and offers a wide variety of interest groups. Some members take campus courses for a minimal fee through UCSC Extension’s Concurrent Enrollment.

For further information regarding all the STARS programs, call (831) 459-2552. For current programs and activities, view the STARS web site: www.ucsc.edu/stars.

Part-Time Program

If you are unable to attend the university full-time because of family obligations, employment responsibilities, or health problems, you may qualify for the Part-Time Program. This program enables students to pursue a bachelor’s degree part-time in any major offered at UC Santa Cruz. To participate, undergraduate students must file a Part-Time Program application by the appropriate deadline. Full-time students normally take three 5-credit courses per quarter; part-time students may enroll in a maximum of 10 credits.

Students approved for enrollment on a part-time basis pay the same fees as full-time students but pay only one-half of the educational fee. Part-time nonresidents pay one-half of nonresident tuition. Financial aid awards may be affected by enrolling part-time. Students who use the part-time fee reduction may not also use the UC employee reduction.

Applications for undergraduates are available from the Office of the Registrar, 190 Hahn Student Services Building. For more information, call (831) 459-4412 or e-mail registrar@ucsc.edu. Web: reg.ucsc.edu/students/part-time.html.

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: oasas.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 95053-0631 or (408) 554-4781, e-mail syakoubek@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, or visit the web site: airforcerotc.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 U.C. 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: alien@ucsc.edu, ISSS: visa@ucsc.edu. Web: www2.ucsc.edu/oie.

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 upper-division students in all majors. (Natural science 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 28.) 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 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, 27 Merrill College, (831) 459-2505.

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.

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 2004–05 will take place during winter quarter 2004. 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 40). In addition to the off-campus placements provided by the programs described below, independent 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 with 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.
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 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 Economics 100A, 100B, and 113 (see page 171). 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 178) 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 to stop by the Economics Field-Study Office: 217A Social Sciences 1; call (831) 459-2028; or e-mail econ_intern@ucsc.edu. Web: econ.ucsc.edu.

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 61). 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 346) 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, students must take five courses directly relevant to human health.

The health sciences major (see page 136) 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 a foreign 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 352). 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.

Latin American and Latino Studies Fieldwork

A variety of field-study and internship opportunities can be arranged through the Latin American and Latino studies (LALS) fieldwork
course. Field studies are independent, community-based study projects for academic credit, done under faculty sponsorship and arranged on an individual basis. It is important to plan at least two quarters in advance of the intended departure date for a field study abroad. Projects vary widely, but students who want to develop a field-study proposal are expected to prepare for it by acquiring fluency in the appropriate language, prior cross-cultural experience, and upper-division course work on the region and/or topic that is to be the focus of the study. Students are expected to take the Field-Study Seminar (LALS 190, see page 270) and work with the field-study codirectors. Local field study can be arranged in Santa Cruz, Watsonville, and Salinas, with agencies and organizations, schools, and newspapers and radio stations that serve Chicano/Latino communities. These local field studies are done in conjunction with course work on campus (i.e., as one of a student’s three courses in a given quarter). For more information, contact the field-study codirectors at (831) 459-3449 (guiller@ucsc.edu) or 459-5897 (jafot@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 experience in 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 334). 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, D. 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 fieldwork 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 180, or contact the Education Department, 212 Crown College, (831) 459-2589 (reception). E-mail address: education@ucsc.edu; web: education.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 humanities, arts, 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.

Summer Language Intensive Program
Through the Summer 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 262). 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, 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, both backstage and in rehearsal. 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, stage management, and technical aspects of theater. 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: shakespearesantacruz.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 International, 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 web site, www.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 $20 fee; subsequent applications filed at least one week prior to the first day of instruction for the quarter have an $8 fee. Applications filed later than one week prior to the first day of instruction for the quarter have a $40 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.

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 msce@soe.ucsc.edu.

Sierra Institute: Wilderness Field Studies

The Sierra Institute is part of University Extension in Santa Cruz. Through its affiliation with the campus Environmental Studies Department, the institute offers accredited field programs that are taught while out on a series of backpacking trips in various wild areas of the western states (California, Montana, Utah, Colorado). The institute has offerings year-round, most spending eight weeks in the field and granting 15 credits. In the winter, there are special excursions to Belize and Chile.

Some of the programs are science-based, covering a variety of ecological subjects and including hands-on natural history. Other programs are oriented toward the humanities and deal with such subjects as nature philosophy, cultural ecology, ecopsychology, and nature writing. Both lower- and upper-division courses are offered. Groups are small (12 students), allowing for individual attention.

UCSC students must take a leave of absence from campus and enroll through University Extension in order to participate in Sierra Institute programs. Students provide most of their own camping equipment. No prior backpacking experience is required.

For further information, contact Sierra Institute, UCSC Extension, 1101 Pacific Avenue, Suite 200, Santa Cruz, CA 95060, (831) 427-6618. E-mail: sierrai@ucsc.edu. Web: www.ucsc-extension.edu/sierra.

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 seeks to cross-enroll;
• has a grade-point average of 2.00 for work completed;
• has paid tuition or fees 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 previously been admitted to and registered at UCSC.

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

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Economics graduate student Chunhua Sun Rich
Graduate Education

UC Santa Cruz offers graduate study in 27 academic fields. About 1,400 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 Santa Cruz 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 57–72). 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 ................................................... Ph.D.
- Astronomy and astrophysics ................................ Ph.D.
- Biology (with emphasis in ecology and evolution or molecular, cell, and developmental) ........ M.A./Ph.D.
- Chemistry and biochemistry ................................ M.S./Ph.D.
- Computer engineering ........................................ M.S./Ph.D.
- Computer science ............................................. M.S./Ph.D.
- Earth sciences .................................................. M.S./Ph.D.
- Economics
  - applied ......................................................... M.S.
  - international ................................................ Ph.D.
- Education
  - teaching ...................................................... M.A.
  - research ...................................................... Ph.D.
- Electrical engineering ....................................... M.S./Ph.D.
- Environmental studies ....................................... Ph.D.
- Environmental toxicology .................................... M.S./Ph.D.
- History .......................................................... M.A./Ph.D.
- History of consciousness .................................. Ph.D.
- Linguistics ..................................................... M.A./Ph.D.
- Literature ...................................................... M.A./Ph.D.
- Marine sciences ............................................. M.S.
- Mathematics .................................................. M.A./Ph.D.
- Music ............................................................. M.A.
- Ocean sciences ................................................ M.S./Ph.D.
- Philosophy ..................................................... M.A./Ph.D.
- Physics ........................................................... M.S./Ph.D.
- Politics ........................................................... Ph.D.
- Psychology (with emphasis in social, developmental, or cognitive/ experimental) ......................... Ph.D.
- Science communication
  - illustration .................................................. Certificate
  - writing ....................................................... Certificate
- Sociology ........................................................ Ph.D.
- Theater arts .................................................... Certificate

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. Hard copies of materials and applications for our centralized programs are available from and returned to UC Santa Cruz:

Division of Graduate Studies
1156 High Street
Santa Cruz, CA 95064
(831) 459-2301
E-mail: gradadm@cats.ucsc.edu

Program Descriptions 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 contact the assistant dean for outreach and recruitment, at (831) 459-4109, early in the application process.

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 contact the assistant dean for outreach and recruitment, at (831) 459-4109, early in the application process.

Diversity-Enhancement Programs

The Eugene Cota-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

*Prospective students should contact the department for both graduate programs prior to applying.
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) 459-4109.

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 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 42 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 them 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 apartments were designed with privacy, 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 $8,337 for the 2003–04 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 living 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.

Many changes are in progress and were not finalized in time for this publication.

Anthropology..........................January 5, 2004
Astronomy and astrophysics..........January 1, 2004
Biology.................................December 15, 2003
Chemistry and biochemistry...........January 15, 2004
Computer engineering................December 15, 2003
Computer science........................January 15, 2004
Earth sciences..........................January 15, 2004
Economics applied.....................February 1, 2004
International..........................January 15, 2004
Education
  teaching (M.A.).......................January 15, 2004
  research (Ph.D.).....................December 15, 2003
Electrical engineering..................December 15, 2003
Environmental studies..................January 7, 2004
Environmental toxicology.............January 15, 2004
History................................January 5, 2004
History of consciousness..............December 1, 2003
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 (or the department, for decentralized programs) by the program’s deadline or by February 1, 2004, whichever is earlier.

Admission Requirements

To be admitted with graduate status at 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, or to the department (except for our decentralized programs—anthropology, chemistry and biochemistry, economics, environmental studies, history, linguistics, music, philosophy, politics, science communication, and theater arts). Records submitted to the Division of Graduate Studies may not be borrowed, returned, or sent elsewhere. The application and the accompanying materials should be complete and accurate.

1. Application materials. Application materials for all programs are available online at graddiv.ucsc.edu. A hard copy of the application form may be obtained from the Division of Graduate Studies. (Applications for our decentralized programs—anthropology, chemistry and biochemistry, economics, environmental studies, history, linguistics, music, philosophy, politics, science communication, and theater arts—are available directly from those departments.) The completed application must be accompanied by a $60 check, draft, or money order, payable to UC Regents. 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 included in the application packet or be requested well in advance of the program deadline to be sent to the Division of Graduate Studies or decentralized department. 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 must 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 application packet, or the applicant should arrange to have them forwarded to the Division of Graduate Studies or decentralized department. 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
- Biology: 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
- Earth sciences: GRE General Test
- Economics: 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
- Marine sciences: GRE General Test and GRE Subject Test in major
- 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

*Prospective students should contact the department for both graduate programs prior to applying.
**Physics:** GRE General Test and GRE Physics Test

**Politics:** GRE General Test

**Psychology:** GRE General Test

**Science communication**
- Illustration: No GRE required
- Writing: Miller Analogies Test; GRE General Test and GRE Subject Test in Biochemistry, Cell, and Molecular Biology; Biology; Chemistry; Computer Science; Geology; Mathematics; or Physics

**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 Division of Graduate Studies 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 mailed to the division 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. 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 marine 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. 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. The science communication illustration track requires a portfolio of at least eight examples of the applicant’s artwork (paper reproductions, photographs, or slides) in color and/or black and white. Sociology requires 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. The decentralized programs in anthropology, chemistry and biochemistry, economics, environmental studies, history, linguistics, music, philosophy, politics, science communication, and theater arts process their own applications. When the application is complete or the application deadline is reached, the application (whether complete or incomplete) is prepared and sent to the appropriate department for review and recommendation.

Applicants are admitted by the graduate dean following recommendations by the departments. Applicants will be notified by 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, via e-mail, in person, or by proxy. Letters are mailed 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 questions about the completeness of the file should be directed to the Division of Graduate Studies at (831) 459-5906, 8–10 A.M. or 4–5 P.M., or to the decentralized department, before the application deadline. Specific questions about the evaluation of the application should be directed to the graduate representative of the department.
Fees and Expenses

Fees and expenses for graduate students are shown below. Tuition, fees, and other charges are subject to change without notice by the Regents of the University of California. For current fee information, check reg.ucsc.edu.

Graduate Student Fees, 2003–04

<table>
<thead>
<tr>
<th></th>
<th>One Quarter</th>
<th>F-W-S Quarters</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Registration Fee¹</td>
<td>$238.00</td>
<td>$713.00</td>
</tr>
<tr>
<td>Educational Fee¹</td>
<td>1,385.00</td>
<td>4,156.00</td>
</tr>
<tr>
<td>Santa Cruz campus fees²</td>
<td>217.75</td>
<td>653.25</td>
</tr>
<tr>
<td>Health Insurance (waivable)</td>
<td>504.00</td>
<td>$1,512.00</td>
</tr>
<tr>
<td><strong>Total for California Residents</strong></td>
<td><strong>$2,344.75</strong></td>
<td><strong>$7,034.25</strong></td>
</tr>
<tr>
<td>Nonresident Tuition¹</td>
<td>3,859.00</td>
<td>11,577.00</td>
</tr>
<tr>
<td>Educational Fee Differential³</td>
<td>87.00</td>
<td>260.00</td>
</tr>
<tr>
<td><strong>Total for Nonresidents of California</strong></td>
<td><strong>$6,290.75</strong></td>
<td><strong>$18,871.25</strong></td>
</tr>
</tbody>
</table>

¹Two quarters at $238 and one quarter at $237.
²A proposed $1,200 increase in the annual Educational Fee is included. California residents pay an annual Educational Fee of $4,316 (two quarters at $1,385 and one quarter at $1,386). For nonresidents of California, the annual Educational Fee is $4,416 (three quarters at $1,472). Graduate students who have been approved to enroll in part-time study may be eligible for a 50 percent Educational Fee reduction.
³A limited number of Nonresident Tuition Fellowships are available. Please refer to the Financial Support section.

For information on fee refunds, see page 22.

Minimum annual expenses, including registration fees, for a single graduate student living on campus are estimated to be about $23,025 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 2003–04 academic year. Non–California residents should add $11,837 in nonresident tuition and fees to the total. Living expenses and student fees are likely to increase for 2004–05.

Graduate Student Budget, 2003–04

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees</td>
<td>$7,034.25</td>
</tr>
<tr>
<td>Books and supplies</td>
<td>1,385.00</td>
</tr>
<tr>
<td>Room and board (on or off campus)</td>
<td>11,163.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,488.00</td>
</tr>
<tr>
<td>Personal</td>
<td>2,136.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$23,024.25</strong></td>
</tr>
</tbody>
</table>

Required Fees

Required fees are due and payable before the start of each quarter. At the beginning of each quarter, sufficient funds will be needed 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. Financial aid recipients should note that fellowship, grant, and loan checks or bank deposits in excess of university charges are not available until after registration each 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 extracurricular programs, campus child care, community and public service projects, and free-fare use of the local transit systems.

In addition, all students, including foreign students, are assessed a mandatory fee for health insurance. 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 75 or 95 percent of the customary and usual charge, depending upon whether the preferred provider network is used. Coverage includes hospital stays, surgical services, physician visits, emergency treatment, outpatient care, and pregnancy. Dependent coverage is also available. For information, call the Student Health Center, (831) 459-2389.

Waivers from the mandatory insurance fee are available for students who can show that their outside plan 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 on the web at reg.ucsc.edu and the Graduate Student Handbook at www.graddiv.ucsc.edu/handbook.html.

Nonresident Tuition

A resident of a state other than California or of another country must pay nonresident tuition. General criteria for residency are in Appendix A. Non–U.S. citizens note: Only U.S. citizens and holders of immigrant visas may become qualified for resident classification regardless of how long they live in California.

Late Fees

Late fees may be assessed if a student fails to make university payments or file forms by the specified deadlines. 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 Graduate Student Handbook and the Schedule of Classes, and online at reg.ucsc.edu, and they appear on the Statement of Account.

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 studentinfo@cats.ucsc.edu, or visit the web site at www2.ucsc.edu/accs/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, 2004, for enrollment in fall 2004. Priority is given to applications submitted by March 2, 2004. Applications for student loans for the 2004–05 academic year will be accepted until
April 2005. More detailed information about the application process and loans appears on pages 23–24. Students may also contact the Financial Aid Office, 201 Hahn Student Services Building, (831) 459-2963, e-mail fin_aid@ucsc.edu. Web: www2.ucsc.edu/fin-aid.

Fellowships, Assistantships, Grants

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 2003–04 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 2003–04 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. 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 $3,859 per quarter for 2003–04.)

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 $4,014, and the Cal Grant B program is expected to pay a maximum of $5,565 per year for study at the University of California in 2003–04. Renewal of these awards also requires the student to submit the FAFSA by March 2.

Cal Grant T Program. The California Student Aid Commission (CSAC) offers the Cal Grant T for California residents with a bachelor’s degree who are admitted to a program of professional teacher preparation. This one-year grant is expected to be $4,014 for 2003–04 and is intended to pay fees. Applicants must complete and submit the FAFSA by early April to ensure that their accurate data is received by CSAC postmarked no later than June 1, 2004. Awards are based upon need and academic performance (usually measured by GPA or GRE scores). Cal Grant T recipients must agree to teach at a low-performing school for one year for each $2,000 in funding they receive, for up to four years of service. Those who do not comply with this service requirement must repay the portion of funding for which they provided no service. Students who have received a one-year extension of a Cal Grant A or B for a teacher credential program are not eligible for this award.

Teaching Assistantships. For the 2002–03 academic year, half-time teaching assistantships have provided a salary of $4,715 per quarter.

Graduate Student Researchships. For the 2002–03 academic year, half-time researchships provided a salary ranging from $1,189 to $1,756 per month, depending on the student’s academic level and department. The application for fellowships, assistantships, and researchships 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 February 1, 2004, whichever is earlier.

The division and the UCSC Career Center (see page 40) can provide information about graduate fellowships and grants available from external sources.

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 24 for additional information.

Loan Forgiveness Programs

The Assumption Program of Loans for Education (APLE) is another program offered by CSAC for students. There are two categories of students this program serves: students who plan to become public schoolteachers and graduate students who plan to serve as faculty in California colleges or universities.

The first category of students must be nominated by the UCSC Education Department. Under the program, the commission may assumes 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. In addition, participants who teach mathematics, science, or special education in the lowest-performing schools may have an additional $8,000 of educational debt assumed, for a total of $19,000. To receive full benefits, you must provide four consecutive years of teaching at a California public school. The postmark application/nomination deadline is July 15, 2004.

Graduate students who plan to become college faculty must complete an application packet and submit it to their academic department for evaluation and submission to CSAC by the June 30 deadline. Additional eligibility criteria include California residence, U.S. citizenship or eligible noncitizenship, full-time graduate enrollment, academic ability, and financial need. Selected applicants must agree to provide three consecutive years of full-time, or the equivalent, teaching service at one or more regionally accredited California colleges or universities. The maximum loan assumption payment is $6,000 ($2,000 for each year of service).
## Resources for Learning and Research

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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 over 1.35 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 on 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 systemwide Melvyl® catalog, and the library home page. The library home page provides a convenient gateway to the CRUZCAT and Melvyl® systems, the California Digital Library, and a host of other electronic information resources, such as 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 nearly 150 online article databases to which the library subscribes. Librarians also offer group instruction: orientation tours 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 magazines. 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, Trilogy, 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 (ERS)
- 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, 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.

Computing Facilities

Computing at Santa Cruz is characterized by faculty, staff, and students using computers not only for instructional, research, and administrative activities, but to communicate with each other and colleagues worldwide in support of these scholarly activities. With campus computing resources, students on or off campus can access campus web and application servers, library resources, and the Internet.

Electronic mail is a primary form of communication and available to everyone in the campus community.

The campus has 15 open-access instructional computing laboratories, with digital media equipment and specialized academic software. For a description of these open-access labs, see icampus.ucsc.edu. In addition, several programs—including those in arts, biology, computer engineering, economics, foreign languages, and physics—operate specialized computing facilities for students in those majors. The campus also provides specialized computing facilities, such as visualization laboratories, for faculty research in many fields from astronomy to linguistics to seismology. For a description of the Baskin School of Engineering computer facilities, see page 59.

Many classrooms are equipped with the latest advances in technology, including computers, video, and video projectors. Faculty and students take advantage of these by using innovative instructional software and presentation methods.
The campus bookstore provides substantial discounts for students, faculty, and staff on personal computers such as Apple and Compaq and may be contacted directly for pricing and availability information or via the web at slugstore.ucsc.edu.

Communications and Technology Services

Communications and Technology Services (CATS) provides computing, network, telecommunications, and instructional technology services and support to the campus. CATS is located in the Communications Building and may be visited at www2.ucsc.edu/cats and ic.ucsc.edu.

CATS 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 material via the web or electronic mail, and both the UCSC and UC-wide library catalogs are accessible via the web.

CATS Instructional Computing (CATS/IC) manages 15 instructional computing labs throughout the campus. These include a Digital Media Lab in the arts and Solaris Unix labs for students in the sciences. The 15 labs, including wired and wireless labs, have over 375 computers available for students to use; 65 are Sun workstations, and the remaining are about evenly split between Macs and PCs. Lab workstations are replaced every three years.

Labs are used like classrooms: reserved by faculty or 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 www2.ucsc.edu/drc and make your request so CATS/IC 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 CATS/IC 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.

Instructional Computing has about 100 student staff members. Positions include lab consultants, who staff labs and assist students; technical support specialists, who maintain lab hardware and software; and web developers, who work on project teams to produce academic course sites. Please see the IC web page at ic.ucsc.edu or e-mail fitc@ucsc.edu for more information.

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 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 into 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/CATS account. Each registered student is assigned an account and may set the initial password via the web at any of the instructional computing labs or from their own computer. Faculty and campus units send e-mail about classes and student services to this account. Students may forward e-mail sent to this UCSC account to another address via a web form.

CATS provides support for its services to students, faculty, and staff via the Information Resource Center. The Information Resource Center (IRC) provides walk-in, phone, and online support, including a knowledge database at ic.ucsc.edu/help/. The IRC is located at 50 Communications Building. To reach the IRC, call (831) 459-4357 (459-Help), e-mail infocat@ucsc.edu, or visit our web site: www2.ucsc.edu/cats/ic/.

Research Programs and Facilities

Research at 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 105–366.

Arboretum

The Arboretum at UCSC is a research and teaching facility serving both the campus and the public. Its total collection, containing representatives of nearly 300 plant families, provides beginning students with a survey of the plant kingdom. Special collections provide undergraduates with illustrations of a great variety of interesting phenomena. Facilities for growing plants offer students and research faculty opportunities to experiment with living plants. The Arboretum maintains various collections of rare plants of unusual scientific interest. Particular specialties are world conifers, primitive angiosperms, plant families from Australia, New Zealand, and South Africa, and California natives. Many of the species in these collections are not otherwise available for study in American botanical gardens and arboreta.

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 1,500 different selections from among choice ornamentals. Many of these have been and will continue to be the plants of future California gardens.

Norrie’s, which is a volunteer-run gift shop supporting the Arboretum and its student staff, is open Tuesday 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: arboratum@ucsc.edu; web: www2.ucsc.edu/arboratum.
Arts Instructional Computing Laboratories

Instructional Computing (IC) has two labs for the arts located in Porter College, Rooms D-240 and D-245. A third lab, with specialized music hardware and software, is located in the Music Center.

The IC Arts Mac Lab and IC Digital Media Lab at Porter are equipped with arts-specific hardware and software. Apple G4 workstations are 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 dual-processor G4s and other hardware 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, computer labs located in the Art, Theater Arts, and Film and Digital Media Departments only serve students taking classes in those departments.

Baskin School of Engineering Computer Facilities

The Jack Baskin School of Engineering operates several computer laboratories in support of research and graduate instruction in applied mathematics and statistics, computer engineering, computer science, and electrical engineering. The School of Engineering maintains a network of several hundred Unix and Windows systems. For general-purpose computing, the School of Engineering supports:

- Central file servers for core services such as mail, name service, and file sharing
- Several general-access Unix systems
- Several graduate student computer labs with a mix of Windows, Linux, and Solaris workstations and network printers

In addition to these facilities, the School of Engineering operates and supports the following research laboratories:

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 (e.g., packet-radio networks), Internetworking, multipoint communication, and the control of resources by multiple administrative authorities.

Computer Systems Laboratory

Composed of faculty from the Computer Science and Computer Engineering Departments, the Computer Systems Laboratory focuses on caching, storage systems hierarchies, wide-area distributed systems, security, and performance.

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.

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.

Multidimensional Signal Processing Research Group

The Multidimensional Signal Processing (MDSP) Research Group 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.

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., hierarchies, irregular grids, massively parallel volume rendering through the net, uncertainty visualization, vir-
tual reality in scientific visualization, nomadic collaborative visualization, tensor visualization, and flow visualization.

**Storage Systems Advanced Research Group**

The Storage Systems Advanced Research (STAR) Group develops new I/O interfaces that exploit high bandwidth and increased processing power at the storage layer, coupled with automatic techniques for characterizing performance and adapting to new workloads.

**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.

**Undergraduate Engineering Laboratories**

The School of Engineering 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 [www.soe.ucsc.edu/bels](http://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 Public Wireless Computer Network**

A public wireless (IEEE–802.11b) computer network is being installed on the first floor of the Baskin Engineering Building. UCSC students and guests may access the Internet using their own laptops with wireless Internet cards.

**UCSC Computer Center**

In addition to the facilities provided by the Jack Baskin School of Engineering, students have access to the computing facilities of the UCSC Computer Center. These include several computer labs consisting of Unix, Mac, and Windows workstations. They are supported by the Instructional Computing component of Communications and Technology Services (CATS, see page 58).

For additional information regarding the School of Engineering, please check our web site: [www.soe.ucsc.edu](http://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, O n H eroes, H ero Worship, and the H eroic in H istory, was published in 1993 by the University of California Press. The second volume, Sartor Re Loadus, was published in 2000. H istorical E ssays and T he F rench R evolution are forthcoming. Web: [www.nd.edu/~carlyle/strouse.html](http://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 agricultural 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 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 219) 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 221). 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 hosts 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. Web: www.ucsc.edu/casfs.

Center for Biomolecular Science and Engineering

The Center for Biomolecular Science and Engineering (CBSE) is an umbrella organization for interdisciplinary research and academic programs spanning the School of Engineering and the Division of Physical and Biological Sciences. The mission of CBSE is to foster research and education intended to meet the challenges of the post-genomic era resulting from completion of the Human Genome Project and sequencing of model organisms. The revolutionary technologies that have recently been developed to gather and analyze genomic information will help to forge a new understanding of biology, with widespread applications to medicine, agriculture, and ecology. These technologies have been made possible by developments in structural biology, engineering, and computer science, and their further advancement requires a new blend of computational analysis, micromechanical robotics, microfluidics, bioelectronic chips, imaging, and new laboratory methods for functional genomics. UCSC’s location, in proximity to Silicon Valley and the San Francisco Bay Area biotech community, our actively collaborating groups in molecular biology, biochemistry, and computational biology, and the support for micro- and nanoscale engineering methods from programs in the School of Engineering make this a natural research and academic focus for this campus.

Our goals are to (1) promote interdisciplinary research in areas that support the study of genomic information and structural biology, (2) develop courses, curricula, and internships leading to degrees in the area of biomolecular engineering, (3) support a core of instrumental and computational facilities, and (4) cultivate and maintain mutually beneficial industrial collaborations.

The center provides a forum for bringing individual faculty together to jointly tackle some of the emerging complex research challenges in genomics and structural biology. Through funding for the center and affiliated faculty from federal, state, and private agencies, we provide interdisciplinary training for undergraduates, graduate students, and postdoctoral researchers.

UCSC currently offers a B.S. degree in bioinformatics (see page 190) and has initiated plans for M.S. and Ph.D. degree programs in bioinformatics. These educational programs are designed to meet the critical need for trained professionals in industry and academia in this area and will include internship opportunities and seminars to facilitate close interaction with local industry. More information on the center can be found on 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-America, 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 67), but it 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 fund several visiting scholars each year in conjunction with an ongoing project on “Other Globalizations,” funded by the Rockefeller Foundation. It also hosts 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/ CultStudies/. 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 44), 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/cgirs.

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 education by broadening the understanding of science learning in both formal and informal environments. 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, view 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 Focused Research Activity (FRA) founded in 2001 and housed at the Baskin School of Engineering. In addition, it plans to convert to an Organized Research Unit (ORU) in 2003. 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, via its research centers, focuses research 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:
- 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/research/centers/fra.html

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; comparative genocides across time, space, and culture; sexuality and the public sphere; the relationship between science, technology, and social justice; youth, education, and inequality; and activist-academic collaboration on issues facing immigrants in northern California. 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, 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 postdoctoral and affiliated researchers. For more information, contact CJTC at cjtc@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 molecular basis of action of RNA in biological systems.
focused on improving the education of students at risk of academic failure due to language or cultural barriers, race, geographic location, or poverty. CREDE is based at UCSC, with an affiliate center at the University of Houston.

From 1996 to 2001, CREDE funded 31 research projects around the country. Researchers in these projects gathered data and tested curriculum models in wide-ranging settings and with diverse student populations—from classrooms with predominantly Zuni-speaking students in New Mexico, to inner-city schools in Florida, to California elementary schools with large populations of native Spanish-speaking students.

During 2001–03, seven synthesis teams are extracting the key findings and practices from the field. The teams will produce a range of publications and other tools to help teachers implement best practices in the classroom and to set future research agendas. CREDE is also partnered with two schools (Starlight Elementary School in Watsonville, Calif., and Waianae High School in Waianae, Hawaii) to document and develop a scalable model of school reform.

CREDE offers a wide range of multimedia products (interactive CD-ROMs, videos, and national directories of programs focused on teacher preparation, two-way bilingual immersion, and secondary newcomers), print publications, and a useful web site for practitioners, researchers, policy makers, and parents. For more on CREDE, visit www.crede.ucsc.edu.

**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 publishes an annual newsletter and a working-paper series. For further information, e-mail clrc@ucsc.edu or visit the web page: lals.ucsc.edu/clrc.

An important goal is to promote interaction between structural biologists on the one hand and molecular geneticists and biochemists on the other; thus, members of the center comprise faculty from biology, chemistry and biochemistry, and computer science. 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.

Motivation for the creation of the center has come from 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, and understanding RNA viruses—such as HIV—has become a national priority.

Research laboratories for the center are located in Sinheimer 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/rnacenter/

**Center for Research on Education, Diversity & Excellence**

The Center for Research on Education, Diversity & Excellence (CREDE) is a federally funded research and development program.
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 scheduled topic for summer 2003 is The Old Curiosity Shop. 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 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 three residential programs on the UCSC campus providing high school students with enriched learning experiences. The Upward Bound Math and Science Program assists students from disadvantaged backgrounds to succeed in higher education through its summer program and year-round counseling services. The California State Summer School in Mathematics and Science (COSMOS) selects academically talented high school students from around the state. The Magical School Bus Ride is a two-week program for students from Compton Unified School District who visit four UC campuses, including UC Santa Cruz.

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
Focused Research Activity in Performance and Visual Studies

The Focused Research Activity in Performance and Visual Studies develops multidisciplinary and integrated approaches to the arts. Faculty and graduate students come from three Divisions: Arts, Humanities, and Social Sciences.

The FRA explores how working across the disciplinary boundaries of theater, dance, music, art history, literary theory, anthropology, and history can uncover new methodological approaches to the study of performance and visual culture. Performance and visual culture emphasize both the historical and social situation of TTS approaches. In addition, the impact of visual culture on performance (cultural, artistic, and ritual) since the 1960s leads to the more contemporary studies undertaken by the FRA. The intersections of aesthetics and anthropology, of literature and performance, of dance and ethnography, and of all of these with the visual dimension of representation have become ever more intensive areas of interdisciplinary research since the 1980s. The performativity of viewing also contributes to our field of study. We see recent work on the body and its movements; on the diverse cultures of musical notation; on the relationship of the physical and auditory to dramatic production as areas of innovative and forward-reaching scholarship. Today, performative and visual media interact and redefine our understanding of culture, causing critical approaches to be of paramount importance to the future of the arts. This work generates new theories of interpretation and meanings. The FRA sponsors a yearly speaker series and special events such as symposia and international conferences. For further information, e-mail mfranko@ucsc.edu or cmwosat@ucsc.edu

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 ethnomusicology. 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 of baroque music for thebaroque orchestra, Virtual Bach, premieres 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 Taillefére, 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, rehearsal 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.

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.

The focus of academic year 2003–04 will be Feminisms and Global War. For information, contact the director at (831) 459-4146, moglen@ucsc.edu, or staff at (831) 479-1776, nray@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 61) and research units including: Jewish Studies, Mediterranean Studies, Mind and Meaning, Pre- and Early Modern Studies, and Modernist and Avant-Garde Studies, Wilderness Studies, and Black Music in a Global Context. 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 will build 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 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 (IGPPP), a multicampus research unit, includes a branch at UCSC. The IGPPP supports a wide range of basic research on the origin, structure, and evolution of the 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 three 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), and the Center for the Study of Imaging and Dynamics of the Earth (CSIDE). 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 astrophysical modeling. An expansion is planned that will add a Center for Remote Sensing of the Environment.

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 Astrophysics, 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.

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 and education. 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, 108 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
- Paleoenvironmental analysis
- 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 134; a two-year graduate program leading to an M.S. in marine sciences is described on page 308. 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 invertibrates 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 are 55 acres of land recently purchased by UCSC for 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 43-foot research vessel, 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 Año Nuevo Island, the largest elephant seal rookery on the Pacific coast (see page 70). Long-term research on Año Nuevo is made possible by a use agreement with the California Department of Parks and Recreation.

IMS maintains active cooperative research agreements with both the Biological Resources Division and the Coastal and Marine Group of the U.S. Geological Survey and houses at or near Long Marine Laboratory 30 agency research scientists and support staff, who interact and collaborate with faculty and students. 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 cause 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 established a Cooperative Research Center 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: ims.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.

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 transmission networks. SCPBRG is also expanding its activities to increase educational outreach through school assemblies and training for professionals. A new Seabird/Raptor Facility focuses on research and education efforts on posttreatment and postrelease monitoring and survival of oiled seabirds, as well as on research and monitoring of raptors. SCPBRG is located at the Long Marine Laboratory. For more information, review the web site at www.ucsc.edu/~scpbrg.

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 sdbave@ucsc.edu. The web address is www.2.ucsc.edu/si-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 subcategorization, 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 lrc@ling.ucsc.edu; or see the web: lrc@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, 437 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 Crescent, 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 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, fusu@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, fusu@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, jsmit@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 coastal 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, fusari@ucsc.edu. Web: uncresrv.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, fusari@ucsc.edu. Web: uncresrv.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 make this an ideal location for research. Northern elephant seals, California sea lions, northern sea lions, and harbor seals 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 000). 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 pamorris@ucsc.edu, or visit the web: nrs.ucop.edu/reserves/nuevo.html.

New Teacher Center
The New Teacher Center (NTC) is a national resource dedicated to teacher development and the support of programs and practices that promote excellence and diversity in America’s teaching force. Recent research and conventional wisdom indicate that the quality of the classroom teacher is the most important ingredient for student learning. Currently, the NTC operates a number of initiatives in the areas of teacher preparation, teacher induction, teacher leadership, school administrator training and support, and research addressing these topics. The NTC receives support from a number of foundations and works in collaboration with county offices of education and school districts throughout the state and the nation. The center is located at 725 Front Street in downtown Santa Cruz, (831) 459-4323, e-mail ntc@ucsc.edu. Web: www.newteachercenter.org.

Ray Film and Study Collection
The Satyajit Ray Film and Study Collection (Ray FASC) is a focused research activity concentrating on the films and other artistic works of Satyajit Ray, one of the world’s greatest filmmakers. Ray FASC maintains, in addition to 35 mm films and videocassettes of Satyajit Ray’s films, a collection of the Ray papers: books, articles, letters, screenplays, sketchbooks, costume designs, music tapes/recordings, posters, stills, illustrations, and other examples of Ray’s multifaceted genius. Ray FASC has received the Lethbridge Collection of some 1,500 volumes/items of works on Ray and by Ray in some 10 world languages. The gift has come from Mr. and Mrs. Cuthbert Lethbridge of Melbourne, Australia. Ray FASC is a recent recipient of a major two-year grant from the Packard Humanities Institute. The grant will enable Ray FASC to prepare an inventory, catalog, and database of the materials in the archive. Ray FASC hosts an annual lecture in honor of the late Dr. Sidharta Maitra, film screenings, seminars, and exhibitions. It helped organize several Ray retrospectives nationally and internationally in 2001–02; plans for more in 2003–04 are under way. Student internships and research projects in the archives are welcome. For further information, call (831) 459-4012, (831) 459-3125, e-mail rayfasc@scilibx.ucsc.edu, or check the web site: arts.ucsc.edu/rayfasc.

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, graduate and undergraduate studies, and the exchange of scholars. Areas of study include international finance, open-economy macroeconomics, international trade, and international political economy. We also support and participate in activities designed to bring greater public awareness and understanding to policy issues involving international economics. SCCIE sponsors public seminars, publication of working papers, and occasional public forums. To support undergraduate study and research in international economics, SCCIE sponsors annual research awards to students wishing to work on a project involving international economics and/or global economic issues. Recent SCCIE events include workshops on the World Trade Organization, Asian Currency Crisis, Globalization and Labor Markets, and International Trade and the Environment. SCCIE cosponsors the West Coast Japan Economic Seminar with UC San Diego. For more information, call (831) 459-1553. E-mail sccie@ucsc.edu; web: sccie.ucsc.edu.

Santa Cruz Institute for Particle Physics
The 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 cam-
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, an 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:

- Data collection with the BaBar detector for studies of CP violation at SLAC
- Studies of ultrahigh-energy cosmic ray showers at facilities associated with Los Alamos National Laboratory
- Studies of deep inelastic electron scattering at DESY in Hamburg, Germany
- Work toward the ATLAS detector for studies at the LHC at CERN in Geneva, Switzerland
- Development of the GLAST detector for studies of high-energy photons in space

The detector development is largely concerned with miniaturization of detectors. Design and testing of custom-integrated circuitry is a major facet of this effort.

Both graduate and undergraduate students take part in these projects, which give them opportunities for thesis work, independent study, and part-time employment. Students have gained experience in the use of minicomputers and electronics design, as well as in actual experimentation and data analysis.

The institute’s theorists have broad interests in high-energy physics, astrophysics, and cosmology—subjects that have become increasingly interrelated in recent years. Topics of their recent work have included the following:

- Phenomenological properties of Higgs bosons and formulation of search strategies for their discovery
- Development and analysis of supersymmetric and other new theories of particle physics that can be tested at present and future accelerators
- Investigations of gauge theories of strong and electroweak interactions, topics in quantum field theory and string theory
- Physics of the early universe including the origin of matter-antimatter asymmetry
- Theories of dark matter and galaxy formation

The theory group collaborates with the SCIPP experimental group, the UCSC astrophysicists and astronomers associated with Lick and Keck Observatories, the large theoretical physics group at SLAC, and theorists at UC Berkeley, UC Davis, and the Institute for Theoretical Physics

Social Sciences Media Laboratory

The Social Sciences Media Laboratory offers media services and equipment to students, faculty, and staff in the Division of Social Sciences. The lab provides technical consultation and support, equipment training, video production and postproduction services, equipment loans, and darkroom facilities. The lab’s facilities are available for use by undergraduates and graduate students doing media projects for credit in a social science class, independent study, or senior thesis. The media lab regularly offers laboratories in video production, basic photography, and audio documentary. These labs train participants in the fundamentals of portable video production, still photography, and audio production. The lab may be contacted by phone at (831) 459-4010; e-mail mlab@zzyx.ucsc.edu. Web: zzyx.ucsc.edu/Mlab/.

STEPS Institute for Innovation in Environmental Research

Founded to integrate Science, Technology, Engineering, Policy, and Society, the STEPS Institute seeks practical solutions to critical environmental problems. The institute focuses on three major global environmental issues: climate change, genetic restructuring of ecosystems, and alteration of major water systems. These changes, brought about by human activities, are interconnected and are rapidly altering all of the Earth’s ecosystems.

The STEPS Institute addresses these problems by helping facilitate research projects through the commonly missed first step: bringing together policy makers, social scientists, engineers, and life-sciences researchers from UC Santa Cruz and other institutions. These interdisciplinary groups formulate major environmental questions and design research that will deliver usable answers. Objectives follow:

- To foster collaborations among environmental research groups throughout the university and help develop partnerships between UCSC researchers and others regionally, nationally, and internationally
- To provide a context where working groups addressing major environmental research and policy questions can develop coordinated long-term efforts
- To be the major mechanism for coordinating environmental research throughout the university, linking departments, centers, other institutes, and divisions and developing research facilities with tools that go beyond the equipment and resources available to individual researchers
- Current research being addressed:
  - How do we confront scientifically and socially the rapidly changing biodiversity of all ecosystems that is being driven by fragmentation of landscapes and the introduction of nonnative species of plants, animals, and microbes?
  - How is diffusion of environmental toxins, such as heavy metals and toxic algal blooms, reshaping ecosystems?
  - How do we translate the science and technology of climate modeling and data collection into effective planning tools for fisheries, agriculture, forestry, urban centers, and overall ecosystem management?

The STEPS Institute harnesses the expertise and resources of dozens of departments and research units at UC Santa Cruz, spanning the Division of Physical and Biological Sciences, the Division of Social Sciences, and the Jack Baskin School of Engineering. For more information contact: thompson@biology.ucsc.edu. Web: www.steps.ucsc.edu.
corporations, city and county planning departments, and resource management agencies, to map everything from trucking routes and zoning areas to acreage slated for logging.

The purpose of the facility is for environmental and policy research and training, including additional teaching and self-instruction. Beyond serving the training and research needs of the campus, the facility serves as a regional resource through data and technology exchanges (e.g., with NASA, 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. It is administered by the Environmental Studies Department, Division of Social Sciences, which teaches Environmental Studies 115A (see page 223). 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 laboratory manager at (831) 459-2890 (fulmres@ucsc.edu). Web: gis.ucsc.edu/.

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 125). A B.S. degree in astrophysics is offered through the Physics Department (see page 318). 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 astrograph, 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 supernovae. 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 spectograph, judged to be one 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 Kast double spectograph, a pioneering example of UCO/Lick’s innovative instrumentation capabilities; the multiple-object spectograph, 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 the wide variety of astrophysical issues, 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 spectograph (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 spectograph 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 is funded for five years, with the probability of an additional five years following a program review by NSF. 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.
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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 choose a college 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 do 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 pages 34–35). 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 39–42 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. Students may change colleges 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 159), 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 are arranged in two quadrangles on a hillside overlooking the city of Santa Cruz and Monterey Bay. About 475 students are housed in the college. Each building 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. The residential staff facilitate diverse educational, social, and recreational programming to enhance the living and learning environment. Apartments for continuing students are scheduled to open in fall 2004.

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, weekly 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

Fellows
MARGARITA AZMITIA, Psychology
KAREN BASSI, Classics
JAMES H. BIERMAN, Theater Arts (Drama)
DONALD BRENNIE, Anthropology
JEAN P. BRODIE, Astronomy and Astrophysics
MARGARET R. BROSE, Italian and Comparative Literature
GIULIA CENTINEO, Italian Language
SANDRA CHUNG, Linguistics
PHILIP CREWS, Chemistry
MARIA (TONIA) DE CHICCHIO, Italian Language
JOHN M. DORIS, Philosophy
MIRIAM ELLIS, French Language
ANGELA ELSEY, French Language
PATRICIA FITCHEN, French Language
CAROL M. FREEMAN, Writing
MARY-KAY GAMEL, Classics and Comparative Literature
RAYMOND W. GIBBS JR., Psychology
ROBERT A. GOFF, Philosophy
M. VICTORIA GONZALEZ-PAGANI, Spanish Language

UCSC offers two kinds of residential living on campus—residence halls and apartments. Shown above is a typical residence-hall room, available in all of the ten residential colleges except Kresge College. Kresge has apartments only.
Stevenson 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, chivalry, honesty, hard work, and responsibility.

— Seung Kyun Joseph Mok, Stevenson Alumnus/Ragins 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 critical 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 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, physical and biological sciences
• Yearlong freshman seminar
• Tutors and Advisers Program
• Academic Support Center
• Junior Fellows Program

Stevenson College distinguishes itself as the only college with a three-quarter, yearlong freshman 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 353) 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, all three 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 teaching and research assistants for Self and Society. Junior fellows, who must have completed outstanding work in Self and Society (the Stevenson core course) during their freshman year, undergo a rigorous application and selection process. Junior fellows (enrolled in Stevenson 120, Teaching Practicum, and will receive a modest stipend. Tutors and advisers are closely associated with the freshman seminar and the residence houses. By establishing a close academic and collegial relationship with new students, tutors and advisers serve an important role in new students’ transition to the university’s academic community.

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
- Theme Floors: Substance Free, Multicultural
- Coffee House
- Wagstaff 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. Nearby are a picnic and barbecue 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 Wagstaff 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
MARGO HENDRICKS, Literature

Fellows
JUDITH AISSEN, Linguistics
ROBERT S. ANDERSON, Earth Sciences
DANE ARCHER, Sociology
ELOI ARONSON, Psychology, Emeritus
JONATHAN F. BEECHER, History
ILAN BENJAMIN, Chemistry and Biochemistry
PETER H. BODENHEIMER, Astronomy and Astrophysics
REBECCA BRESSAU, Chemistry and Biochemistry
FRANK G. BRIDGES, Physics
MONICA CASPER, Sociology
MARK CIIOC, History
CATHERINE R. COOPER, Psychology and Education
W. JACKSON DAVIS, Ecology and Evolutionary Biology
MICHAEL DINE, Physics
G. WILLIAM DOMHOFF, Psychology, Emeritus
VIRGINIA DRAPER, Writing
DONKA FARKAS, Linguistics
HIROSHI FUKURAI, Sociology
ROBERT E. GARRISON, Earth Sciences, Emeritus
MARVIN J. GREENBERG, Mathematics, Emeritus
ISEBELL V. GRUHN, Politics
HOWARD E. HABER, Physics
CRAG W. HANEY, Psychology
JERG HANKAMER, Linguistics
DAVID M. HARRINGTON, Psychology
AIDA HURTADO, Psychology
JUNKO ITO, Linguistics
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 730 students. The facilities at Crown College were built through a partnership of public funds and a gift from the Crown-Merrill Science and Technology Foundation.

Academic Emphases

Ethical Issues in Emerging Transgenics, Clones, Cyborgs, and Artificial Intelligence explores emerging ethical issues and challenges and the social and cultural consequences. 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 160 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 course work. It often acts as a bridge to the ACE Program in the physical and biological sciences and engineering (see page 401). 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.

Saturday Academy is a service-learning program that gives students an opportunity to teach science-based lessons to junior high students. It is a two-quarter course: the first for developing curriculum and the second for working in the classroom.

College Community and Facilities

Crown sponsors a wide variety of cultural, educational, and social events that are cocurricular in nature. One popular series is the Science/Public Affairs Tables, where a small group of students and selected faculty are invited to the Provost’s House for informal dining and discussions related to their research, interests, or current events.

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 Crown Carnival. 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 in a coed environment (single-sex bedrooms with unisex bathrooms) or on all-female floors. For students particularly interested in living with and learning about a special-interest environment, Crown provides transfer floors, Substance-Free/Smoke-Free Houses, and a Science and Technology Learning Community.

In addition, the college has apartments for 250 students above the first-year level. Like the residence halls, the apartments are designed on a small scale. Each three-story building has two or three apartments per floor that house four to five students in a combination of single, double, and triple rooms and include a kitchen, living room, dining room, bathroom, and outside deck. Special housing options available in the apartments are Smoke-Free, Transfer/ Junior/Senior, and Coed (single-sex bedrooms).

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. Newly 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
Naimera Akitar, Psychology
Robert S. Anderson, Earth Sciences

Harry Beevers, M olecular, Cell, and Developmental Biology, Emeritus
Scott Brandt, Computer Science
Kenneth W. Bruandt, Ocean Sciences
Joseph F. Burnett, Chemistry and Biochemistry, Emeritus
Maureen Callanan, Psychology
Kenneth L. Cameron, Earth Sciences
Sue A. Carter, Physics
Nancy N. Chen, Anthropology
Yin-Wong Cheung, Economics
Menzie Chinn, Economics
Eugene H. Cota-Robles, Molecular, Cell, and Developmental Biology, Emeritus
Margaret L. Delaney, Ocean Sciences
Chongying 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
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. García-Luna-Aceves, Computer Engineering
Linda J. Goff, Ecology and Evolutionary Biology
M. R. C. Greenwood, Chancellor; Ecology and Evolutionary Biology
Ronald E. Grierson, Economics
Judith A. Harbicht-Mauche, Anthropology
David Haussler, Computer Science
Ralph T. Henegardner, 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. Krupp, Biology, Coordinator, Microscopy and Imaging Laboratory
Edward M. Landesman, Mathematics, Emeritus
Jean H. Langenheim, Ecology and Evolutionary Biology, Emeritus
Leo F. Laporte, Earth Sciences, Emeritus
Burney J. Le Bouëc, Ecology and Evolutionary Biology, Emeritus
Max M. Levin, Psychology, Emeritus
Debra Lewis, Mathematics

NAMEERA AKHTAR, Ecology and Evolutionary Biology, Emeritus
ROBERT F. ADAMS, Computer Science
F. JOEL FERGUSON, Chemistry and Biochemistry
E. MELANIE DUPUIS, Sociology
JOHN M. ELLIS, German Literature
MICHAEL P. DOOLEY, Economics
WILLIAM T. DOYLE, Ecology and Evolutionary Biology, Emeritus
MAUREEN CALLANAN, Psychology
MAUREEN CALLANAN, Psychology
ROBERT S. EDGAR, Molecular, Cell, and Developmental Biology, Emeritus
MAUREEN CALLANAN, Psychology
JOSEPH F. BUNNETT, Chemistry and Biochemistry
JOHN FAULKNER, Computer Science
CHONGYING DONG, Mathematics
Michael P. Dooley, Economics
WILLIAM T. DOYLE, Ecology and Evolutionary Biology, Emeritus
...
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 Momaday, Haylsip, Hochschild, Wilentz, Rodriguez, and Isbister. 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 promotes theoretical solutions, while also investigating the fundamental international forces of imperialism and nationalism. (For the course description, see page 297.) Transfer students with fewer than 45 transferable quarter credits are required to take the core course.

Merrill is in the sixth year of its Freshman Scholars Program, in which students take a course together in each of the three quarters: a section of the high school 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.

The second annual Merrill Seminar, Documentary/Documentary Films, was offered in spring 2002. It is anticipated that the Merrill Seminar, a unique offering on a particular research specialty of a UCSC faculty or staff member, will be given each spring quarter; it will be open to all students on campus.

The annual 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, or help in an adult literacy program, or work in a Santa Cruz Public Library-sponsored project, assisting children

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.

Academic Emphases

Potential majors include:

- Environmental Toxicology
- Molecular, Cellular, and Developmental Biology
- Computer Science
- Education and Creative Writing
- Anthropology
- German Language and Literature
- Chemistry and Biochemistry
- Earth Sciences
- Economics
- Physics
- History
- Political Science
- Philosophy
- Psychology
- Sociology
- English
- Music
- Dance
- Film Studies
- Theatre
- Art

Academic programs and minors include:

- Biology
- Chemistry
- Economics
- Environmental Policy
- Geology
- History
- International Relations
- Linguistics
- Mathematics
- Philosophy
- Political Science
- Psychology
- Sociology
- Spanish
- Spanish and Latin American Studies
- English
- French
- German
- Italian
- Russian
- Chinese
- Japanese
- Korean
- Native American Studies
- Women's Studies

Academic offerings include:

- Transfer Credit Courses
- Core Courses
- Special Topics Courses
- Independent Study
- Internships
- Research Assistantships
- Study Abroad
- Service Learning

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 is the home of Casa Latina, which houses the Latin American and Latino Studies Department, the Chicano/Latino Research Center, La Galería, the CineMedia Project, and the Chicano Latino Student Life Resource Center. The Ming Ong Computer Center houses 40 modern personal computers; the college sponsors frequent programs to familiarize students with their use.

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 café, and mission bell tower suggest California’s Latino 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 two apartments per floor. Each apartment houses four 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 its 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 space, which is open to Merrill students on a first-come first-served basis. The entire college is online electronically. 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, Politics

**SONIA E. ALVAREZ,** Politics

**FRANK C. ANDREWS,** Chemistry and Biochemistry

**GABRIELA ABREDONDO,** Latin American and Latino Studies

**NORIKO ASO,** History

**BRENDA BARCELÓ,** Spanish Language

**DILIP K. BASU,** History

**ROBERT F. BERKHOFR JR.,** History, Emeritus

**CLAUDIA F. BERNASCONE,** 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 CALIERNO,** Spanish Language

**MAX CAMARELLO,** Counseling and Psychological Services

**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, Emerita

**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

**HARRY T. FREY,** Sociology

**MARGARET (GRETA) A. GIBSON,** Education

**DIANE P. GIFFORD-GONZALEZ,** Anthropology

**WALTER L. GOLDFRANK,** Sociology

**MARÍA VICTORIA GONZALEZ-PAGANI,** Spanish Language

**M. LIESBETH HAAS,** History

**JUDITH HARRIS-FREIS,** 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. MANTY,** Computer Engineering

**LOURDES MARTINEZ-ECHEZABAL,** Latin American Literature

**MELA EUGENIA MATUTE-BIANCHI,** Education, Emerita

**BARRY MCLAUGHLIN,** Psychology, Emeritus

**MARTA MORELLO-FROSH,** Literature, Emerita

**MARIA MORRIS,** Spanish Language

**OLGA NAJERA-RAMIREZ,** Anthropology

**ELLEN NEWBERRY,** Writing

**ALEX T. PANG,** Computer Science

**SHERI PARIS,** Writing

**SARAH-HOPE PARAMETER,** Writing

**MANUEL PASTOR JR.,** Latin American and Latino Studies

**JUAN POBLETE,** Literature

**CLIFTON A. POODRY,** Molecular, Cell, and Developmental Biology

**ALAN R. RICHARDS,** Economics

**PAMELA A. ROBY,** Sociology

**STUART A. SCHLEGEL,** Anthropology

**ANA MARÍA SERRA,** Portuguese Language

**BAKTHAN SINGARAM,** Chemistry and Biochemistry

**GRAEME H. SMITH,** Astronomy and Astrophysics

**DAVID G. SWEET,** History

**LARRY TRUJILLO,** Community Studies

**GEORGE E. VON DER MUHLL,** Politics, Emeritus
Porter College

The 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 331) 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.

College Community and Facilities

The residence halls play an important role in bringing the college community together. Students are encouraged to spend their beginning 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. The Arts Instructional Computing Laboratories, located at Porter College, consist of two high-end labs oriented toward the arts (see page 59). 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 354), the Elena Baskin Visual Arts Center (see page 119), and the Music Center (see page 299).

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 din-
ing commons has been the site of performances by artists such as a visiting Kathakali dance drama ensemble from India, readings by contemporary authors such as Maxine Hong Kingston and Sherman Alexie, and speakers such as Harold Ramis, who directed Groundhog Day, and Pulitzer Prize–winning cartoonist Art Spiegelman.

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.

**Porter Faculty and Staff**

**Provost**
David Evan Jones, Music

**Fellows**
Elizabeth S. Abrams, Writing
Ken Allen, Art
Elliot Anderson, Art
Roger W. Anderson, Chemistry and Biochemistry
Lawrence Andrews, Film and Digital Media
Manuel Ares Jr., Molecular, Cel, and Developmental Biology
Doris Ash, Education
Charles Atkinson, Writing
Amy C. Beal, Music
Tandy Beal, Theater Arts
James H. Bierman, Theater Arts
Roberto A. Bogomolni, Chemistry and Biochemistry
Joyce Brodsky, Art
George Brown, Physics
Linda Burman-Hall, Music
Elisabeth Cameron, History of Art and Visual Culture
Martin M. Chemers, Psychology
Robert S. Coe, Earth Sciences
Ray T. Collett, UCSC Arboretum, Emeritus
David H. Cope, Music
William D. Coulter, Music
Donald Coyne, Physics
David Crane, Film and Digital Media
E. G. Creighton, Art
Faye J. Crosby, Psychology
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. Ezekova, Music
M. Kathleen Foley, Theater Arts
Doyle Foreman, Art, Emeritus
Jean Fox Tree, Psycholinguistics

**Mark Franko**, Theater Arts
**Susan Friedman**, Art
**Gregory Frisch**, Theater Arts
**Frank Galuszka**, Art
**Ingeborg Gerdes**, Art
**Robert Giges**, Core Course
**Jennifer A. Gonzalez**, History of Art and Visual Culture
**Melissa Gwyn**, Art
**James B. Hall**, Literature, Emeritus
**Susan Harding**, Anthropology
**Amelia Hasting**, Film and Digital Media
**John Hay**, History of Art and Visual Culture
**Irene Herrmann**, Music
**Karlton Hester**, Music
**Clemens A. Heusch**, Physics
**Elie Holland**, 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 Kreemre**, Theater Arts
**Thorne Lay**, Earth Sciences
**Anatole Leinik**, Music
**Frédéric Lieberman**, Music
**Norman Locks**, Art
**Suresh Lodha**, Computer Science
**Charles L. Lord**, Film and Digital Media
**Pavel Machotka**, Psychology, Emeritus
**Dominic W. Massaro**, Psychology
**William G. Mathews**, Astronomy and Astrophysics
**Jennie Lind McAfee**, Art
**Charles E. McDowell**, Computer Science
**Letta E. Miller**, Music
**Margaret Morse**, Film and Digital Media
**Nobuo Nagasawa**, Art
**Paul Nauret**, Music
**Nicole A. Paement**, Music
**Jennifer Parker**, Art
**Kenneth Pedrotti**, Electrical Engineering
**Paul Rangel**, Music
**Barbara Rogoff**, 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. Soussloff**, History of Art and Visual Culture
**Shelley Stame**, 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. Tamkin**, Molecular, Cellular, and Developmental Biology
**Othmar T. Tobisch**, Earth Sciences, Emeritus
**Judith Todd**, Writing
**Andrey Todorov**, Mathematics
**Allen Van Gelder**, Computer Science

**Lewis Watts**, Art
**C. Gordon Wells**, Computer Science
**Linda Werner**, Computer Science
**James Whitehead**, Computer Science
**Paul Whitworth**, Theater Arts
**Jane P. Williams**, Computer Science
**Quentin C. Williams**, Earth Sciences
**Mel Wong**, Theater Arts

**College Administrative Officer**
Michael Yamauchi-Gleason

**Staff**
Susan J. Beach, Administrative Assistant to the Provost
Deborah Belville, Academic Preceptor
Tanya Bennett, Administrative Assistant to the Provost
Thais Bouchereau, Coordinator for Residential Education
Janice Cockren, Academic Preceptor
Jeanine Cowan, Coordinator for Residential Education
Eugene Ervin, Relief Proctor
Robert Giges, Academic Preceptor
Wayne Hendrickson, Senior Night Proctor
Deva Hymen, College Programs Coordinator
Ryan Jones, Coordinator for Residential Education
Cecilia Kerridge, College Receptionist
Robin May-Jarvis, Assistant College Programs Coordinator
Kalin McGraw, Housing Coordinator
Todd J. McGregor, Assistant College Administrative Officer for Student Life
Jesse Rodriguez, Maintenance Assistant
Jennifer Sciglianski, Coordinator for Residential Education
Mary Stafford, College Assistant Dean
David Sulser, Maintenance Supervisor
Paula Trujillo, Financial Coordinator

**Kresge Faculty**

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, Cultural Intersections, (see page 261) invites active participation in the creation of new social possibilities. The Kresge
core course asks: How do we construct our notions of race, gender, class, and sexuality, and how might we? What tensions and what possibilities exist among individual creativity, cultural determination, and social responsibility? How does language reflect—and how might it alter—our shifting perspectives as a culture? Class conversations, written essays and commentaries, readings, films, field trips, and workshops help students challenge theory and social practice in meaningful “real-world” ways.

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 Philips, 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 frosh 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; this includes specific apartments set aside for transfer and re-entry students—those 25 years of age or older.

The residential life 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 academic success, through potlucks, film series, music events, time-management and study-skills advising, sports events, career and graduate school advising, mural painting, and evening concerts at the Provost’s House with faculty, staff, and students.

Kresge has provided a place for me, as a transfer student, where my questions and concerns have been addressed. As a Peer Adviser, it has become my commitment to work with the Kresge community to provide students with an environment where they can experience the richness of university life.

— Julie Taylor, Literature, Chancellor’s Undergraduate Internship Program

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 Piazzetta with its “un-fountain.” Spinning off from the Piazzetta 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 Piazzetta 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 mind frames, 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.

— Dian Do, Community Studies

For more information, call (831) 459-2071 or visit the web site: www2.ucsc.edu/kresge.

Kresge Faculty and Staff

Associate Provost
CONN HALLINAN, Journalism

Members
RALPH H. ABRAHAM, Mathematics, Emeritus
BETTINA APTHEKER, Women's Studies and History
MURRAY BAUMGARTEN, English and Comparative Literature
RACHEL BRINBAUM, History of Art and Visual Culture
TINA CAMPT, Women's Studies
SHELLY E. ERRINGTON, Anthropology
J. PETER EUBEN, Politics, Emeritus
MARGE FRANTZ, American Studies and Women's Studies, Emerita
CARLA FRECCERO, Literature
PASCAL GAYET, French Literature and Language
JOY H. GREENE, English Literature
HENRY R. HILGARD, Molecular, Cell, and Developmental Biology, Emeritus
EMILY HONIG, Women's Studies and History
AKASHA HULL, Women's Studies and Literature, Emerita
EARL JACKSON JR., Japanese Literature
JOHN O. JORDAN, English Literature
ELISE KNITTEL, Earth Sciences
DIANE K. LEWIS, Anthropology, Emerita
NATHANIEL E. MACKEY, 20th-Century Literature, Afro-American Literature, Creative Writing
MARY KAY MARTÍN, Writing, Emerita
ALMA MARTÍNEZ, Theater Arts
CAROLYN MARTIN SHAW, Anthropology
GEOFFREY MASON, Mathematics
KAREN C. MCEALY, Earth Sciences, Emerita
ROBERT L. MEISTER, Politics
HELENE MOGLEN, English Literature

MADELINE MOORE, English Literature, Emerita
LISA ROFEL, Anthropology
MATTHEW SANDS, Physics, Emeritus
JOHN H. SCHAAR, Politics, Emeritus
DANNY SCHEIE, Theater Arts
ROSEWELL SFAFFORD, Writing
RICHARD TERTIS, Literature
ANNA TSING, Anthropology
KAREN TEI YAMASHITA, Literature

Honorary Member
JACQUELYN MARIE, Librarian, McHenry Library

College Administrative Officer
MICHAEL YAMAUCHI-GLEASON

Staff
JIMMY BROWN, Senior Proctor
LINDA CORRALEJO, Receptionist
CAROLYN CRANDALL, Academic Preceptor
VIRGINIA FITZMAURICE, Judicial Officer
CHRISTINE FLORES, Housing Coordinator
ANGELA GALINDO, Advising and Records Coordinator
MATT HIEGER, Custodian
BARBARA LEE, Services to Academic Staff Assistant
ROBIN MCDUFF, Maintenance Supervisor
IAN MITCHELL, Maintenance Assistant
CLAUDIA PARRISH, Transfer Center Coordinator
DARIEN RICE, Groundskeeper
KAREN ROSEWOOD HOOPER, Assistant College Administrative Officer
PEG SHEMARIA, Counseling Psychologist
MARY SIERRA, Financial Coordinator
JULIE TAYLOR, Academic Preceptor
GINGER WELSH, College Programs Coordinator
BETSY WOOTTEN, Services to Academic Staff Supervisor

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, 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 366 for a description of the course.) Transfer students with fewer than 45 transferable 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.
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, celebrations of cultural traditions such as Kwanzaa and Dia de los Muertos, an annual Harvest Dinner for the Oakes community, a Valentine’s Day party, and a spring block party.

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 encouraged to find room for their own creative personal expression.

The other physical facilities at Oakes further support the special programs of the college and provide recreational opportunities for the students. College facilities include the Learning Center, administered by the Academic Resources Center, with computers and seminar rooms; a multipurpose room for lectures, movies, and small theater productions; a college library; a lounge used for college dinners and meetings; a dining facility shared with College Eight; TV lounges in the residences and adjacent to the coffee shop; and a small basketball court, the “Underdome.” Additional recreational facilities located close to the college include tennis courts, a large soccer field, and an indoor basketball court.

A grant from the San Francisco Foundation—from Roscoe and Margaret Oakes Foundation funds—was used in partnership with public funds for the construction of Oakes. Part of the grant was used to establish an endowed fund for the college.

For further information, call (831) 459-2558 or visit the web site: oakes.ucsc.edu.

Oakes Faculty and Staff
Provo t
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. DOREN, Physics
BARBARA L. EISTEIN, History of Consciousness
JAMES B. GILL, Earth Sciences
SUSAN GILLMAN, American Literature
KIRSTEN GRUESZ, Literature
DONNA J. HARAWAY, History of Consciousness
YVETTE HUGUENIN, American Studies
SHARON KINOSHITA, Literature and Language Studies
DAVID S. KLEGER, Chemistry and Biochemistry
MIRIAM F. LANDESMAN, Economics and Mathematics
ANN M. LANE, American Studies
DIANE K. LEWIS, Anthropology
PRADIP K. MASCHARAK, Chemistry and Biochemistry
ERIC PORTER, American Studies
CATHERINE RAMIREZ, American Studies
RENIA 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. TALAMANTES, Molecular, Cell, and Developmental Biology
HAYDEN WHITE, History of Consciousness, Emeritus
ROB WILSON, Literature
STEPHEN C. WRIGHT, Psychology
JUDY YUNG, American Studies
ADRIENNE L. ZEHMAN, Anthropology

Honorary Associates
J. HERMAN BLAKE
BRUCE N. COOPERSTEIN
DAVID DODSON
ALEN B. FIELDS
DOLORES HUERTA
ELBA R. SÁNCHEZ

College Administrative Officer
MARI ORTIZ-MCGUIRE, Interim

Staff
CHER BERGEON, Academic Preceptor
IRA BEYAH, Relief Proctor
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
MILLIKA HINH, Academic Coordinator
PAULA HOLZ, Counseling Psychologist
ELAINE KISHARA, Academic Preceptor
C. J. LESLIE, Groundskeeper
GWENDOLYN MATHIEU, Housing Coordinator
MARIO MONTES, Resident Assistant
EMILIO NAVARRO, Maintenance Assistant
ANNE OANDASAN, EOP Academic Counselor
OSIBIS ORTIZ, College Programs Assistant
KELLI RIGGS, College Programs Coordinator
PATTI TITUS, Advising and Records Coordinator
NICK YUKICH, Senior Proctor

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 153 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 work together on 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 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 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 two- and three-story residence halls with single and double rooms and suites. The residence halls include designated study lounges, laundry facilities, and lobbies 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, graduate students, or campus staff members, along with undergraduate resident assistants and community 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 celebrations of the college community’s varied cultural traditions through music and food at our social hours, College Nights, and dances. Special efforts are made to plan events that reflect the multicultural population through festivals, theatrical performances, dance performances, and seminars and workshops. The seminar series provides opportunities for faculty, students, staff, and visitors to share their research, field programs, and other interests with the college and campus communities. Topics have included the Peace Corps, urban growth, and the politics of occupational hazards.

The Student Programs Office also arranges off-campus events such as trips to the Monterey Bay Aquarium, bird-watching and kayaking at Elkhorn Slough, and observing the elephant seals at Año Nuevo State Reserve.

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 chas@ucsc.edu, or visit the web site: www2.ucsc.edu/eight/.

College Eight Faculty and Staff

Provost

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Fellows

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JULIE BETTIE, Sociology

JOHN G. BORBEGO, Latin American and Latino Studies

BRUCE BRIDGEMAN, Psychology

DAVID T. BRUNIDGE, Community Studies

MONICA J. CASPER, Sociology

BRUCE N. COOPERSTEIN, Mathematics

DANIEL P. COSTA, Ecology and Evolutionary Biology

WILLIAM H. FRIEDLAND, Community Studies and Sociology, Emeritus

HIROSHI FURUKAI, Sociology

MARGARET H. FUSARI, Environmental Studies

JOAQUIN GARCIA-LUNA, Computer Engineering

VICTOR GINZBURG, Mathematics

STEPHEN R. GLIESMAN, Environmental Studies

WALTER L. GOLDFRANK, Sociology

BRUCE BRIDGEMAN, Sociology

DAVID GOODMAN, Environmental Studies

MARGARET H. FUSARI, Environmental Studies

JAMES R. O’CONNOR, Sociology, Emeritus

ART PEARL, Sociology

DANIEL M. PRESS, Environmental Studies

JAMES E. PEPPER, Environmental Planning, Emeritus

DAVID M. RANK, Astronomy and Astrophysics, Emeritus

CRAIG REINARMAN, Sociology

MICHAEL ROTTKE, Community Studies

MARTINE D. F. SCHLAG, Computer Engineering

DANIEL S. BERNSTEIN, Sociology

MICHAEL SOULE, Environmental Studies, Emeritus

NANCY STOLLER, Community Studies

ANUJAN VARMA, Computer Engineering

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. LUBECK, Sociology

PAUL NIEBANCK, 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. RAEMONDI, Ecology and Evolutionary Biology

DAVID M. RANK, Astronomy and Astrophysics, Emeritus

CRAIG REINARMAN, Sociology

MICHAEL ROTTKE, Community Studies

MARTINE D. F. SCHLAG, Computer Engineering

DANIEL S. BERNSTEIN, Sociology

MICHAEL SOULE, Environmental Studies, Emeritus

NANCY STOLLER, Community Studies

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 LeBouef, Ecology and Evolutionary Biology, Emeritus
Joel R. Primack, Physics
Brian Walton, Environmental Studies Coordinator, Predatory Bird Research Group

College Administrative Officer
Mary McKinnon, Interim

Staff
David Barry, Senior Proctor
Paul Bianchini, Maintenance Supervisor
Jan Burroughs, Academic Preceptor
Jody Croce, Cafe Manager
Wendy Gittings, Cafe Assistant Manager
Robin Kirksey, Financial Coordinator
Heidi Lewin, College Programs Coordinator
Sandy Lord, Financial Coordinator
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
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 153), 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 teaching 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 page 42) 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 44 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 60)
• The Center for Global, International and Regional Studies (see page 61)
• The Center for Justice, Tolerance, and Community (see page 63)
• The Chicano/Latino Research Center (see page 64)
• The Santa Cruz Center for International Economics (see page 70)

College Nine Scholars Program
Eligible College Nine freshmen 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. The Scholars Program may continue into the sophomore year.

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.

Monthly Theme Programming
The College Nine theme of International and Global Perspectives forms a central foundation of our programming. Each month, we focus on a different region of the world, and students and staff work together to develop programs, providing opportunities to learn about and enjoy different aspects of the region. Theme events may include faculty presentations, field trips, film series, and hands-on arts programs.

A highlight each month is the College Nine Theme Festival. This popular event, planned by students, brings together the entire college community to enjoy live entertainment and learn how to make some of the culinary delights from a particular region of the world. These events allow students to celebrate another culture in a relaxed and festive atmosphere.

There is also a monthly Book Club meeting. Students come together one evening to discuss a fiction or nonfiction book related to the region of the world being featured that month. It is a way to meet other students and share one’s impressions about a book.

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 Nine students whether or not they live on campus. These events may focus on particular cultures of the world or other student-generated ideas. 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 Weekend
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 Weekend 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 people 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.

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 the College Nine Programming Board. These organizations are responsible for many of the programs previously described. Additionally, there is Recreation 101, which plans dances, ski trips, and intramural sports for College Nine students. There are more specialized groups such as the A Cappella Singing Group.

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 imme-
College Ten

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 154), 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 13-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 discussions, films, 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.

**Students as Teachers and Mentors**

College Ten students have special opportunities to become course assistants, tutors, and students as 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 60)
- The Center for Global, International and Regional Studies (see page 61)
- The Center for Justice, Tolerance, and Community (see page 63)
- The Chicano/Latino Research Center (see page 64)
- 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. The Scholars Program may continue into the sophomore year.

**College Ten Pathways to Distinction**

Another feature of College Ten is that qualified students may graduate with College Ten 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 the first pathway, students are encouraged to pursue research opportunities with faculty by completing three quarters (15 credits) of work on a senior thesis or a research internship. Students may be recognized with College Ten Distinction if they do a thesis or a research internship in their major on a topic related to the theme of social justice and community.

- **Service and Leadership.** The second route to graduating with College Ten Distinction is through completing three quarters (15 credits) of service-learning internships, teaching, or other forms of community service.

**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.

**Social Justice Leadership Institute**

Student leadership and involvement are key to successfully building the new College Ten community. The Social Justice Leadership Institute 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
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 Ten for student involvement. They include the College Ten Student Government Association and the College Ten Programming Board. These organizations are responsible for many of the programs previously described. Additionally, there is Recreation 101, which plans dances, ski trips, and intramural sports for College Ten students. There are more specialized groups, such as 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 rbauman@cats.ucsc.edu, or visit the College Ten web site: collegeten.ucsc.edu

College Ten Faculty and Staff

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Charter Fellows  
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JOHN ISBISTER, Economics  
LORI KLETZER, Economics  
COLIN LEACH, Psychology  
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RAVI RAJAN, Environmental Studies  
CRAIG REINARMAAN, Sociology  
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VICTOR KIMURA, Financial Analyst  
MATT LOZANO, Housing Assistant  
ED MACHADO, Proctor  
SIMON O’SHEA, Coordinator of Residential Education  
JOSE REYES-OLIVAS, Cocurricular Programs Coordinator

College residents enjoying an outdoor study session
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’ll 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 programs 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 55,000, 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 10 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.

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 College Affiliation and 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. (Guarantee only offered in the fall.)

The room and board rates for the 2003–04 academic year range from $7,317 to $10,953, depending upon the type of accommodation and meal plan (see pages 21–22 for more detailed information on rates).

The colleges at UCSC offer two kinds of accommodations. Cowell, Porter, and Stevenson provide residence halls while Kresge houses students in apartments. Colleges Eight, Nine, and Ten, Crown, Merrill, and Oakes 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.)

If you live in a college residence hall, your housing contract will include a board plan (see options below). 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.

During the week, three college dining halls are open from 7:15 A.M. to 8 P.M.; the other facilities are open to serve breakfast, lunch, and dinner. The "Night Shift" operates at three locations from Sunday through Thursday (hours vary at each location). Brunch and dinner are served on the weekends. A wide choice of meal plans are offered, and 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. 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. If you live in an apartment, you will probably prepare your own meals along with your apartmentmates. Many students find it convenient to purchase a meal plan for use in the college dining halls.

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, Welcome brochure, distributed as part of the admission process, 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 voluntary meal plans or Flexi Dollars at this location.

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, three bathrooms, and a kitchenette. 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 2003–04 is $8,259. 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. UCSC students live cooperatively with students enrolled in University Extension’s English Language International (ELI) Program. Contact the Campus Housing Office for more information, (831) 459-2394 or housing@ucsc.edu.
UCSC Inn and Conference Center
The Inn, located at 611 Ocean Street in downtown Santa Cruz, provides housing for 248 UCSC students (new freshmen are not eligible for this housing option) during the academic year. 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 2003–04 the monthly rent is $943, 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. 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 $350 per month. All have water and electrical hookups; eight also have sewer hookups, for $390 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, or to request an application, contact the Graduate Student Housing Office, (831) 459-5712, rvpark@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 50 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. All users should be sure to bring some form of picture identification such as a driver’s license or passport.

Other services provided 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. Locating 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 2002, a room in a shared household averaged $559 per month, while separate units averaged $743 for a studio apartment to $2,094 for a three-bedroom house.

The Community Rentals Office, located at 125 Hahn Student Services, is open 9 A.M. to 4 P.M., Monday through Friday. Summer hours may vary. For further information, call (831) 459-4435, e-mail communityrentals@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 60) 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. 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 as:

• 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 art, literature, photography, theater, 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 glies@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 become involved in the Kresge Food Co-op in a number of ways. 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 just 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’re near the university bus lines. Both houses provide housing for summer session students. Call (831) 426-2667 for the Cesar Chavez House, or (831) 425-2667 for Zami House.

Transportation and Parking

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 6 P.M. to 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 temporary or permanent mobility impairments. An evening 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 taps@ucsc.edu, or visit the web: www2.ucsc.edu/taps.

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. Students 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 website: www2.ucsc.edu/summer. 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 website 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 website 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 website at www2.ucsc.edu/healthcenter or call (831) 459-3772.

Holistic Health

To introduce students to alternative ways to achieve health and wellness, the Health Promotion Department offers a pre-
sentation 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. Call (831) 459-3722.

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. Prevention educators provide formal and informal educational sessions for students, college residential staff, and other campus personnel. Staff also work with colleagues to develop and implement campus AOD policies. With resources available for all students, the AOD Program also offers individual consultations to students with particular needs or concerns. The AOD Program is located in Room 86 of the Student Health Center. For additional information, please contact (831) 459-4866 or mdorenzo@ucsc.edu.

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 addressed 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. For more information regarding our programs and volunteer opportunities, call (831) 459-4679 or e-mail HIVinfo@ucsc.edu.

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. To get involved, contact shac@ucsc.edu.

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/counsel.

(For information on academic and career advising, see pages 39–42.)

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 excellent 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. For more information, contact the Rape Prevention Education Office at the Cowell Student Health Center, (831) 459-2721; e-mail: sg@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. AARCC works closely with overall campus outreach to enhance the recruitment and retention of African American students.

AARCC welcomes volunteers and student interns to serve as members of TEAM AARCC 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 Sistas United, Black Men’s Alliance, Alpha Kappa Alpha Sorority, Alpha Phi Alpha Fraternity, and Delta Sigma Theta Sorority. AARCC 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/aarc.

American Indian
The American Indian Resource Center (AIRC) works in collaboration with the Student Alliance of North American Indians (SANAI), native faculty, and the graduate student Native Research and Pacific Research Clusters to develop information, programs, and events that assist public understanding of native peoples. Invested in creating a campus climate that sup-
ports all students, the center provides 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 dbbett@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 cocurricular 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 aapiro@ucsc.edu, or visit the web: www2.ucsc.edu/aapi.rc.

Chicano Latino
The Chicano Latino Resource Center offers programs and activities to enhance students' transition to college, academic success, intellectual growth, research skills, leadership development, community-service opportunities, and preparation for graduate studies. Examples of programs offered through the center include Online Research Workshops, Chicana Latina Pipeline Project, Chicano Latino Men's Support Group, Introduction to Academic Culture Seminar, Chicano Latino Leadership Conference, and Senior Thesis Support Group. The center is located on the third floor of the Bay Tree Building in the center of campus and is open from 9 a.m. to 5 p.m. daily. There is also a satellite office at Casa Latina, Merrill College, third floor. Students are welcome to stop by and find out more about the programs and activities or for individual consultation. The center also offers student internships to help organize programs and activities. For more information or to make an appointment, call (831) 459-5608 or e-mail larryt@ucsc.edu.

Gay, Lesbian, Bisexual, Transgender
The Gay, Lesbian, Bi, Trans (GLBT) 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 GLBT issues. The GLBT Resource Center is home to several student organizations that meet weekly; to a host of exciting programs; and to a library offering books, magazines, and videos. AIDS information, safer-sex supplies, and other GLBT-related materials are also on hand. Information and referral to campus and community GLBT resources is available by phone or in person. Throughout the year, the GLBT Resource Center coordinates student programming with a queer focus. Education of the non-gay 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 6 p.m. Stop by and meet the center’s friendly staff and find out about internship and volunteer opportunities. You can reach the GLBT Resource Center at (831) 459-2468 or via e-mail at glbtcenter@ucsc.edu. The center’s web site, www2.ucsc.edu/glbtcenter, 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, sports, and wellness 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 315–317). 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/indexpage.p.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, soccer, and tennis. Special events include biannual “cardiac pacer” runs, an annual triathlon, and intercollege series. 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/im/.

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, and golf.
Intercollegiate Teams
Intercollegiate teams 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 National Collegiate Athletic Association (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. UCSC is a Division III member of the NCAA. There are no athletic scholarships or grants in aid. 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. 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 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, ju jitsu, ashtanga yoga warrior, creative movement, ninjitsu, scuba diving, Okinawan karate, skiing, swing dance, and tai chi. Web: www.ucsc.edu/opers/rec.

Banana Slug Mascot
The Banana Slug, a bright yellow, slimy, shell-less mollusk found in the campus’s redwood forest, has been the mascot for UC Santa Cruz’s coed teams since the university opened in 1965. 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, small weight room, 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, television, and theater lounges; work and office space for registered student organizations and campus-wide 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 Development and Community Service, and Student Organization Advising and Resources (SOAR).

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 studentunion.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 Organization Advising and Resources (SOAR) 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 Organization Advising and Resources. (831) 459-2934, e-mail soar@ucsc.edu, or visit the web: www.soor.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 Redwood 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; Institute for Leadership Development and Social Responsibility, (831) 459-5489; the Oakes College service coordinator, (831) 459-2556; 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. Usually, 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 more information about the selection process, contact Student Committee on Committees, (831) 459-5533, e-mail suaoffice@ucsc.edu; the Institute for Leadership Development and Social Responsibility, (831) 459-5489; or the Student Union Assembly, (831) 459-4838, e-mail suaoffice@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 Institute for Leadership Development and Social Responsibility, (831) 459-5489.

The Hate/Bias Peer Response Team (HBPRT) 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, HBPRT 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 Institute for Leadership and Social Responsibility at (831) 459-5489.

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, Lobby Corps director, and commissioner of diversity; and one appointed representative from each of the following student organizations: African/Black Student Alliance; Asian/Pacific Islander Student Alliance; Caribbean; Chicano de Aztlan; Intersex Network; Jewish; Latinx; Native American Indians; Chicano de Aztlan; and Student Alliance of North American Indians. 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), labor solidarity, and advocating against the Classification of Race, Ethnicity, and National Origin (CRENO) initiative. For more information, contact the SUA, (831) 459-4838, e-mail suaoffice@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/gsa.

Systemwide Student Government
The UC Student Association (UCSA) is the statewide association of graduate and undergraduate student governments from the nine 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, 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 nine 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 though 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 UCSA, local, state, and national governments. These positions are elect-
ed for one-year terms during spring quarter every year.

The Student Union Assembly officers in charge of UCSA activities can be reached at (831) 459-4838; e-mail: suao@ucsc.edu, sualobby@ucsc.edu.

**Student Media**

Student Media encompasses numerous student-published periodicals and a radio station that serves both the campus and the Monterey Bay Area. Many students receive academic credit for participation in media organizations.

With the greatest broadcasting power of any UC station, KZSC 88.1 FM presents diverse music, news, and public affairs for the three-county listening area.

The award-winning student newspaper City on a Hill publishes weekly. It covers campus, local, national, and international news and offers reviews and commentary.

Fish Rap Live! publishes twice monthly and provides a forum for free expression of ideas, coverage of local and campus events, and personal journalism.

Campus newsmagazines such as Black/African Voice, EyeCandy, TWANAS, Redwood Review, and Leviathan publish quarterly and are dedicated to current cultural, political, and social concerns.

Annual literary journals offer poetry, prose, photography, and art. Examples are Chinquapin, Red Wheelbarrow, La Revista, Aiy, and Las Griffinhs.

SCTV Channel 31, on-campus-only cable TV, broadcasts student programming.

Each year new publications emerge. If you are interested in contacting any of these organizations, call the Press Center at (831) 459-2840 or (831) 459-5360, or call KZSC at (831) 459-3914 or (831) 459-5173. Web address: studentmedia.ucsc.edu.

**Campus Cultural Programs**

Throughout the year, UCSC offers frequent 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 lectures-demonstrations.

Arts & Lectures, a series of public performances and residencies by artists of international stature, is presented by the University Events Office (UEO) during the year. Recent appearances have included the Afro-Cuban All Stars band, the Ailey II dance company, performance artist Laurie Anderson, musician Lyle Lovett, and the Guaneri String Quartet. Lecturers have included NPR’s David Sedaris and political columnist Molly Ivins. UEO 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 Brian Friel’s Translations, Sabina Berman’s Between Pantcho Villa and a Nakad Woman (Entre Villa y U na M ujar Demuda), Eugene O’Neill’s Ah, Wilderness, and Kate Hawley’s Gread & Hanai (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, and A Perfect Ganeshe by Terrence McNally, as well as the annual showcase of student costume, 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. Recent performances have featured major works such as Britten’s Rejoice the Lamb, Haydn’s Missa in angulis (“Nelson” mass), Mozart’s The Marriage of Figaro, Brahms’s Neue Liebeslieder Walztes, and Handel’s Messiah. The department also sponsors concerts by the Jazz, Percussion, and Wind Ensembles; and ethnomusicology groups such as the West Javanese Gamelan Ensemble and the Latin American Ensembles. 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 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 Public 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 and a non-Shakespeare play 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: shakespeare santacruz.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 fac-
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 childcare@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 an 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 (PESSS).

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 on the web at reg.ucsc.edu/catalog/. Students may also view the university catalog on the web at reg.ucsc.edu/catalog. Course syllabi, when provided by faculty, can be accessed via Advance Course Information (ACI) at reg.ucsc.edu/soad/. The Office of the Registrar also 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 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 42.

Course Numbering

Undergraduate courses are classified as lower division or upper division. Lower-division courses (numbered 1–99) are designed for first-year and sophomore students but may be taken by more advanced students. Upper-division courses (numbered 100–199) 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 course work basic to the subject matter of the course.

Courses listed in sequence (for example, History 131A-B, Spanish 1-2-3) are continued through successive quarters. The first course is prerequisite to the second and the second, prerequisite to the third, unless otherwise specified in the description of the course.

Footnotes

Courses marked with an asterisk (*) will not be offered in the 2003–04 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 28.

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 second primary course 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’s 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 43.

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 students 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 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, 459-2054, 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

Michael H. Cowan, Professor of American Studies and Literature
Nineeenth- and 20th-century American literature, urban studies, American cultural theory and history, multicultural analysis, autobiography

231 Oakes College
(831) 459-4658
http://humwww.ucsc.edu
JOHN DIZEKES, Emeritus
MARGE FRANTZ, Emerita
A. Yvette Huggins, Assistant Professor of American Studies
Race and class relations within 19th- and 20th-century western American history, U.S. labor and immigration history, and comparative ethnic studies

ANN M. LANE, Emerita
ERIC PORTER, Associate Professor of American Studies
African American history, comparative race and ethnicity, cultural studies and critical theory, popular music and jazz studies

CATHERINE RAMIREZ, Assistant Professor of American Studies
Chicana/o and U.S. Latina/o literature, history and culture, popular and cultural studies: critical theory, postcolonial literature and theory, feminist theory, speculative fiction

RENYA RAMIREZ, Assistant Professor of American Studies
Native American studies, Indian identity, Native Americans and anthropology, urban Indians, Native American women, cultural citizenship, expressive culture, and anti-racist education

JOHN BROWN CHILDS, Professor of Sociology
History; race, class, and gender

CHICANO/A history and culture; American social and urban history

PEDRO G. CASTILLO, Associate Professor of History
U.S. social movements, Irish history and politics since the New Deal

NINETEENTH- and 20th-century American literature, including Mark Twain, the American West, and popular culture and biographies of American culture and theory

TRICIA ROSE, Professor of American Studies
African American culture, urban history, cultural politics, race and gender theory, popular culture and music

JUDY YUNG, Professor of American Studies
Asian American history, culture, women, and contemporary issues; comparative race and ethnicity, oral history

DAVID HENRY ANTHONY III, Associate Professor of American Studies
Asian American studies, cultural and religious history, U.S. religious history, women's history, history and theory

FORREST G. ROBINSON, Professor of American Studies
Nineteenth- and twentieth-century American literature, including Mark Twain, the American West, and popular culture biographies and American culture theory

JUDITH A. HABICHT-MAUCHE, Associate Professor of Anthropology
North American prehistory and ethnography; cross-cultural interaction and trade; ceramic technology; archaeology of gender, power, and identity; Southwest and Southern Plains Native American cultures

SUSAN HARDING, Professor of Anthropology
Culture, politics, narrative, gender, local/global studies, ethnographic writing, fundamentalism, Christianity, state-making, aging, America, and Spain

NATHANIEL E. MACKAY, Professor of Literature
Twentieth-century American literature, Afrobe/African American literature, creative writing

OLGA NAJERA-RAIMONDI, Professor of Anthropology
Folklore, theory, ritual, dance, gender, power, and identity; ethnography; cultural politics; and cross-cultural differences in the United States with other imperial enterprises and states

TRILOKI NATH PANDEY, Professor of Anthropology
Native peoples of North America, cultures of India, political anthropology, anthropological theories and comparisons

MARY BETH PEDERSEN, Associate Professor of Community Studies
Regional studies, economic justice, public policy, historical geography of the U.S.

PAUL N. SIEKAZY, Professor of American Literature
Contemporary U.S. fiction, popular culture (especially detective fiction), practical criticism and reviews, oral history, the teaching of literature, American writers abroad, journalism

NANCY STOLLER, Professor of Community Studies
Race and gender aspects of health, the AIDS epidemic, community organizing, social movements, and mediation in prisons

DANA Y. TAKAGI, Professor of Sociology
Methadone, stratification, race relations, social theory, Asian American higher education, identity politics

MARILYN J. WESTERMANN, Professor of History
British colonial and revolutionary America, early modern cultural and religious history, U.S. religious history, women's history, gender

JUDITH A. HABICHT-MAUCHE, Associate Professor of Literature
Twentieth-century American literature, Afrobe/African American literature, creative writing

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Native peoples of North America, cultures of India, political anthropology, anthropological theories and comparisons

MARY BETH PEDERSEN, Associate Professor of Community Studies
Regional studies, economic justice, public policy, historical geography of the U.S.
transfer students, no later than the first quarter of their junior year. Forms and information about the major are available from the American Studies Department Office in Oakes 231.

Upon acceptance to the major, each student is formally assigned a faculty adviser from the department. Through periodic conferences with this adviser, students can make appropriate revisions in their major plans and decide on the best way to fulfill the comprehensive requirement.

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 80A, 80B, 80C, or 80D;
• 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 Departments may work toward a parochetal 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.

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 Codes: IH, E.) A. Hugnattie G. Brahm

2. California and Californians, F,W
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 Codes: IH, E.) F. Robinson, R. Ramirez

42. Student-Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80A. Introduction to African American Studies, F
Explores the history, culture, and politics of African Americans, examining internal diversity as well as interactions with the larger society. (Formerly The African-American Experience) (General Education Codes: T5-Humanities and Arts or Social Sciences, E.) T. Rose

80B. Introduction to Native American Studies, S
Introductory survey of the contemporary experiences of Native Americans in the U.S. and Canada. Topics include Native perspectives on land, environment, education, history, popular culture and stereotypes, identity, politics, artistic production, gender, and sexuality. (Formerly Native American Experiences) (General Education Codes: T5-Humanities and Arts or Social Sciences, E.) R. Ramirez

80C. Introduction to Asian American Studies, F
Introductory survey on the major themes informing the history, culture, and politics of Asian Americans. Topics include immigration, labor, war, cultural representations, family life, identities, and political empowerment. (General Education Codes: T5-Humanities and Arts or Social Sciences, E.) J. Young

80D. Introduction to Chicana/o Studies, W
Introduces major issues in Chicana/o studies by focusing on film, literature, visual art, and music. Topics may include identity and community, regional diversity, relationships with other historically marginalized groups, culture and social movements, gender and sexuality, capitalism and labor, and globalization. (General Education Codes: T5-Humanities and Arts or Social Sciences, E.) C. Ramirez

93. Field Study, F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

99. Tutorial, F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Upper-Division Courses
*100. Key Concepts in American Studies, F
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. Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: W.) F. Robinson

*101. Race and Ethnicity, W
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 limited to 24. Enrollment restricted to American studies majors. (General Education Code: E.) A. Hugnattie

102A. Gender and U.S. Society, F
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 recommended prior to taking this course. K. Gilmartin

102B. Sexuality and Culture, W
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. K. Gilmartin

104A-B. U.S. Labor and the Working-Class History, F
Examines 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. A: colonial period to 1919; B: 1919 to present. (Also offered as History 104A. Students cannot receive credit for both courses.) Satisfies American History and Institutions Requirement. D. Frank

*105A. Oral History, W
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 limited to 24. Enrollment restricted to American studies majors. (General Education Code: W.) J. Young

107A. U.S. Popular Culture 1800–1918, W
A survey of major popular cultural forms and texts in the pre-WW1 era including Minstrelsy, Uncle Tom's Cabin, P.T. Barnum, Ramona, The Wizard of Oz, and Birth of a Nation, with attention to historical context and theory. (Formerly American Popular Culture 1800–1918.) F. Robinson

107B. U.S. Popular Culture 1920–Present, S
Major popular cultural forms from the 1920s to the present. Topics include early “race” recordings; Depression radicalism; WWII entertainments; the Cold War; popular film genres; and the 1970s and 1980s contemporary music (con-junto, jazz, rock, rap). Particular attention to multicultural issues. Course 107A recommended. (Formerly American Popular Culture 1920–Present.) E. Porter

*109A. Technology and American Culture, W
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 politics and technology. Enrollment restricted to sophomores, juniors, and seniors. G. Brahm

109B. Science Fiction in Multicultural America, W
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. C. Ramirez

*Not offered in 2003–04
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. (Formerly 111A. American Musical Theater.)

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. (General Education Code: E.)

108. Native American Women.
Examines the history, culture, and politics of Native American women from a woman-centered perspective. Topics include immigration, labor, community, identity, politics, and contemporary issues. (General Education Code: E.)

108F. Native American Women.
Examines the history, culture, and politics of Native American women from a woman-centered perspective. Topics include immigration, labor, community, identity, politics, and contemporary issues. (General Education Code: E.)

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. (Formerly 111A. American Musical Theater.)

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. (General Education Code: E.)

125. African American Studies.
Provides a historical overview of the relationship between African Americans and museums. Current issues and practices in museums—primarily those associated with ethics, collecting practices, exhibitions, education/interpretation, and administration/governance—explored. (General Education Code: E.)

Selected topics on Asian American culture, religion, music, foodways, literature, theater, film, and/or art. May be repeated for credit. (General Education Code: E.)

History of Native peoples of the U.S. from 1900 to present, with emphasis on Indian/white relations and continuing development of federal Indian policy and its impact. Attention also given to the persistence, change, and adaption of Native cultures to historical and contemporary social conditions. (General Education Code: E.)

217X. Native American History in the Twentieth Century.
History of Native peoples of the U.S. from 1900 to present, with emphasis on Indian/white relations and continuing development of federal Indian policy and its impact. Attention also given to the persistence, change, and adaption of Native cultures to historical and contemporary social conditions. (General Education Code: E.)

218. Asian American History and Culture.
Examines the history and culture of Filipinos in the U.S. from 1763 to present day within 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: E.)

Examines the history and culture of African Americans from a woman-centered perspective. Topics include immigration, work, family, identities, expatriation, and political and social activism. Students cannot receive credit for this course and American Literature 120B. (General Education Code: E.)

220. Asian American History and Culture.
Examines the history and culture of Filipinos in the U.S. from 1763 to present day within 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: E.)

221. African American History and Culture.
Examines the history and culture of African Americans from a woman-centered perspective. Topics include immigration, work, family, identities, expatriation, and political and social activism. Students cannot receive credit for this course and American Literature 120B. (General Education Code: E.)

222. Asian American History and Culture.
Examines the history and culture of Filipinos in the U.S. from 1763 to present day within 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: E.)

223. African American History and Culture.
Examines the history and culture of African Americans from a woman-centered perspective. Topics include immigration, work, family, identities, expatriation, and political and social activism. Students cannot receive credit for this course and American Literature 120B. (General Education Code: E.)
Y. Senior Seminar on Oral History. S
Examines issues of race, ethnicity, class, gender, sexuality, and American lives through the art and practice of oral history. Students complete a 20-page oral history project. Enrollment limited to 20. Enrollment restricted to senior American studies majors. J. Yang

192. Directed Student Teaching. F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) For students with upper-division 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

195A-B. Senior Project. F,W,S
For students continuing work on their senior thesis. Prerequisite(s): petition on file with 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. Prerequisite(s): approval of the student’s adviser, certification of adequate preparation. May be repeated for credit. The Staff

199. Tutorial. F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

199F. Tutorial (2 credits). F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with 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 a nation-state. Enrollment restricted to graduate students. M. Cowan

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 limited to 10. Enrollment restricted to graduate students. 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. Huginnie

Examines the relationship of the attempts to legitimize 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 conception of American nation as both political and cultural. Enrollment limited to 8. Enrollment restricted to graduate students. M. Cowan

211. Nativity, Culture, Race, and Space. S
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 limited to 10. Enrollment restricted to graduate students. A. Huginnie

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 limited to 10. Enrollment restricted to graduate students. T. Rose

295. Directed Reading. F,W,S
Directed reading which does not involve a term paper. Designed for graduate students. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

297. Independent Study. F,W,S
Independent study for graduate students who need to establish a research area for their thesis. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Independent thesis research for graduate students. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Anthropology

361 Social Sciences 1 Building
http://anthro.ucsc.edu/

Faculty and Professional Interests

Professor

DONALD BRENNIES
Linguistic anthropology, folklore, legal anthropology, ethnomusicology, overseas Indians, South Asia, disputing and dispute management, legal language, bureaucratic institutions

MAY N. DIAZ, Emerita

SHELLY ERRINGTON
Culture and politics, art and nationalism, the art market, visual and social semiotics, photography, film and new media, Southeast Asia and Latin America

ALISON GALLOWAY
Skeletal biology, forensic anthropology, human adaptability and variation, reproductive energetics, aging, race theory in physical anthropology

DIANE GIFFORD-GONZALEZ
Paleolithic and Neolithic Africa and Eurasia, colonial New Mexico, origins of food production, pastoralists, zooarchaeology, history of archaeology, interpretive theory, visual anthropology

SUSAN HARDING
Culture, politics, narrative, gender, local/global studies, ethnographic writing, fundamentalism, Christianity, state-making, aging, America, and Spain

DIANE K. LEWIS, Emerita

NANCY N. CHEN
Medieval anthropology, visual anthropology, urban anthropology, Asian American identity, traditional medicine, mental health, anthropology of food, China

JUDITH A. HABICH-MAUCH
North American prehistory and ethnohistory, trans-cultural interaction and trade, ceramic technology, archaeology of gender, power, and identity, Southwest and Southern Plains

HUGH RAFFLES
Nature, the non-human, intimacy, scale, taxonomy, writing, Brazilian Amazon

LISA ROFEL
Critical theory, anthropology of modernity, popular/public culture, gender, and sexuality, transnational political economy, postcolonial feminist anthropology, China

Assistant Professor

MARK ANDERSON
Racial formation, diaspora, nationalism, transnationalism, culture and power, Latin America, African diaspora

*Not offered in 2003–04
**Professor**

RAOUL BRINBAUM (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 anthropology, travel, and exoticism; transnational cultural studies, museum studies, indigenous studies

A. RUSSELL FLEGAL (Environmental Toxicology)

Anthropogenic perturbations of biogeochemical cycles

MARGARET (GRETA) A. GIBSON (Education)

Immigrants and education; minority status and schooling; community-school relationships; ethnicity, class, gender, and educational processes; qualitative research methods

STEPHEN R. GLEISSMAN (Engineering [Applied Mathematics and Statistics])

Archaeology, 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, cultural and historical studies of science and technology, relation of life and human sciences, and human-animal relations

PAUL KOCH (Earth Sciences)

Isotope biogeochemistry, vertebrate palaeontology

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, ethnographic research methods, and translational migration of Mexican/a workers and U.S. capital

**Associate Professor**

CAROLYN DEAN (History of Art and Visual Culture)

Cultural histories of the native Americas, colonial Latin America, and West Africa

**Assistant Professor**

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

RENYA RAMIREZ (American Studies)

Native American studies, Indian identity, Native Americans and anthropology, urban Indians, 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 unusually 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 people's 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 changes over time.
- UCSC students have the opportunity to do independent library and field research in cultural anthropology, archaeology, and physical anthropology. Laboratory courses in archaeology and physical anthropology offer practical experience in the analysis of biological and cultural materials. Students may use the department 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 anyone 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 A Guide to 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, faculty interests, and campus resources for anthropology majors.

**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 advisers 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, 3, and either course 4 or an 80s-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
121 M useums, Tourism, Exhibits
123 Psychological Anthropology
124 Anthropology of Religion
125 Aging
126 Sexuality and Society in Cross-Cultural Perspective
127 Ethnographies of Capitalism
128 Born-Again Religion and Culture
131 Women in Cross-Cultural Perspective
132 Photography and Anthropology
133 Narratives of the Popular
134 Medical Anthropology
135A Cities
136 Diaspora and Transnational Identities
137 Consuming Culture
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
154 Documenting Culture
161 Hello Dolly: Cultural Politics of Animals
164 Anthropology of Dance
165 Anthropological Folklore
167 Practicing Folklore
168 Self and Identity
169 Comparative Ethnicity

**Ethnographic Area Studies Courses**

130A Peoples and Cultures of Africa
130B Brazil
130C Politics and Culture in China
130E Culture and Political/Island Southeast Asia
130G Asian Americans in Ethnicity and Film
130L Ethnographies of Latin America
130I Culture of India
130K Politics and Culture in East Asia
130N Native Peoples of North America
130S The Anthropology of Black America
130U Amazonia

**Physical Anthropology and Archaeology Courses**

101 Human Evolution
101E Human Evolution Laboratory (2 credits)
102A Human Skeletal Biology
103 Forest Anthropology
104 Human Adaptability
106 Primate Behavior and Ecology
106E Primate Behavior Laboratory (2 credits)
program of study in consultation with a member of the subfield. Students writing a senior thesis must complete research and reflect the student's understanding of fundamental concepts within a 194-series course) should be based on original work. Students considering an independent thesis must arrange for the supervision of a faculty adviser. Many students emphasizing anthropology within the major have benefited from concurrent study in the Cabrillo College Archaeological Technology Certificate Program. This vocational certification program is sponsored entirely by Cabrillo College, but credit for its summer field survey and excavation component may be transferred for credit at UCSC. Although courses in the Archaeological Technology Certificate Program cannot be counted toward the anthropology major at UCSC, students who have obtained the certificate in tandem with their bachelor's degree in anthropology have expanded their employment and advanced degree program opportunities. Students interested in exploring this possibility are encouraged to consult with UCSC anthropology faculty and to visit the program's web site at www.cabrillo.cc.ca.us/divisionssc/archtech.

Senior Seminar Courses

194A History of Evolutionary Theory
194B Community
194D Person-Centered Ethnography
194E Advanced Topics in Folkloristics
194F Local and Globalization
194H Thinking with Bataen
194J History of Forests and Other Wild Places
194K Reading Ethnographies
194L Southwest Prehistory
194M Special Topics in Medical Anthropology
194O Anthropology of Sexuality
194P Space, Place, and Culture
194S Hearing Culture
194T Politics and Society
194U Picturing Cultures
194W Women in Politics A Third World Perspective
194Y Paleolithic Prehistory

Because of the importance of writing in the anthropology major, we offer an additional course, Anthropology 150, Communicating Anthropology, as an upper-division elective every year. This course is strongly recommended for all students in the major.

Two-credit courses cannot be counted toward the eight upper-division courses for the major. Only one 5-credit individual studies course (197, 198, or 199) may be counted toward the eight required upper-division courses.

Comprehensive Requirement

The senior comprehensive requirement in anthropology can be fulfilled either by passing an advanced senior seminar (194-series course), by writing an acceptable independent senior thesis, or by passing a graduate-level anthropology course. Senior seminars are small, writing-intensive classes focusing on advanced topics in anthropology. Prerequisite for admission to a senior seminar is successful completion of courses 1, 2, and 3; senior seminars are restricted to anthropology majors. Students considering an independent thesis must arrange for the sponsorship and support of a faculty member before beginning research. An independent senior thesis (not written within a 194-series course) should be based on original research and reflect the student's understanding of fundamental theories and issues in anthropology. The thesis should be comparable in content, style, and length (generally 25–30 pages) to a professional journal article in its subfield. Students writing a senior thesis must complete five, instead of four, upper-division electives.

All majors, including double majors, must prepare a program of study in consultation with a member of the Anthropology Department. Double majors in anthropology and another discipline may be arranged by special petition. A combined major in anthropology and Earth sciences, leading to a B.A. degree, is also offered; for that program description see page 163. Students going on to graduate school should plan course schedules in close consultation with faculty advisers.

Many students emphasizing anthropology within the major have benefited from concurrent study in the Cabrillo College Archaeological Technology Certificate Program. This vocational certification program is sponsored entirely by Cabrillo College, but credit for its summer field survey and excavation component may be transferred for credit at UCSC. Although courses in the Archaeological Technology Certificate Program cannot be counted toward the anthropology major at UCSC, students who have obtained the certificate in tandem with their bachelor's degree in anthropology have expanded their employment and advanced degree program opportunities. Students interested in exploring this possibility are encouraged to consult with UCSC anthropology faculty and to visit the program's web site at www.cabrillo.cc.ca.us/divisionssc/archtech.

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 filled 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

Anthropology 130 (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
102B Dental Anthropology
107L Anatomy of the Human Body and Laboratory
130 (one ethnographic course)
152 Survey of Cultural Anthropological Theory
Three upper-division electives
Senior exit requirement

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 should bring a copy of their UCSC 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 enrollment 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 I), and the Ethnographic Library (328 Social Sciences I).

Honors

Honors in anthropology are awarded to graduating seniors whose evaluations are judged to be consistently outstanding by a committee of anthropology faculty. 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) sociocultural 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 have contributed 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 retheorize culture. In this perspective, culture is not shared equally but is positioned within a field of inequalities; it is more the outcome of events than their precondition; and as is readily manifested 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 the 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 the graduate 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 are augmented by rigorous laboratory apprentice training. The archaeological practice course is offered in combinations of the following: seminars taught by upper-division students under faculty supervision, seminar taught by faculty. Conducted every fall, spring, and summer. Will be offered in the 2005–06 academic year. (See course 192.)

1. Introduction to Human Evolution. F
Study of evolution illustrated by Pleistocene 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: IN.) A. Galloway

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: IS.) C. Martín Shaw

3. Introduction to Archaeology. S
Overview of ways of learning about the human past beyond the scope of written history. Reviews development of archaeological, 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: IS.) H. Abdell-Maoua

4. Public Life and Contemporary Issues. S
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 empirical substance of the course. (General Education Code: IS.) A. Ting

42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80B. African Women. F
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 Codes: E. T3-Social Sciences.) C. Martín 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. (Formerly UnBuried Bodies, Buried Lives) (General Education Code: T3-Social Sciences.) A. Galloway

*80D. Africa Today.
Present-day values and social life of selected sub-Saharan African people examined using anthropological and African literature. (General Education Codes: T3-Social Sciences, E.) C. Martín Shaw

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: T3-Social Sciences.) S. Harding

*80G. Barrio Popular Culture.
Introduces students to a broad sampling of verbal and nonverbal forms of Mexican folklore. Concentrates on experiencing these forms through texts, film, and if possible, performances. Attention to how these forms have been used by scholars to comment on Mexican culture is an underlying theme. Knowledge of Spanish is useful but not required. Will be offered in the 2004–05 academic year. (Also offered as Latin American and Latino Studies 80G. Students cannot receive credit for both courses.) (General Education Codes: E, T3-Social Sciences.) O. Najera-Ramírez

80I. Culture and Power in Latin America. S
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 peoples. (General Education Codes: T3-Social Sciences, E.) M. Anderson

80J. Introduction to Visual Culture. W
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: T3-Social Sciences.) L. Rofel

*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. (General Education Code: T3-Social Sciences.) N. Chen

*80M. Healing and Culture.
Examines traditional medicine, ethnomedicine, alternative healing, and biomedical as cultural systems in both local and transnational contexts. (General Education Code: T3-Social Sciences.) N. Chen

80O. Environmental Politics.
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. Will be offered in the 2005-06 academic year. (General Education Code: T3-Social Sciences.) H. Raffles

*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: 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Prerequisite(s): petition on file with sponsoring agency. The Staff
Upper-Division Courses

*100P. Cultural Performance: Filipino American Experience (2 credits).
This course offers two credits to students participating in the production of the Philippine Cultural Celebration (PCC), a cultural performance held annually which includes four aspects: theater, folk dance, choir, and contemporary dance. Prerequisite(s): audition required. May be repeated for credit. (The Staff)

101. Human Evolution. F
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). F
Laboratory focuses on the locomotor, dental, facial-cranial anatomy of hominids. Meets weekly, with exercises designed around primates and human skeletal materials and casts of fossil hominids. Prerequisite(s): concurrent enrollment in course 101. Enrollment limited to 15. A. Zihlman

102A. Human Skeletal Biology. W
Presents basic human ontology 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 16. (The Staff)

*103. Forensic Anthropology.
Covers the basic analysis of human skeletal remains for the medicolegal profession. Assessment of age, sex, ancestry, and general physical characteristics, trauma, and disease are discussed. Legal responsibilities of the anthropologist are addressed. A. Galloway

104. Human Adaptability. W
Explores the major environmental factors (temperature, altitude, diet, and disease); how they are perceived by the human body; the physiological, micro- and macroanatomical responses; and how behavior and culture can modify the impact of these stresses. Course 1 is highly recommended as preparation. (The Staff)

106. Primate Behavior and Ecology. S
The nature of primate social systems and social bonds is examined in the light of evolutionary and ecological concepts. Students cannot receive credit for this course and course 206. Prerequisite(s): course 1. A. Zihlman

*106E. Primate Behavior Laboratory (2 credits).
Focuses on locomotor and dental-cranial anatomy and skeletal/dental development of primates. Weekly meetings, with exercises designed around primate materials. Prerequisite(s): concurrent enrollment in course 106. Enrollment limited to 15. A. Zihlman

Study of structure and function of the human body through dissection, comparative vertebrate anatomy, anatomical models, and computer-assisted instruction. Students are billed for a lab fee. Students cannot receive credit for this course, course 207L, and Biology 135L. (Also offered as Biology 135L. Students cannot receive credit for both courses.) Prerequisite(s): course 1 or Biology 20B; concurrent enrollment in course 107. Enrollment limited to 48. (The Staff)

110. Anthropology of Movement. W
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. F
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 differences in the context of global inequalities. Prerequisite(s): course 2 or 80F 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). F
This lab in video production is to train students in Culture Through Film, Anthropology 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. Prerequisite(s): concurrent enrollment in course 120 and a portfolio review prior to enrollment. Enrollment limited to 15. (The Staff)

*121. Museums, Tourism, Exhibits. M
Museums, world’s fairs, WWW URLs, and other public sites are involved in the production of culture for display and consumption. Histories of collecting and displaying artifacts and images, especially of the “other,” are examined as well as theoretical implications and social impacts of these practices. Will be offered in the 2004–05 academic year. S. Errington

*123. Psychological Anthropology.
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. D. Linger

124. Anthropology of Religion. W
Study of the phenomenon of religion as manifested in ethnographic literature, with special attention to traditional and recent modes of analysis of religious behavior. Specific topics include myth, religious healing, witchcraft and sorcery, ritual, and millenarian movements. A. Pandey

*126. Sexuality and Society in Cross-Cultural Perspective.
The meaning and social processes associated with sexuality in selected societies. Examination of variations in sexual expressions and control of sexuality, and in economic and political organizations, highlights the interrelationship of sex and society. Prerequisite(s): course 2. C. Martin Shaw

*127. Ethnographies of Capitalism.
Challenges approaches to capitalism that treat it as socioeconomic relations separable from “culture.” Readings include ethnographies demonstrating the inextricability of cultural meanings from capitalist practices. Topics include capitalism’s relationship to colonialism, nationalism, socialism, gender, and the commodification of aesthetics. Will be offered in the 2004–05 academic year. Offered in alternate academic years. L. Roff

Study of contemporary, American, born-again Protestant discourse using ethnographic materials and interpretive theories. Topics include biblical literalism, Christian conversion and sub-fabulation, charismatic gifts, preaching, sacrificial giving, prosperity theology, apocalypticism, creationism, pro-family and pro-life rhetoric, and televangelism. S. Harding

129. Other Globalizations: Cultures and Histories of Interconnection. F
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. Tang

130. Ethnographic Area Studies.

* A. Peoples and Cultures of Africa.
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. Will be offered in the 2004–05 academic year. (General Education Code: E.) D. Linger

C. Politics and Culture in China. F
Examines Brazilian culture and its link to interpersonal relationships, religion, politics, and psychological experience. (General Education Code: E.) D. Linger

E. Culture and Politics of Island Southeast Asia. W
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: E.) A. Tang

G. 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. (Formerly course 163.) (General Education Code: E.) W. Chen

I. Cultures of India. W
An examination of anthropological studies of tribal, rural, and urban cultures of India and a look at changes taking place in India. Prerequisite(s): course 2. Offered in alternate academic years. (General Education Code: E.) T. Pandey

*K. 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: E.) The Staff

*132L. Photography and Anthropology Laboratory (2 credits).
This still photography lab trains students in the basic operations and techniques of the camera and the creation of a set of still photographs. Use of 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. Will be offered in the 2004–05 academic year. Prerequisite(s): concurrent enrollment in course 112 and a portfolio review. Enrollment limited to 30. (Formerly course 112L.) Enrollment restricted to anthropology majors. The Staff

133. Narratives of the Popular. W
Addresses the increasing importance of popular culture as the terrain upon which to address issues of culture and power. Emphasizes an anthropological approach to popular culture as sociocultural 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. (Formerly course 113.) Offered in alternate academic years. L. Rodf

*134. Medical Anthropology: An Introduction.
Cross-cultural study of health, disease, and illness behavior from ecological and ethnomedical perspectives. Implications for biomedical health care policy. (Formerly course 114.) W. Chen

135A. Cities.
Examines cities from an anthropological perspective. Reviews pertinent scientific social literature of the nineteenth and early twentieth centuries. Surveys the concepts and methods used by contemporary anthropologists to investigate urban phenomena. (Formerly course 154.) D. Lingr

136. Diaspora and Transnationalism.
Examines formations of culture and identity that cross the borders of nation-states. Interdisciplinary in approach, critically examines past and present scholarship on the ways cultural identities are formed or transformed through the movement of people, capital, and images. Will be offered in the 2004–05 academic year. Prerequisite(s): course 2. Enrollment limited to 45. (Formerly course 159.) The Staff

137. Consuming Culture.
Explores consumption as a cultural form. Beginning with theories of capitalism and exchange, it then focuses on sites and modes of consumption and display such as department stores, museums and zoos, advertisements and photography, cultural tourism. Will be offered in the 2004–05 academic year. Prerequisite(s): course 2. (Formerly course 117.) The Staff

138. Political Anthropology.
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 course.) Enrollment restricted to majors in anthropology and legal studies. S. Errington

140. Art, Artists, Artifacts. W
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. S. Errington

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 course 142. Students cannot receive credit for both courses.) Enrollment restricted to majors in anthropology and legal studies. D. Brenns

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. 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 Code: W) O. N. áger-Ramírez

151. Workshop in Ethnography. F
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. (Formerly course 181.) L. Rodf

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: W) D. Lingr

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): any of the three following four courses: courses 1, 2, or 80s course. Enrollment limited to 40. Enrollment restricted to anthropology majors. S. Errington

Levi-Strauss observed that animals are not just good to eat, but "good to think." This course considers the history and politics of relations between humans and other animals. Topics covered include classification, pets, zoos, meat, and cloning. H. Raffs

164. The Anthropology of Dance.
An intense reading seminar which critically reviews anthropological works in dance ethnography and dance theory. Recommended for anthropology majors. Will be

*Not offered in 2003–04
offered in the 2004–05 academic year. Prerequisite(s): course 2. Enrollment limited to 25. Offered in alternate academic years. The Staff

165. Anthropological Folklore. S
Survey of the major forms of folklore with emphasis upon games, humor, superstitions, and folk-narratives (myth, legend, and folktales). 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 or background in folkloristics an opportunity to develop a project that integrates folkloristic theory and ethnographic practice. Prerequisite(s): course 2. Enrollment limited to 40. Enrollment restricted to anthropology majors. The Staff

*168. Self and Identity.
Examines anthropological treatments of self and identity with attention to the related topics of consciousness and agency. Surveys theories, key debates, and important ethnographic case studies. Will be offered in the 2004–05 academic year. D. Gifford-Gonzalez

170. History of Archaeological Theory. F
Historical review of prehistoric archaeology from antiquarianism to the present. Emphasis on development of archaeological theory and its relation to evolutionary and anthropological theory. Recommended for juniors. Students cannot receive credit for this course and course 270. Prerequisite(s): course 3; satisfaction of the Subject A and Composition requirements. Offered in alternate academic years. (General Education Code: 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. Enrollment limited to 25. Offered in alternate academic years. (General Education Code: W) D. Gifford-Gonzalez

173. Origins of Farming. S
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

*175A. African Archaeology.
Archaeological history of Africa from the first 2.5 million-year-old artifacts to the emergence of African cities, states, and commercial relations with Medieval Asia and Europe. Disciplinary models and assumptions critically examined in their historical and political contexts. Students cannot receive credit for this course and course 275A. Prerequisite(s): course 3 or equivalent. Enrollment limited to 45. (Formerly course 175.) Enrollment restricted to juniors and seniors. D. Gifford-Gonzalez

*175B. Paleolithic Art.
Overview of Paleolithic art, focusing on the earliest visual representations in Europe, Africa, Asia, and Australia and emphasizing regional styles and theories of the emergence of visual culture in anatomically modern humans. (Also offered as History of Art and Visual Culture 189P. Students cannot receive credit for both courses.) C. D. E. Macaluso

176A. North American Archaeology. W
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. Prerequisite(s): course 3 or consent of instructor. (Formerly course 176.) J. Habicht-Mauhe

*176B. Meso-American Archaeology.
Review of the archaeological and ethnohistorical evidence for the origins and development of pre-Columbian civilizations in Meso-America including the Olmec, Maya, Zapotec, Mixtec, Teotihuacan, Toltec, Tarascan, and Aztec. Prerequisite(s): course 3. (Formerly course 178.) The Staff

180. Ceramic Analysis in Archaeology. F
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. Enrollment restricted to anthropology majors. J. Habicht-Mauhe

180L. Ceramic Analysis Laboratory (2 credits). F
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 limited to 16. Enrollment restricted to anthropology majors. J. Habicht-Mauhe

*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. (Formerly course 182.) The Staff

184. Zooarchaeology. 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. (Formerly course 179.) Offered in alternate academic years. D. Gifford-Gonzalez

*185. Osteology of Mammals, Birds, and Fish.
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 102 or Biology 138L or Earth Sciences 100 or Environmental Studies 106CL, plus consent of instructor. Enrollment limited to 16. (Formerly 179L.) 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.) Prerequisite(s): petition on file with sponsoring agency. The Staff

193. Field Study. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

194. Senior Seminar.
A. History of Evolutionary Theory. W
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 limited to 15. Enrollment restricted to seniors majoring in anthropology. (General Education Code: W) A. Zihlman

B. 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. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment limited to 25. Enrollment restricted to junior and senior anthropology majors. (General Education Code: W) J. Martin Shaw

D. Person-Centered Ethnography.
Examines the theory and practice of person-centered ethnography focusing on the relationship between personal experience and sociocultural worlds. Seminar participants write a substantial paper based on their own ethnographic research. Will be offered in the 2004–05 academic year. Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) D. Linger

*E. 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. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) D. Linger

F. 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. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. Enrollment restricted to seniors majoring in anthropology. (General Education Code: W) J. Raffies

H. 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 limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) D. Linger

I. 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 limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) The Staff

J. Histories of Forests and Other Wild Places, W
“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 limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) A. Tsing

K. Reading Ethnographies, S
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 limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) S. Harding

L. Southwest Prehistory. Outlines development of Native cultures in American Southwest from Paleo-Indian times through early Euro-American contact. Completion of previous courses in North American prehistory is recommended. Students cannot receive credit for this course and course 294L. Will be offered in the 2004–05 academic year. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment limited to 25. Enrollment restricted to anthropology majors. (General Education Code: W) J. Habicht-Mauche

M. Special Topics in Medical Anthropology, S
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 limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) N. Chen

N. Comparison of Cultures, W
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. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) T. Fandy

O. The Anthropology of Sexuality. 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 borders. 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 limited to 15. Enrollment restricted to senior anthropology majors. (General Education Code: W) C. Martin Shaw

*P. 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 tracing the ways these questions have come to the fore in more recent scholarship. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) The Staff

Q. 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 theories between race and diaspora. Prerequisite(s): satisfaction of Subject A and Composition requirements; courses 1, 2, and 3. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) M. Anderson

R. Behavioral Ecology in Archaeology, F
Critical overview of behavioral ecology applied in archaeology starting with key documents in animal ecology, modern-day human forager studies, and use in human evolutionary and archaeological model building. Evaluates applicability 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. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) D. Gifford-Gonzalez

S. 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. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment limited to 15. Enrollment restricted to senior anthropology majors. (General Education Code: W) D. Branas

V. Picturing Cultures, W
A historical, analytical, and practical exploration of the uses of still and moving pictures in ethnographic representation, research, and practice. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3. Enrollment limited to 20. Enrollment restricted to senior anthropology majors. (General Education Code: W) S. Errington

*196A-B. Archaeology of the American Southwest (3 credits each term).
Outlines development of Native cultures in the American Southwest from Paleo-Indian times through early Euro-American contact. Students must enroll in 196A and 196B. Students cannot receive credit for courses 196A-B and 194I. Prerequisite(s): satisfaction of the Subject A and Composition requirements; courses 1, 2, and 3; 196A is prerequisite to 196B. Enrollment limited to 25. Enrollment restricted to Anthropology majors. (General Education Code: W) J. Habicht-Mauche, S. Shadle

197. Laboratory Tutorial, F, W, S
Independent laboratory research on selected topics in archeology and physical anthropology. Prerequisite(s): interview with the appropriate instructor. May be repeated for credit. The Staff

197F. Laboratory Tutorial (2 credits), F, W, S
Independent laboratory research on selected topics in archaeology and physical anthropology. Prerequisite(s): interview with appropriate instructor. Enrollment restricted to anthropology majors. May be repeated for credit. D. Gifford-Gonzalez, J. Habicht-Mauche, A. Zihlman, A. Galloway

198. Independent Field Study, F, W, S
Off-campus field study. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F, W, S
Prerequisite(s): petition on file with 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 canons and areas of conflict within it, leading up to contemporary debates on a variety of issues. Two-term course: students must enroll in both quarters. Enrollment limited to 12. Enrollment restricted to anthropological graduate students. S. Harding, L. Rodell

200B. Core Graduate Course (10 credits), W
Introduces history, ethnography, and theory of cultural anthropology with emphasis on awareness of construction of anthropological canons and areas of conflict within it, leading up to contemporary debates on a variety of issues. Two-term course: students must enroll in both quarters. Enrollment limited to 12. Enrollment restricted to anthropological graduate students. O. Nájera-Ramírez

201. Human Evolution. F
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: hominin fossils, archaeology, paleoecology, and molecular data. Enrollment limited to 15. Enrollment restricted to graduate students. A. Zihlman

202A. Skeletal Biology, W
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 limited to 5. Enrollment restricted to graduate students. The Staff

*203. Forensic Anthropology.
Provides training in techniques used in identifying biological profile from the skeleton, assessing the trauma, and estimating time since death. Impact of legal context in which these assessments are made paramount to this course. Enrollment limited to 10. Enrollment restricted to graduate students. A. Galloway

206. Primate Behavior, S
An overview of primate evolution and review of the major groups of primates in terms of their ecological, locomotor, dietary, and social adaptations. Theoretical frameworks, such as behavioral ecology, sexual selection, and life history, are evaluated from long-term studies of primate behavior. Students cannot receive credit for this course and course 106. Enrollment limited to 15. Enrollment restricted to graduate students. A. Zihlman

*Not offered in 2003-04
Study of the human body from molecules to organ systems, emphasizing evolution and medical applications. Students cannot receive credit for this course, course 207L, and Biology 135L. Enrollment limited to 15. Enrollment restricted to graduate students. T he Staff

207L. Anatomy of the Human Body Laboratory (2 credits). S
Study of the human body using dissection and comparative anatomy exercises for advanced anatomy students. Students are billed for a laboratory fee. Concurrent enrollment in course 207 is required. Students cannot receive credit for this course, course 207L, and Biology 135L. Enrollment limited to 15. Enrollment restricted to graduate students. T he Staff

208A. Ethnographic Practice. S
Introduces graduate students to the practice of fieldwork. Students design and carry out a quarter-long research project exploring a range of methods and producing an analytical case study. Readings and discussion emphasize both methodological critique and successful implementation. Enrollment limited to 15. Enrollment restricted to anthropology graduate students. D. Brennès
*208B. Topical Seminar in Ethnographic Practice.
Graduate-level advanced seminar in ethnographic practice. Practice and critique of ethnographic research methods; analysis of how research sites are constructed. Topics and themes change yearly. Requirements include ethnographic fieldwork and writing. Will be offered in the 2004–05 academic year. Enrollment limited to 15. Enrollment restricted to anthropology graduate students. D. Brennès

208L. 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 students’ media exercises, students learn the fundamentals of photography, video production, and audio recording in the field. Concurrent enrollment in course 208A required. Enrollment limited to 15. Enrollment restricted to graduate students in anthropology. T he Staff

210. Anthropology of Movement. W
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 limited to 15. Enrollment restricted to graduate students. A. Zihlman

Taxonomies are ways of making and organizing human beings, nature, objects, space, and time. They have histories, geographies, complex ways of traveling, and decidedly material effects. In this course, we examine what some of these might be. Enrollment limited to 15. Enrollment restricted to graduate students. H. Raffles

228. Grant Writing. W
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 limited to 15. Enrollment restricted to anthropology graduate students. May be repeated for credit. D. Linger

*229. Constructing Regions.
Discusses centrality of the idea of “regions” in studies of culture, the history of “locating” social theory, and debates about area studies. Students develop area of transregional bibliographies. Primarily for second- or third-year anthropology graduate students reading “area” literatures. Enrollment limited to 15. Enrollment restricted to graduate students. T. Pandey

232. Bodies, Knowledge, Practice. F
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 limited to 15. Enrollment restricted to anthropology graduate students. N. Chen

*233. Race, Culture, and Power.
Trains students to do ethnographic fieldwork in research settings where ideologies of racial differences operate; exposes students to the history of racial discourse and research in anthropology; enables critical analysis of past and present theories of culture and power for their relevance to the study of race and, conversely, examines the ways that scholarly interest in “race” has affected theorizing about culture and power, generally. Will be offered in the 2004–05 academic year. Enrollment limited to 15. Enrollment restricted to anthropology graduate students. T he Staff

*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, post-colonial debates, the intersection of gender with race and nationalism, and gender and transnationalism. Will be offered in the 2005–06 academic year. Enrollment limited to 15. Enrollment restricted to graduate students. A. Tsing

*235. Language and Culture.
An examination of language system and language use in relationship to cultural 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 limited to 15. Enrollment restricted to graduate students. A. Tsing

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. Enrollment limited to 15. Enrollment restricted to graduate students. T he Staff

*239. Narrative Culture.
This seminar examines various approaches to narrative culture—myths, metanarratives, narrative fields, cultural narratives, stories, storytelling, and narrative enactments—from anthropology, cultural studies, and literary studies. Will be offered in the 2004–05 academic year. Enrollment limited to 15. Enrollment restricted to graduate students. S. Harding

*240. Anthropology and Poststructuralism.
This course traces an ongoing dialogue between poststructuralist 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 limited to 15. Enrollment restricted to graduate students. L. Roff

*243. Political Economy and Its Interlocutors.
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, post-modernism, and the aesthetics of mass culture. Through political economy's interlocutors, raises questions about gender, race and ethnicity, and post-structuralist critiques. Will be offered in the 2004–05 academic year. Enrollment limited to 15. (Formerly course 213.) Enrollment restricted to graduate students. L. Roff

*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. Enrollment limited to 15. Enrollment restricted to graduate students. 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 limited to 15. (Formerly course 215.) Enrollment restricted to graduate students. D. Linger

*249. Ecological Discourses.
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. Will be offered in the 2004–05 academic year. Enrollment limited to 15. (Formerly course 219.) Enrollment restricted to graduate students. A. Tsing

*250. Dissertation Writing.
Course devoted entirely to the process of writing a dissertation. Students work on their dissertations, post-fieldwork, at various stages, ranging from beginning stages of making an outline to middle stages of drafting chapters to final stages of revision. Emphasis placed upon initial stages of organizing field materials into themes for chapters. Will be offered in the 2004–05 academic year. Enrollment limited to 15. (Formerly course 219.) Enrollment restricted to graduate students. May be repeated for credit. T he Staff

251. Globalization and Identity in Latin America. W
Explores theoretical and ethnographic 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 limited to 15. Enrollment restricted to graduate students. 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 limited to 15. Enrollment restricted to graduate students. D. Gifford-Gonzalez

*Not offered in 2003–04
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, forensics of dead persons in mass disasters and human rights cases, indigenous rights and repatriation. Prerequisite(s): graduate standing in anthropology or permission of instructor. Enrollment limited to 15. Enrollment restricted to graduate students. 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 175A. Enrollment limited to 15. Enrollment restricted to graduate students. The Staff

*275A. Tutorial on African Archaeology. 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 limited to 15. (Formerly course 275.) Enrollment restricted to graduate students. D. Gifford-Gonzalez

276A. Advanced Topics in North American Archaeology. W 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 limited to 15. Enrollment restricted to graduate students. J. Habicht-Mauhe

*277. Archaeology of the Peopling of the Americas. Using a multidisciplinary approach, examines the physical, paleoenvironment, human biology, linguistics, and culture history of the Americas at the end of the last Ice Age. Particular emphasis is placed on reconstructing the timing routes and context of the first peopling of the American continents. Also offered as Earth Sciences 276. Students cannot receive credit for both courses. Enrollment limited to 15. Enrollment restricted to graduate students. J. Habicht-Mauhe

*284. Zooroarchaeology. 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 184. Will be offered in the 2004–05 academic year. Enrollment limited to 15. (Formerly course 284.) Enrollment restricted to graduate students. D. Gifford-Gonzalez

*285. Osteology of Mammals, Birds, and Fish. Practicum in vertebrate osteology, covering all larger mammal species of central California, plus selected bird and fish species, and topics in evolution and ecology of selected taxa. Students cannot receive credit for this course and course 185. Prerequisite(s): permission of instructor. Enrollment limited to 15. (Formerly course 285L.) Enrollment restricted to graduate students. D. Gifford-Gonzalez

292. Graduate Colloquium (2 credits). F,W,S Designed to offer an institutionalized mechanism for the presentation of research papers and teaching efforts by faculty and advanced graduate students. Enrollment restricted to graduate students. May be repeated for credit. The Staff

294A. History of Evolutionary Theory. W History of ideas about evolution as a process, with a focus on human evolution from Darwin's methods and contributions through genetics, paleontology, and the modern evolutionary synthesis, concluding with the impact of molecular data on understanding of evolution today. Students cannot receive credit for this course and course 194A. Enrollment limited to 15. Enrollment restricted to graduate students. A. Zihlman

*294L. Advanced Topics in Southwest Prehistory. Advanced overview of Native cultures in the American Southwest from Paleo-Indian times through early European contact. Completion of undergraduate course in North American archaeology is strongly recommended. Students cannot receive credit for this course and course 194L. Will be offered in the 2004–05 academic year. Enrollment limited to 10. Enrollment restricted to graduate students. J. Habicht-Mauhe

294N. Comparison of Cultures. W Seminar for students interested in theories and methodology of social and cultural anthropology devoted to critical discussion of different methods of comparison practiced in anthropology. Enrollment limited to 15. Enrollment restricted to graduate students. T. Pandey

294R. Graduate Readings in Behavioral Ecology. F Intensive graduate tutorial on behavioral ecology in archaeology and human evolutionary studies. Reviews foundational literature in animal ecology, contemporary human forager studies, evolutionary and archaeological model-building. Assesses utility in studies of human evolution, emergence of agriculture, and social complexity. Students cannot receive credit for this course and course 194R. Enrollment limited to 15. Enrollment restricted to graduate students. D. Gifford-Gonzalez

297. Independent Study, F,W,S Prerequisite(s): permission of instructor. T. Pandey

298. Advanced Laboratory Apprenticeship. F 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. Prerequisite(s): permission of instructor. Enrollment limited to 5. Enrollment restricted to graduate students. D. Gifford-Gonzalez

299. Thesis Research, F,W,S Prerequisite(s): permission of instructor. T. Pandey

299F. T. Tutorial (2 credits). F,W,S Prerequisite(s): permission of instructor. T. Pandey

299R. Tutorial (2 credits). F,W,S Prerequisite(s): permission of instructor. T. Pandey

121. Arab Culture and Society. Cross-Disciplinary examination of Arab culture and society. Examination of Arab cultural constructions of death, dead bodies and dead persons in mass disasters and human rights cases, indigenous rights and repatriation. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

122. Arab Studies. Cross-Disciplinary examination of Arab culture and society. Examination of Arab cultural constructions of death, dead bodies and dead persons in mass disasters and human rights cases, indigenous rights and repatriation. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

123. Arabic. Oral proficiency and reading skills will be taught through texts, media, and discussions covering a variety of topics. Listening comprehension, reading, and speaking are emphasized in historical, social, and political contexts of the Arab-speaking countries: literature, history, religion, politics, film, and media. Designed for students at the lower intermediate level and above. Prerequisite(s): Arabic 3 or permission of instructor. May be repeated for credit. The Staff

99. Tutorial, F,W,S Prerequisite(s): permission of instructor. T. Pandey

99F. Tutorial (2 credits), F,W,S Prerequisite(s): permission of instructor. T. Pandey

99R. Tutorial (2 credits), F,W,S Prerequisite(s): permission of instructor. T. Pandey

13F. Formal Arabic: Reading and Conversation (2 credits), F,W Oral proficiency and reading skills will be taught through texts, media, and discussions covering a variety of topics. Listening comprehension, reading, and speaking are emphasized in historical, social, and political contexts of the Arab-speaking countries. Literature, history, religion, politics, film, and media. Designed for students at the lower intermediate level and above. Prerequisite(s): Arabic 3 or permission of instructor. May be repeated for credit. The Staff

Upper-Division Courses

199. Tutorial, F,W,S Prerequisite(s): permission of instructor. T. Pandey

199F. Tutorial (2 credits), F,W,S Prerequisite(s): permission of instructor. T. Pandey

199R. Tutorial (2 credits), F,W,S Prerequisite(s): permission of instructor. T. Pandey

Program Description

For students interested in acquiring proficiency in the Arabic language, beginning and intermediate level languages are offered. The courses emphasize reading, writing, understanding, and speaking modern standard Arabic as used by educated native speakers of the Arabic 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 262, under Language Program.
Faculty and Professional Interests

Professor

Patrick Aherne, Emeritus
Joyce Broducky

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. Hunnicutt, Emeritus

Drawing, Painting

Douglas E. McClellan, Emeritus
Jennie Lind Mcdade
Drawing, Painting

Kathryn E. Metz, Emerita
Jasper A. Rose, Emeritus

Drawing, painting, and sculpture

Donald L. Weygandt, Emeritus
Jack Zajac, Emeritus

Associate Professor

E. G. Crichton
Interdisciplinary mixed media, electronic arts, photography, installation

Norman Locks
Photography

Elizabeth Stephens
Sculpture, installation, video, performance

Assistant Professor

Elliot Anderson
Electronic art

Melissa Gwyn
Painting, drawing

Jimin Lee
Etching, lithography, monoprinting, book arts, ukiyoe

Lewis Watts
Photography

Lecturer

Susan Friedman
Photography

Donald Fritz
Drawing, painting, and sculpture

Ingeborg Gerdes
Photography

Miriam Hitchcock
Drawing, painting

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 students. Art and pre-art majors have enrollment priority in lower-division courses, but these courses are open to all students 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 Center provides excellent studio facilities for drawing, painting, installation, photography, casting and sculptural construction, and printmaking. Computer facilities are located at both Baskin Visual Arts Center and Porter College.

Declaring the Pre-Art Major

Students must declare the pre-art major in order to enroll in introductory studio courses via UCSC’s TELESLEG advance enrollment system. There are no requirements for pre-art. Students must declare pre-art in their freshman or sophomore year and may not do so in their junior year. 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/Minor 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

Acceptance into the art major 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 deadline, 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 eight lower-division and nine upper-division courses 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:

- The foundation series:
  - 10G 2-D Foundation
  - 10H 3-D Foundation

- Three courses from the following list:
  - 20 Introduction to Drawing for the Major
  - 21 Introduction to Computer Art
  - 23 Intermedia I
  - 24 Introduction to Painting Oil
  - 26 Introduction to Printmaking
  - 28 Introduction to Figure 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

Art Major Planner

The following is a recommended academic plan for students to complete during their first two years as a preparation for the art major.

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<tr>
<th>Year</th>
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*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 (satisfies senior comprehensive requirement);
- 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 three options:

- completing 10 credits of senior studio course work in the area of focus;
- presenting an exhibition and, by appointment, meeting with a faculty member for review and critique of the exhibition;
- presenting a portfolio and, by appointment, meeting with a faculty member for review and critique of the portfolio.

**Study Abroad**

The UC 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. Foundation series classes are prerequisites for studio-intensive courses. Students must register for both lecture and studio sections.

**G. 2D Foundation. W**

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. Enrollment limited to 100. (Formerly course 80G.) (General Education Code: A.) T The Staff

**H. 3D Foundation. F**

This is an introductory level studio class that will give the student the tools necessary to understand and analyze three dimensional artworks. Contemporary three dimensional art incorporates and addresses many concerns in a variety of processes, forms, and content. This course will introduce the student to a broad range of production methods and a variety of conceptual approaches. Historical, theoretical, and critical methods of viewing and understanding contemporary three dimensional work will be taught. Priority given to freshmen and sophomores. Students are billed for a materials fee. Enrollment limited to 100. (Formerly course 80H.) (General Education Code: A.) N. Nagasawa

**J. Technology Foundation.**

Introduction to the ways technology and art intersect. Readings and lectures address how artists have experimented with and been influenced by technological innovations through the ages. In the studio, students experiment with technologies such as mechanical and digital reproduction, light, motion, and the cyborg body to create art works. Students are billed a materials fee. Enrollment limited to 100. (Formerly course 80J.) (General Education Code: A.) T The Staff

**20. Introduction to 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 exploration. Discussions and critiques facilitate the development of critical skills. Designed for students considering the art major. Students are billed for a materials fee. Enrollment limited to 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) M. Gwyn, T The Staff


Basic introduction to use of computer as fine art tool and medium. Basic skills, concepts relevant to contemporary research issues, and art practices addressed. Introduction to fundamentals of graphics and programming with brief demonstrations of relevant software for image acquisition and manipulation provided. Basic HTML and Java programming instruction; students required to create a simple Java applet and produce a web site. Students work independently and in groups. Assignments include digital image acquisition and manipulation, basic scripting, hyper-text and web publishing, object-oriented and algorithmic programming. Readings, discussions, and critiques engage students in a cross-disciplinary examination of the complex ways new technologies affect and are affected by contemporary culture. Students billed for a materials fee. Enrollment limited to 20. Enrollment restricted to art, pre-art, and history of art and visual culture majors. (General Education Code: A.) T The Staff

**22. Intermedia I. F, S**

Introduction to combining images and text with other media to explore a variety of contemporary art forms. Assignments encourage experimenting with varied materials and practices such as mixed media, photography, computer imaging, projection, and sound. Introduction to diverse art forms: installation, collaboration, performance, site specific and interactive art. Discussions, readings, and critiques help develop perceptual and conceptual skills. Skill workshops introduce new techniques. Students billed for a materials fee. Enrollment limited to 20. (Formerly Beginning Intermedia: Two-Dimensional Approaches.) Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) E. Crichton, E. Stephens, T The Staff

**23. 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 limited to 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) T The Staff, F. Galvaska, M. Gwyn, J. Mcdade

**26. Introduction to Printmaking. F, W, S**

Survey of print medium: basic terminology, techniques, application of tools, materials, and condensed 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 limited to 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) P. Rangell, R. Wohlfelder, J. Lee

**28. Contemporary College Majors.**

Assignments may include the following: working from the live model, investigation of proportion, anatomy and issues of volume and mass; abstraction to explore basic concepts of modern sculpture; modeling in wax and mold-making in preparation for casting. Critiques, slide lectures, and class discussion introduce students to the contemporary and historical activity in the field of classic and contemporary figurature. Students are billed for a materials fee. Enrollment limited to 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) T 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 limited to 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) L. Watts 1. Garris, S. Fridman

**40. Sculpture I. F, W**

Introduction to range of plastic materials (i.e., paper mache, plaster, clay, or wax) and techniques (i.e., modeling, mold-making, armature-building, and working from natural forms, figures, or drawings) used to create sculptural forms. Familiarized with materials introduced while learning forms and ideas these materials and techniques best express. Introduction to foundry included. Students billed a materials fee. Enrollment limited to 20. Enrollment restricted to pre-art, art, and history of art and visual culture majors. (General Education Code: A.) T The Staff

**42. Student-Directed Seminar. W, S**

Seminars taught by upper-division students under faculty supervision. (See course 192.) T The Staff

**60. Forms and Ideas. F**

Required for all junior transfer student art majors, introduction to the art program, emphasizing awareness of contemporary visual practices and theory. Combines studio practice and theory. Enrollment limited to 20. Enrollment restricted to junior transfer art majors. (General Education Code: A.) T The Staff

**70. Book Arts. F, W**

Studies in history, theory, and practice of the printer's craft. Learn typesetting, manual press operation, aspects of design, and historical processes with particular emphasis on the book arts. Taught in conjunction with course 111. Does not fulfill a requirement for the art major. (Also of-
109. Intermedia I: F,W,S
The Staff

Upper-Division Courses

110. Intermediate/Advanced Drawing, F
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. Course may not fulfill a requirement for the art major. Students are billed for a materials fee. Prerequisite(s): course 20. Enrollment limited to 20. May be repeated for credit. M. Hitchcock, H. Hännä

112. Relief and Intaglio Printmaking, F
Introduction and development of relief and intaglio techniques. Emphasis on experimentation, mixed techniques, and color work including multiple and viscosity printing. Students proceed according to individual needs, interests, and abilities. Students are billed for materials fee. Prerequisite(s): course 26. Enrollment limited to 20. May be repeated for credit. (General Education Code: A.)

116A-B. Senior Studio in Printmaking (5 credits per course), S
Continuation of course 112 with further introduction of techniques, with emphasis on experimentation, mixed techniques and color work, including multiple plate and viscosity printing. Students proceed according to individual needs, interests, and abilities. Students are billed for materials fee. Prerequisite(s): course 112. Enrollment limited to 20. May be repeated for credit. (General Education Code: A.)

117. Special Topics in Printmaking, F
Special studies in printmaking, as announced. Students are billed for materials fee. Prerequisite(s): course 26. Enrollment limited to 20. May be repeated for credit. (General Education Code: A.)
119. Digital Video, W, S
An exploration of the video medium including produc-
ding using the digital video format. Digital video cameras
will be used to produce digital source material to be ma-
nipulated in a non-linear digital editing system. Image
manipulation, effects, and editing will be explored. A va-
riety of video structures, theories, concepts, and forms
will be examined through production, discussions, and view-
ing students’ and artists’ work. Students are billed for a
materials fee. Prerequisite(s): course 21. Enrollment
limited to 20. May be repeated for credit. (General Edu-
cation Code: A.) The Staff

120. Advanced Projects in Computer Art I, W
Independent and collaborative creative projects using ad-
vanced computer methods. May include networking proj-
ects, virtual representations, interactive multimedia,
installation, performance, artificial intelligence, artificial
life, etc. Emphasis on advanced critical and experimen-
tal approaches to computers as a unique art medium and
contemporary art research. Students are required to en-
roll in scheduled lab sections. Students are billed for a ma-
terials fee. Prerequisite(s): course 118. Enrollment
limited to 20. May be repeated for credit. E. Anderson

121. Advanced Projects in Computer Art II
Independent and collaborative creative projects using ad-
vanced computer methods, which may be a continuation of
projects initiated in course 120. May include network-
ing projects, virtual representations, interactive multime-
dia, installation, performance, artificial intelligence, artificial
life, etc. Emphasis on advanced critical and experimen-
tal 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 ma-
terials fee. Enrollment limited to 20. May be repeated for
credit. E. Anderson

122. Computer Printmaking, W
Explores the use of the computer as a tool for printmak-
ing in conjunction with traditional techniques of hand
and photo processes. Students will gain knowledge and ex-
erience in using computer equipment and software and
digital printers, and applying digital computer technolo-
gies to extend traditional art practices. Investigation of
conceptual and technical issues associated with digital
image-making and the interface with traditional graphic
approaches. A materials fee will be charged for this class.
Prerequisite(s): course 26 or permission of instructor. En-
rollment limited to 20. Enrollment restricted to art ma-
jors. May be repeated for credit. (General Education
Code: 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 his-
torical and theoretical works, and examination of photo-
graphs. Students are billed for a materials fee. May be
repeated once for credit. Prerequisite(s): course 30. En-
rollment limited to 20. Enrollment restricted to art ma-
jors. L. Watts, 1. Gérdes

131. Advanced Photography, W, S
Continuation of course 130. Students produce a portfo-
lio 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 fol-
lowing: course 130 or either course 132 or 134 or by
passing 10 credits of 130. Enrollment limited to 20. En-
rollment restricted to art majors. 1. Gérdes, The Staff

132. Color in Photography, F, W
Concentration on making photographic works in color.
Students produce a portfolio of color photographs, read his-
torical and theoretical works, and study photographs and other art works. Individualized projects may include work with color transparencies, etkacolor printing, color xerox, computer-generated imagery, or mixed media. Students are billed for a materials fee. May be repeated once for credit. Prerequisite(s): course 130. Enrollment limited to 20. En-
rollment restricted to art majors. N. Locks, The Staff

133A-B. Senior Studio in Photography (5 credits per course), S
An intensive studio experience, with major emphasis on the
development of individual projects leading to a required
senior exhibition. Satisfies senior exit requirement. Courses
A and B must be taken concurrently. Students are billed for a
materials fee (one charge for both A and B). Prerequi-
tisse(s): by portfolio review prior to advance enrollment. En-
rollment limited to 20. Enrollment restricted to art majors.
May be repeated for credit. L. Watts, N. Locks

134. Special Topics in Photography, F, W
Special studies in photography, concentrating on specific sub-
ject matter or media. Topics may include documentary pho-
ography, landscape, alternative processes, or mixed media.
Students are billed for a materials fee. Prerequisite(s): course 30. Enrollment limited to 20. Enrollment restricted to art majors. May be repeated for credit. N. Locks, S. Friedman

135. Introduction to Digital Photography, F, W
Introduction to basic theories behind the digital produc-
tion, manipulation, and output of photographic images.
Through readings and production, students address major
issues specific to working with images in an in-
creasingly digital environment. Students are billed for a
materials fee. Prerequisite(s): course 30. Enrollment
limited to 20. Enrollment restricted to art majors. May be
repeated for credit. (General Education Code: A.) The Staff

136. Advanced Digital Photography, S
A continuation of course 135 to further study the practice,
thories, and criticisms of the digital production, manipu-
lation, and output of photographic images. Major issues
specific to the production of digital images will be ad-
ressed through readings and discussion, including tech-
niques 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. Prerequi-
tisse(s): course 135 or portfolio review. May be repeated for
credit. (General Education Code: A.) The Staff

139. Intermediate to Advanced Sculpture (Foundry), F
Working from the figure and nature. The basic elements of
casting, leading up to direct work in the foundry. The
techniques include working with wax, gating, investing,
pouring the metal, chasing, and applying the patina. Stu-
dents are billed for a materials fee. Prerequisite(s): one of
the following: course 28, 29, 40, or 41. Enrollment lim-
ited to 17. Enrollment restricted to art majors. May be re-
peated for credit. The Staff

140. Metal Sculpture, F, W, S
Focus on intermediate to advanced processes and tech-
niques of direct metal fabrication. A range of processes
and possibilities is explored through studio demonstra-
tions, slide lectures, and field trips. Students are billed for a
materials fee. Prerequisite(s): course 23, 24, 25, 30, 31; or
course 28, Introduction to Figure Sculpture; or course 29.
Beginning Intermedia: Three-Dimensional Approaches;
or course 40, Sculpture I; or course 41, Sculpture II. En-
rollment limited to 20. Enrollment restricted to art majors.
May be repeated for credit. The Staff, E. Stephens

141. Sculpture II, F, W, S
Fabrication techniques in sculpture using wood, metal,
and other building materials such as plastics. Techniques
include basic carpentry, woodshop skills, and an intro-
troduction to the welding facilities. Students will be billed a
materials fee. Prerequisite(s): one of the following courses:
23, 28, 29, 30, 31, or 41. Enrollment limited to 20. (Formerly course 41.) Enrollment
restricted to art majors. May be repeated for credit.
(General Education Code: A.) E. Stephens, The Staff

143. Advanced Intermedia: Three-Dimensional Approaches.
The investigation of constructed sculpture, site-specific in-
stallation, 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 limited to 20. Enrollment restricted to art majors. May be repeated for credit. E. Stephens

144. Site Works: Four-Dimensional Approaches.
Advanced studio course investigating the artistic practice of
site-specific works, installations, and other nontraditional art
forms that explore expression through alternative contexts.
Emphasis given to the projects and issues involved in
process-based (4-D) works including earthworks, site-
specific installation, environmental work, and public art
which are ephemeral and permanent. Students are billed for a
materials fee. Prerequisite(s): one of the following courses:
109, 143, or 145. Enrollment limited to 18. Enrollment re-
stricted to art majors. May be repeated for credit. The Staff

145. Material Metaphor II.
Continuation of course 37. Workshops introduce further investigation of materials and techniques. Students ex-
ploring diverse methods of visual communication through a
series of projects that require individual research and col-
laborative efforts. Students are encouraged to develop
projects according to their motivation, expertise, and self
assessment. Emphasis placed on contemporary studio prac-
tices of installation, students will integrate a variety of
materials and metaphor within the architectural and en-
vironmental space. Students are billed for a materials fee.
Prerequisite(s): course 29 or 37. Enrollment limited to 18.
Enrollment restricted to art majors. The Staff

146. Intermedia, Special Topics, W
Special subjects to be offered by regular staff or visiting
artists as announced. Students are billed for a materials fee.
Prerequisite(s): course 23, Intermedia; or course 28, Inter-

*Not offered in 2003-04
148. Special Topics.  
Special topics in public art, as announced, concentrating on specific aspects of subject matter and media. Students are billed for a materials fee. Prerequisite(s): course 143 or 145. Enrollment limited to 20. Enrollment restricted to art majors. Offered in alternate academic years. May be repeated for credit. The Staff

*149A. Contemporary Visual Media: Issues of Theory and Practice. F  
Through class discussions of a core of readings, selected issues in critical theory relevant to contemporary visual practices are examined. Enrollment limited to 20. Enrollment restricted to juniors and seniors. J. Brodsky

Continuation of 149A with emphasis on readings about visual practices related to issues of class, gender, sexuality, ethnicity, postcolonialism and postnationalism. Enrollment limited to 20. Enrollment restricted to juniors and seniors. J. Brodsky

150. Seminar in Contemporary Art.  
*A. 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 limited to 24. Enrollment restricted to junior and senior art majors. J. M. O'Dade

*B. Ethno-American Art.  
The development of an awareness of the history of ethno-American art (such as African, Latino, Asian, and Middle East) and contemporary ethno-American artists. Guest lecturers. Enrollment limited to 24. Enrollment restricted to junior and senior art majors. (General Education Codes: A, E.) The Staff

C. Issues in Collaboration and Interactivity. W  
Explores the role of collaboration and interactivity in contemporary art practices. Emphasis placed on modes of making works 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 limited to 20. Enrollment restricted to art or history of art and visual culture majors. 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 theoretical understanding of broader issues, in art administration, including an introduction to the political and ethical realities professionals face. Enrollment limited to 20. Enrollment restricted to art majors. 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 limited to 30. Enrollment restricted to juniors and seniors. (General Education Code: A.) E. Crichton

159A-B. Senior Studio in Inter-Dimensional Art (5 credits per course). S  
An intensive studio experience for art majors concentrating in the areas of intermedia, computer and interactive art, sculpture, public art, and installation. 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. A and B must be taken concurrently. Students are billed for a materials fee (one charge for both 159A and 159B). Prerequisite(s): by portfolio review prior to advance enrollment. Enrollment limited to 18. Enrollment restricted to art majors. May be repeated for credit. E. Crichton, E. Anderson

160. Practicum for Careers in Art (3 credits).  
Prepares graduating art students for future careers in art. Enrollment limited to 25. Enrollment restricted to art majors. Offered in alternate academic years. The Staff

191. Teaching Apprenticeship. F,W,S  
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students should have upper-division experience with the curricular vision, art, exhibition review, and according to the political and ethical realities professionals face. The Staff

192. Directed Student Teaching. F,W,S  
Student student assists in a lower-division art course under the direction of the student's faculty supervisor. The Staff

193. Field Study. F,W,S  
Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. The Staff

197. Independent Study. F,W,S  
Provides department-sponsored independent study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

199. Tutorial. F,W,S  
Individual study in areas approved by sponsoring instructors. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Graduate Courses  
297. Independent Study. F,W,S  
Independent study or research for graduate students. Prerequisite(s): petition on file with sponsoring agency. The Staff

Art History  
See History of Art and Visual Culture, page 246.

Arts  
D Building, Porter College  
(831) 459-4940  
http://arts.ucsc.edu

The Division of the Arts offers technical training and historical, theoretical, and critical studies in art, art history (visual culture), dance, drama (acting, directing, and playwriting), design and technology, film and digital media, and music to all UCSC undergraduates, as well as to those undergraduate and graduate students majoring in the arts. The mission of the arts in education derives from their special contributions to human experience and achievement. The arts involve unique ways of knowing, understanding, feeling, communicating, and creating. In education, and at this university, the arts complement humanistic and scientific thought, and students and faculty in the arts are frequently involved in collaborations with colleagues in humanities and science disciplines.

The Division of the Arts provides students with access to excellent state-of-the-art facilities, including recently constructed and equipped music recital halls and practice rooms, an electronic music studio, several theaters, drama and dance studios, painting and printmaking studios, a foundry, film and video editing rooms, a photography laboratory, multimedia computing laboratories, and specialized lecture and seminar classrooms.

Among the division's many performing and fine arts programs, Shakespeare Santa Cruz, an internationally recognized professional repertory company, exemplifies our goal of combining scholarship with the performance and practice of the arts.

The departments and majors in the Division of the Arts are listed in detail under Art, Filmm and Digital Media, History of Art and Visual Culture, Music, and Theater Arts.

Digital Arts and New Media  
MFA Program  
Authorization to confer the degree of master of fine arts in digital arts and new media is pending as this publication goes to press. It is anticipated that the program will be inaugurated and students admitted in the fall quarter of 2004. The program will explore 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, Music, and Theater Arts Departments as well as from the Baskin School of Engineering, the Division of Physical and Biological Sciences, and the Division of Social Sciences. A minimum of two years will be required in order to complete the program. Further information regarding the program, its admission criteria, and the application process can be found at http://digitalarts.ucsc.edu.
Asian Studies

For language instruction see Chinese, page 151, and Japanese, page 259.

Astronomy and Astrophysics

Astronomy Department Office
201 Interdisciplinary Sciences Building
(831) 459-2844
http://www.astro.ucsc.edu

Faculty and Professional Interests

Professor/Astronomer

PETER H. BODENHEIMER
Stellar structure, star formation

MICHAEL J. BOUTE
Dynamics of star clusters, ages of star clusters, chemical enrichment history of the galaxy, observations of interacting galaxies

JEAN P. BRODE
Galaxies, instrumentation

HARLAND W. EPS
Astronomical optics and instrumentation

SANDRA M. FABER
Galaxies, stellar populations, cosmology

PURAGRA (RAJA) GUHATHAKURTA
Faint blue galaxies, study of faint stars using multi-color CCD data, search for Kuiper 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
Astronomy

DAVID C. KOO
Cosmology, birth and evolution of galaxies and quasars

ROBERT P. KRAFT, Emeritus

CLARE 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

GRAEME H. SMITH
Stellar populations, chromospheric activity among late-type stars

STEVEN S. VOGT
Stellar spectroscopy, instrumentation

Merie F. Walker, Emeritus

Astronomer

Lloyd B. Robinson, Emeritus

Assistant Professor/Assistant Astronomer

JASON PROCHASKA
Damped Lyα 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 FULKNER
Stellar structure, close binary stars, relativity

DOUGLAS N. C. LIN
Fluid dynamics, star formation, galactic structure

PIERO MADAU
Cosmology, high-energy astrophysics

WILLIAM G. MATHEWS
Galaxies, high-energy astrophysics, gaseous nebulae: comet (musca)

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

GREGORY LAUGHLIN
Extra-solar planets, numerical astrophysics, astrophysical phenomena of the extremely distant future

Professor

JOEL R. PRIMACK (Physics)
Thermodynamics of fundamental particles, cosmology, astrophysics

Robert B. Hanson

Astronomy, galactic structure, and statistical astronomy

RICHARD STOVER
Instrumentation, galactic 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 nucleo-synthesis, 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 it 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 astronomical 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 frontier 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

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, providing 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 nonscience majors may attend. A good high school background in mathematics and physics is assumed. 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.

Finally, a more thorough quantitative treatment of selected topics 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 5B/M or 6B/M and 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 majors 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).
- Basic mathematics: Calculus (Mathematics 19A-B and 23A-B or equivalent) and statistics (Engineering 5).

Intermediate-level physics: Mechanics (Physics 105); electricity, magnetism, and optics (Physics 110A-B); mathematical methods in physics (Physics 114A-B); 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

Instruction and research leading to the Ph.D. degree in astronomy have been under way 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 nonscience majors interested in a one-quarter survey of classical and modern astronomy. (General Education Codes: Q, IN.) S. Vogt, G. Laughlin, J. Miller, P. Guha, H. Hakurita, J. Faulkner, 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 Codes: IN, Q.) D. Licht

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 Codes: IN, Q.) A. Steindarker

5. Introductory Astronomy: The Formation and Evolution of the Universe. S

The universe explained. Esoteric 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 Codes: IN, Q.) S. Murray

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. Comet/meteor 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 Codes: IN, Q.) T. Horrocks


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 Codes: IN, Q, J.) Faulkner

12. Stars and Stellar Evolution. W

An introduction to the 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 Codes: IN, Q.) S. Woolsey


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 Codes: IN, Q.) D. Kozyrev

14. Observational Astronomy. S

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 50. (General Education Codes: IN, Q.) R. Dewey

16. Life in the Universe. F

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 extrasolar planets. Introductory algebra required. Some knowledge of logarithms and bases recommended. Enrollment limited to 50. (Formerly course 116.) Offered in alternate academic years. (General Education Codes: IN, Q.) L. 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(s): completion of high school algebra and physics recommended; course intended for science majors. (General Education Codes: IN, Q.) C. Mac

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 Codes: T2-Natural Sciences, Q.) G. Smith

80B. Light, Color, and Vision.

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 Codes: T2-Natural Sciences, Q.) J. Nelson

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: T2-Natural Sciences.) S. Thorsett

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, nucleosynthesis, stellar atmospheres, stellar populations. Final stages of evolution, including white dwarfs, neutron stars, supernovae. Prerequisite(s): Mathematics 22 or 23A and 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 various background radiations, 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 and Physics 5B or 6B or 101A. P. M. addau

*117. High Energy Astrophysics. 

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 and Physics 5B or 6B and 101A. Offered in alternate academic years. S. Thorsett

118. Physics of Planetary Systems, S

Determination of the physical properties of the solar system, its individual planets, and extrasolar 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 and Physics 5B or 6B and 101A. Offered in alternate academic years. (General Education Code: Q.) P. Bodenheimer

135. Astrophysics Advanced Laboratory. F

Introduction to the 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. (Also offered as Physics 135. Students cannot receive credit for both courses.) Prerequisite(s): Physics 133 and at least one astronomy course. R. Dewey

171. General Relativity, Black Holes, and Cosmology. F

Special relativity is reviewed. Curved space-time, including the metric and geodesics, is illustrated with simple examples. 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. H. Habib

199. Tutorial. F,W,S

T the Staff

Graduate Courses


Topics in classical radiation: multipole radiation, synchrotron and Cerenkov radiation, Compton scattering, bremsstrahlung, stimulated and coherent emission, diffusion and scattering. Topics in plasma physics: plasma waves, Debye 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. G. Blumenthal

*204A. Physics of Astrophysics I.

Lagrangian and Hamiltonian dynamics, perturbation theory, action angle variables, classical field, elasticity, kinetic theory, statistical mechanics, quantum mechanics, density matrices, quantum field theory, equation of state. Enrollment restricted to graduate students. Offered in alternate academic years. D. Lin

204B. Physics of Astrophysics II. F

Fluid mechanics, equation of motion, inviscid and viscous flow, boundary layers, turbulence, compressibility, sound and non-linear waves, heat and momentum transport, instabilities, magnetohydrodynamics, Alfvén waves, anisotropic 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. G. Smith

*207. Future Directions/Future Missions.

Examines possible key science goals for the 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 (DEEP, ALMA, SNAP, NGST) as examples. Enrollment restricted to graduate students. G. Illingworth

*210. Radiation Astrophysics.

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. Offered in alternate academic years. T the Staff

*212. Dynamical Astronomy.

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.

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. M. addau

*220A. Stellar Structure and Evolution.

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.

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.

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. S. Woosley

*222. Planetary Science.

Gross dynamical and chemical properties of solar system, interior structure, plate tectonics, atmosphere of terrestrial planets, structure and evolution of giant planets, generation of magnetic fields, planet-satellite tidal interaction, planetary rings, comets, meteors, 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. S

Introduction to the particle physics and cosmology of the very early universe: relativistic cosmology, initial conditions, inflation and grand unified theories, baryoynthesis, 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.) (Formerly The Very Early Universe.) Enrollment restricted to graduate students. Offered in alternate academic years. J. Primack

*225. Physics of Compact Objects.


226. General Relativity. W

Develops the formalism of Einstein's general relativity, including solar system tests, gravitational waves, cosmology, and black holes. Offered in alternate academic years. (Also offered as Physics 226. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. 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. W. M. athews

231. Astrophysical Gas Dynamics. W


*233. Physical Cosmology.

Survey of modern physical cosmology, including Newtonian cosmology, curved space-times, observational tests

*Not offered in 2003-04
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. Blumenhal

**235. Numerical Techniques.**
Gives students a 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 radiation 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 novae and X-ray sources are emphasized. Offered in alternate academic years. D. Lin

**240A. Galactic and Extragalactic Stellar Systems. F**

**240B. Galactic and Extragalactic Stellar Systems. W**
Galaxy formation and evolution from observations of intermediate-to-high redshift galaxies (z = 0.5-5). Complements and builds on 240A. Cluster galaxies and field galaxies. Foundation from classic papers on distant galaxies. Recent discoveries from IR 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. S**

**253. Stellar Dynamics.**
Kinematics and relaxation of stellar systems. Potential and orbit 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. S**
Astronomical telescopes and detectors. Astronomical observing techniques. The reduction of observations. Machine shop practice in instrument construction. Offered in alternate academic years. M. Bolte

**260. Instrumentation for Astronomy. W**
An 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. N. Dietz, T. Maz

**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. Thorsett

**289. Special Topics in Astrophysics.**
Occasional courses in particular areas of current interest.

**C. Adaptive Optics and Its Application. F**
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. Offered in alternate academic years. C. Mak

**292. Seminar (no credit). F,W,S**
Seminar attended by faculty, graduate students, and upper-division undergraduate students. T he Staff

**297. Independent Study, F,W,S**
Independent study or research for graduate students who have not yet begun work on their theses. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to graduate students. T he Staff

**299. Thesis Research, F,W,S**
T he Staff

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**Biochemistry and Molecular Biology**

389 Thimann Laboratories
(831) 459-4125
http://www.chemistry.ucsc.edu

**Faculty and Professional Interests**

**Manuel Ares Jr., Professor of Biology**
Gene expression, RNA processing, structure and function of small nuclear RNAs

**Roberto A. Bogomolni, Professor of Chemistry and Biochemistry**
Biophysical chemistry, photobiology, light energy conversion and signal transduction in biological systems

**Barry Bowman, Professor of Biology**
Membrane biochemistry and genetics, biochemistry and molecular biology of membrane proteins

**Andrew D. Chisholm, Associate Professor of Biology**
Genetics and development of C. elegans

**Joshua M. Deitsch, Professor of Physics**
Condensed matter theory

**Ölof Einarsdóttir, Professor of Chemistry and Biochemistry**
Time-resolved spectroscopy, biophysics and bioenergetics, ligand binding and electron transfer dynamics of redox metalloproteins, home-copper oxides, protein translocation

**Jerry F. Feldman, Professor of Biology**
Molecular genetics, genetics and biochemistry of cellular clocks

**Anthony L. Fink, Professor of Chemistry and Biochemistry**
Molecular basis of protein deposition diseases— for example, Parkinson’s disease and amyloidosis; protein folding, intermediates, and aggregation; biophysical studies of protein structure

**Lindsay Hinck, Assistant Professor of Biology**
Neurobiology, cell biology, development

**Theodore Holman, Assistant Professor of Chemistry and Biochemistry**
Biophysical and chemical genetics

**Yishi Jin, Associate Professor of Biology**
Neurobiology, molecular genetics, development

**Douglas R. Kellogg, Associate Professor of Biology**
Cell biology, biochemistry

**R. Scott Lokey, Assistant Professor of Chemistry and Biochemistry**
Organic chemistry, combinatorial synthesis, biotechnology, molecular cell biology

**Robert A. Ludwig, Professor of Biology**
Biochemistry and molecular biology, regulation of gene expression and enzyme activity, genetics, biological nitrogen (gas) fixation, Arabidopsis (plant) growth and development

**Pradip K. Mascharak, Professor of Chemistry and Biochemistry**
Bioorganic chemistry, design of anticancer drugs, modeling of active sites of metalloenzymes, design of catalysts for hydrocarbon oxidation, studies on intermediates in non-heme oxygenase chemistry, design of N-0 donors for photodynamic therapy

**Glenn L. Millhauser, Professor of Chemistry and Biochemistry**
Electron spin resonance, nuclear magnetic resonance, melanocortin receptor signaling, agouti proteins, prion peptide synthesis

**Harry F. Noller, Robert L. Sinsheimer Professor of Molecular Biology**
Ribosomes, RNA structure and function, RNA protein interaction

**Clifton A. Poodry, Professor Emeritus of Biology**
Thomas W. Schleich, Professor of Chemistry and Biochemistry

**Biophysical and magnetic resonance spectroscopy, magnetic resonance imaging, nuclear magnetic resonance spectroscopy, biophysical chemistry**

**William G. Scott, Assistant Professor of Chemistry and Biochemistry**
Structure and function of RNA, proteins, and their complexes

**Jane Silverthorne, Associate Professor of Biology**
Plant gene expression and development

**William T. Sullivan, Professor of Biology**
Genetics, cell biology, development of the Drosophila embryo

**Lincoln Taiz, Professor of Biology**
Plant development, light regulation of stomatal opening

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*Not offered in 2003–04*
FRANK J. TALAMANTES, Professor of Biology
Biochemical and molecular endocrinology, regulation of expression of the growth hormone receptor, regulation of expression and function of placental lactogens and hormonal carcinogenesis

JOHN W. TAMKUN, Professor of Biology
Transcriptional regulation, molecular genetics of Drosophila development, regulation of gene expression

ALAN M. ZAHLER, Associate Professor of Biology
Molecular biology, RNA processing, regulation of precursor messenger RNA splicing

MARTHA C. ZÚÑIGA, Professor of 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 (BMB) is offered by faculty who are actively engaged in research on biological systems.

Students who declare the BMB major earn a bachelor of science degree. The BMB 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 frontline research. The Departments of Chemistry and Biochemistry and Biological Sciences host a very active seminar series of national and international scholars in which advanced undergraduates are encouraged to participate.

The BMB program features close faculty-student interaction, small upper-division classes, stimulating learning environments, and opportunities for independent research and study. Students majoring in BMB 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 Chemistry Department to be assigned a BMB adviser as early as possible. Junior transfer students or others with questions should consult the Chemistry Department undergraduate programs adviser. To become a BMB major, a student must file a declaration of major petition through the Chemistry Department. A double major of BMB with the biological sciences majors or chemistry is not permitted. There is no minor offered.

Requirements for the B.S. Degree

Core Courses
Chemistry 1B/M and 1CN, General Chemistry Laboratory
Biology 20A and 20B, Introductory Biology Sequence
Biology 20L, Experimental Biology Laboratory
Mathematics 11A-B or 19A-B, and 22, Calculus Physics 5A/L, 5B/M, and 5CN; or 6A/L, 6B/M, and 6CN, Introductory Physics Laboratory
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, Organic Chemistry Laboratory
Chemistry 163A and 163B, Physical Chemistry
Biochemistry and Molecular Biology 100A, 100B, and 100C, Biochemistry

Biochemistry and Molecular Biology

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.

M ajor Disqualification Policy
All biochemistry and molecular biology majors are covered by the college 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 131 for more information.

M aterials 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

80A. Understanding Drugs, F,W
Scientific information on prescription and non-prescription drugs and drugs of abuse is presented. Covers basic 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 Code: 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 Jr.

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. Prerequisite(s): course 100A. W. Scott, R. Bogomolni

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. Prerequisite(s): course 100B. 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. Prerequisite(s): course 100B. The Staff
Bioinformatics

See Engineering, page 190.

Biological Sciences

225 Sinsheimer Laboratories
(831) 459-2209
http://www.biology.ucsc.edu

Ecology and Evolutionary Biology
A308 Earth and Marine Sciences
(831) 459-5358

Molecular, Cell, and Developmental Biology
225 Sinsheimer Laboratories
(831) 459-4986

Faculty and Professional Interests

Molecular, Cell, and Developmental Biology

MANUEL ABRES JR.
Gene expression, RNA processing, structure and function of small nuclear RNAs

BARRY BOWMAN
Molecular biochemistry and genetics, biochemistry and molecular biology of membrane proteins

ANDREW CHISHOLM
Genetics and development of C. elegans

DAVID FELDHEIM
Developmental neuroscience

JERRY F. FELDMAN
Molecular genetics, biochemistry and biology of biological clocks

GRANT HARTZOG
Biochemistry, genetics, chromatin and transcriptional regulation

LINDSAY HINCK
Neurobiology, cell biology, development

YISHI JIN
Neurobiology, molecular genetics, development

DOUGLAS R. KELLLOGG
Cell biology, biochemistry

ROBERT A. LUDWIG
Biochemistry and molecular biology, regulation of gene expression and enzyme activity, genetics, biological nitrogen (gas fixation, Arabidopsis/plant growth and development

HARRY F. NOLLER
Ribosomes, RNA structure and function, RNA protein interaction

JANE SILVERTHORNE
Plant gene expression and development

WILLIAM T. SULLIVAN
Genetics, cell biology, development of the Drosophila embryo

LINDON TAIZ
Plant development, light regulation of stomatal opening

FRANK J. TALAMANTEZ
Biochemical and molecular endocrinology, regulation of expression of the growth hormone receptor, regulation of expression and function of placental lactogens and hormonal carcinogenesis

JOHN W. TAMKUN
Transcriptional regulation, molecular genetics of Drosophila development, regulation of gene expression

ALAN M. ZAHLER
Molecular biology, RNA processing, regulation of precurser messenger RNA splicing

MARTHA Z. ZUNIGA
Molecular, cellular, and developmental biology of the immune system

Molecular, Cell, and Developmental Biology Emeritus Faculty

HARRY BEEVERS

CHARLES DANIEL

ROBERT EDGAR

HENRY HILGARD

KIVIE MOLDAVE

CLIFTON A. POODRY

HOWARD H. WANG

Ecology and Evolutionary Biology

GIACOMO BERNARDI
Fish biology, phylogenetics, evolution

MARK H. CARR
Marine biology, applied marine ecology

DANIEL P. COSTA
Physiological ecology of marine mammals and birds

DONALD CROLL
Foraging ecology of marine birds and mammals, island conservation/ecology

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
Agricultural and parasitic relationships, molecular evolution

BRUCE E. LYON
Behavioral ecology, evolutionary ecology, avian ecology

CHARLES L. (Leo) ORTIZ
Physiology of marine mammals, physiological integration, physiology of secretion

INGRID M. PARKER
Plant ecology, pollination, plant-pathogen interactions, physiological invasions

GRANT H. POTTs
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. RAIMONDI
Marine biology, evolutionary ecology, experimental design, applied ecology

BARRY SINERVO
Animal behavior, evolution, physiological ecology

JOHN N. THOMPSON
Coevolution, evolutionary ecology and genetics of species interactions, organization of biodiversity

TERRIE M. WILLiAMS
Vertebrate locomotor and thermoregulatory physiology; marine biodiversity; comparative vertebrate energetics, evolution

Ecology and Evolutionary Biology Emeritus Faculty

RALPH BERGER

WILLIAM DOYLE

RALPH HINGENARDNER

JEAN LANGENHEIM

J. BURNEY LEBOEUF

A. TODD NEWBERRY

JOHN PEARSE

Biological Sciences Lecturers

MICHAEL S. DALBEY

ROBERT KUHN

BALDO MARINOVIC

LINDA OGREN

WENDY ROTHWELL

JILL THOMPSON

MARY ZAVANELLI

Bruce Bridgeman

Psychology and Psychobiology

Physiological mechanisms of visual perception and cognition, computer simulation of cognitive processes, space perception, eye movements

James Estes

Adjunct Professor, Ecology and Evolutionary Biology and Ocean Sciences

Marine science, community ecology

Anthony Fink

Chemistry and Biochemistry

Molecular basis of protein disposition diseases— for example, Parkinson’s disease and amyloidosis; protein folding, intermediates, and aggregation; biophysical studies of protein structure

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

Stephen R. Gliessman

Environmental Studies

Agroecology, sustainable agriculture, natural history, tropical land use and development, ecology and management of California vegetation

Karen D. Holl

Environmental Studies

Restoration ecology, conservation biology, landscape ecology

Paul L. Koch

Earth Sciences

Isotope biogeochemistry, vertebrate palaeontology

Raphael Kudela

Ocean Sciences

Ecological modeling and remote sensing, satellite oceanography, phytoplankton ecology and harmful algal blooms

Deborah Letourneau

Environmental Studies

Agroecology, tropical biology, insect-plant interactions, biological control as an alternative to chemical pesticides
Julie Lockwood (Environmental Studies)  
Ornithology, conservation biology, evolutionary ecology

Scott Lokey (Chemistry and Biochemistry)  
Organic chemistry, combinatorial synthesis, biotechnology, molecular cell biology

Todd Lowe (Computer Engineering)  
Experimental and computational genomics, mRNAs, gene finders. DNA microarrays to study the biology of Archaea

Marc S. Mangel (Environmental Studies)  
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

Karen Ottemann (Environmental Toxicology)  
Environmental responses of pathogenic bacteria

Thomas W. Schlech (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

Mary W. Silver (Ocean Sciences)  
Biological oceanography, marine plankton, midwater ecology

Donald R. Smith (Environmental Toxicology)  
Organismal responses and therapeutic treatment of toxins

Eugene Switkes (Chemistry and Biochemistry)  
Quantum theory applied to problems in chemistry and biochemistry; visual information processing; spatial vision, color vision

Robert Vrijenhoek (Adjunct Professor, Ecology and Evolutionary Biology)

Pittat Vilela (Environmental Toxicology)  
Microbiology, molecular genetics, genomics; the mechanism of persistence of survival of Vibrio cholerae

Jonathan Zeher (Ocean Sciences)  
Aquatic microbial ecology, biological oceanography

Zhiwu Zhu (Environmental Toxicology)  
Bioinformatic systems for molecular mechanisms of metal homeostasis

General Program Description

The biological sciences have entered into an exciting new era in which phenomena that once seemed indivisible 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 biological sciences departments at UCSC 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 department include RNA molecular biology, molecular and cellular aspects of growth 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 minor (general)  
Biology B.S. (general)  
Biology B.A. or B.S. (general), with informal concentration in environmental science, marine biology, neuroscience and behavior, or plant sciences

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 127.)

Environmental studies/biology combined major B.A. (administered in conjunction with the Environmental Studies Department; see page 220.)

Bioinformatics B.S. (administered in conjunction with the School of Engineering; see page 190.)

Advanced undergraduates, with the consent of faculty supervisors, have 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 UC 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 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. Field spring and fall quarters at the Monteverde 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 sheltered mangrove and seagrass habitats. Molecular, cell, and developmental biology majors and premedical students might want to consider the Human Biology Program at the Panum 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 20L). 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, 20B, and 20C (or 21A, 21B, and 21C or equivalents taken elsewhere), is prerequisite to virtually all upper-division biology courses. Biology 20A has a prerequisite of Chemistry 1B, and thus students cannot begin their biology sequence 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. 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). Course 20L, Experimental Biology Laboratory, is prerequisite to most upper-division biology laboratory and field courses.

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.

The Biology 21A, 21B, and 21C series is an intensive version of the course 20 introductory sequence. The course 21 sequence is intended for students with strong backgrounds in math, chemistry, and biology, particularly students with advanced placement credit. Class size is limited to 40, and the courses are fast-paced, allowing time for discussion of more advanced material.

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 Mathematics 3 as soon as possible. Students with even less preparation may need to take college algebra at another institution.

The biological sciences majors require one of the following organic chemistry combinations: Chemistry 108A/L and 108B/M or 112A/L and 112B/M (112C/N is recommended). Students interested in medical school, other health professions, or graduate studies are advised to complete a full sequence of organic chemistry.

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 program 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.
A maximum of one upper-division course requirement may be met with an 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.

Enrollment in other more specialized courses is even more limited; sections for course 20L are limited to 20 students. At least twice a year (and often during the summer as well), allowing class sizes to remain relatively small compared to other UC campuses. The course 21 accelerated introductory sequence is limited to 40 students, and sections for course 20L are limited to 20 students. Enrolment 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

Students interested in pursuing one of the biological sciences majors should declare the prebiology major until they have completed the prerequisites listed below. After completing the prerequisite courses, students may then declare their major.

Students must complete the following prerequisites in order to declare a major in a biological science: precalculus (Mathematics 3 or a score on the mathematics placement exam sufficient to be placed into calculus); general chemistry (Chemistry 1B/M and 1C/N); organic chemistry (Chemistry 108A/L and 108B/M); and the complete introductory biology sequence with laboratory (Biology 20A, 20B, 20C, and 20L). These requirements apply to the following majors: biology; ecology and evolution; marine biology; molecular, cell, and developmental biology; neuroscience and behavior; plant sciences; and the environmental studies/biology combined major. Students declaring a major in the environmental studies/biology combined major are not held to the Biology 20C requirement, because that course is not required for that major.

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 notification 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 science 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 publishes the Biological Sciences Undergraduate Handbook, which contains substantial advice and information pertinent to students’ most frequently voiced questions. Each student in the major should read this handbook thoroughly; copies are available in 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 science 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, 20C, and 20L. Prospective transfer students should contact the undergraduate advising office for further information.

Graduate Programs

The graduate programs in the biological sciences are organized in two areas: 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 longstanding 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. UCSC 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 Año 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’s Natural Reserve System; the diverse habitats on UCSC’s 2,000-acre campus itself (mixed redwood forest, fossil sand dune associations, rolling pasture land, and chaparral) and on several adjacent preserves; the UCSC experimental Farm and Garden; extensive Southern Hemisphere 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.

Molecular, Cell, and Developmental Biology

The program in molecular, cell, and developmental (MCD) 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 MCD biology focuses on such topics as the structure and function of RNA, gene expression, signaling, cell division, development, and pathogenesis. A unique focus of the department is the Center for the Molecular Biology of RNA.

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 30 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 coursework 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 30 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.
Introductory Requirements
- Biology 20A*, 20B*, and 20C* (or equivalents)
* These courses are prerequisite to most upper-division courses and should be completed without delay (same as for B.A.).
- Chemistry 1B/M and IC/N (same as for B.A.); and either Chemistry 108A/L and 108B/M or Chemistry 112A/L and 112B/M (112C/N recommended)
- Mathematics 11A-B or 19A-B and 22 (one additional calculus course required for the B.S.)
- Physics 6A/L, 6B/M, and 6C/N; or 5A/L, 5B/M, and 5C/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.).

Comprehensive Requirement
The biology B.S. comprehensive requirement is the same as for the biology B.A. major. More detailed information is available from the advising office.

General Biology B.S. Major Planners
The following are two recommended academic plans for students to complete during their first two years as preparation for the biology B.S. major. Plan One is suggested 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 require more preparation.

### Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
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<th>Spring</th>
</tr>
</thead>
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<td>Biol 20L</td>
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### Plan Two

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<th>Winter</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
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<td>Chem 1A (fsh)</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
</tr>
<tr>
<td></td>
<td>Math 3</td>
<td>Math 11A</td>
<td>Math 11B</td>
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<tr>
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<td></td>
<td>Biol 20A</td>
<td>Biol 20A</td>
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<tr>
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<td>Chem 108A/L (soph)</td>
<td>Chem 108B/M</td>
<td>Math 22</td>
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<tr>
<td></td>
<td>Biol 20B</td>
<td>Biol 20C</td>
<td>Biol 20L</td>
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### General Biology Concentrations
Biological science is a broad area of study, so students may focus their interests increasingly on a particular field as they progress through the major. Although there are many possible tracks that can lead to a degree in biology, each of them should be solidly grounded in basic courses that provide a general appreciation of biology as a whole. This grounding is provided by the introductory courses 20A, 20B, 20C, and 20L. In addition to these, courses 100, Biochemistry 105, Genetics 175, Evolution; and one course from each of the three distribution areas are required for all biology majors. These foundation courses are regarded as essential for most areas of specialization, as they cover fundamental processes and principles essential for an understanding of the nature of organisms.

Examples of the many possible specialized tracks one could pursue are plant sciences, neuroscience and behavior, marine biology, or environmental biology. More specific or detailed suggestions about developing a major with a focus in an area of concentration can be obtained by contacting the Biological Science Undergraduate Advising Office. It is essential that a curriculum plan be discussed carefully with a faculty adviser.

### 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 depth in one of four areas of concentration. The capstone of this curriculum is a suite of field courses providing students unique opportunities to learn and conduct research in a host of ecological systems. Students are encouraged to take field courses in their areas of specialization. Other opportunities include participation in research projects with faculty sponsors and the intensive Education Abroad Programs in Costa Rica (tropical biology) and Australia (marine sciences).

### Ecology and Evolution Concentrations

#### Introductory Requirements
- Biology 20A, 20B, 20C (or equivalents), and 20L
- Chemistry 1B/M and 1C/N; and 108A/L and 108B/M
- Engineering 5 or 7 (preferred) or Environmental Toxicology 120 (statistics)
- Mathematics 11A and 11B (calculus)
- Physics 7A/L and 7B/M or two courses from 6 or 5 series, with 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, Evolution
  - 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, Microbiology
    - 136/L, Invertebrate Zoology/Laboratory
    - 138/L, Biology and Ecological Vertebrate/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, 143/L, Herpetology/Laboratory, or 144/L, Ornithology/Laboratory)
- 140, Behavioral Ecology
- Electives

#### Ecology
- One methods course (e.g., 161/L, Kepp Forest Ecology/Laboratory, 162, Marine Ecology Field Quarter, 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
- (students should take Cell Biology)
- 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

### Comprehensive Requirement
The ecology and evolution comprehensive requirement is the same as for the general biology major. More detailed information is available from the advising office.

#### Ecology and Evolution B.S. Major Planner
The following are recommended academic plans for completion of the ecology and evolution major. The second plan is designed for transfer students.
**Ecology and Evolution Sample Course Sequence**

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**Junior Transfer Course Sequence**

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<td>Chem 108B/M</td>
<td>Bio 100</td>
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<tr>
<td>(j)</td>
<td>Biol 105</td>
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<tr>
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<tr>
<td>(sr)</td>
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</table>

**Marine Biology Major**

**Program Description**

Our proximity to the ocean, the on-campus central analytical facilities, and the Long Marine Laboratory make UC Santa Cruz an exceptional campus for the study of marine biology. Course offerings in marine biology can be found throughout the course listing; additional courses are listed under ocean sciences. Students interested in entering the UCSC ocean sciences M.S. and/or Ph.D. programs are advised to pursue course requirements in addition to those of biology. The marine biology major requires that students pay careful attention to the prerequisites and electives. More information is available from the advising office.

**Introductory Requirements**

The lower-division course requirements are designed to provide a good introduction to biology as well as to the foundation in chemistry, mathematics, and physics fundamental to the study of biology.

- **Biology 20A, 20B, 20C (or equivalents), and 20L**
- **Chemistry 1B/M and 1C/N; and either Chemistry 108A/L and 108B/M or 112A/L and 112B/M (112C/N recommended)**
- **Engineering 7 or 9 (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 or 5 series with laboratories**

**Advanced Requirements**

- **100, Biochemistry**
- **100A, Marine Biology**
- **131/L, Genetics**

- **175, 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)**

**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 at 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.

**Marine Biology B.S. Major Planners**

The following are two recommended academic plans for students to complete during their first two years as preparation for the marine biology major. Plan One is for students who are committed to the major early in their academic career. Plan Two is for students considering the major or needing more preparation.

**Plan One**

<table>
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**Plan Two**

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<td>Biol 20B</td>
<td>Biol 20C</td>
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**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 close attention to the prerequisites required for upper-division biology courses.

**Introductory Requirements**

- **Biology 20A, 20B, 20C (or equivalents), and 20L**
- **Chemistry 1B/M and 1C/N; and 108A/L and 108B/M or 112A/L and 112B/M (112C/N recommended)**
- **Mathematics 11A-B or 19A-B and 22 (3 quarters of calculus)**
- **Physics 6A/L, 6B/M, and 6C/N; or 5A/L, 5B/M, and 5C/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 (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
• Two of the following lecture courses
  111, Immunology
  113, Mammalian Endocrinology
  114, Cancer Cell Biology
  119, Mirobiology
  120, Development
  125, Neuroscience
  131/L*, Animal Physiology/Laboratory
  166, Plant Physiology
  167/L, Seed Plant Anatomy/Laboratory
  175, Evolution
• Two of the following laboratory courses
  102/L, Biochemistry of Macromolecules Laboratory
  105/L, Genetics Laboratory
  109/L, Yeast Molecular Genetics Laboratory
  116/L, Eukaryotic Molecular Biology Laboratory
  119/L, Microbiology Laboratory
  128/L, C. elegans Neural Genetics Laboratory
  131/L*, Animal Physiology Laboratory
  187/L, Molecular Biotechnology Laboratory
  Biochemistry and Molecular Biology
  110, Biochemistry Laboratory
* Biology 131/L meets either one lecture or one laboratory requirement, but not both.

Comprehensive Requirement
The comprehensive requirement for the MCD biology B.S. major is the same as for the general biology B.A. major. More detailed information is available from the advising office.

Molecular, Cell, and Developmental Biology B.S. Major Planners
The following are two recommended academic plans for students to complete during their first two years as preparation for the molecular, cell, and developmental biology major. Plan One is for students committed to the major. Plan Two is for students who are considering the major or needing more preparation.

Plan One

<table>
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<td>Biol 20B</td>
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<td>Chem 108B/M Biol 20L</td>
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Plan Two

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<td>Biol 20B</td>
<td>Biol 20L</td>
<td>Math 22</td>
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Neuroscience and Behavior Majors

Program Description
Neuroscience, the study of the nervous system and behavior of animals, is a frontier area in biology, touching 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. The 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 courses and independent research.

Neuroscience and Behavior B.A. Major Requirements

Introductory Course Requirements
• Biology 20A, 20B, 20C (or equivalents), and 20L
• Chemistry 1B/M and 1C/N
• Organic chemistry: either Chemistry 108A/L and 108B/M or Chemistry 112A/L and 112B/M (112C/N recommended)
• Mathematics 11A-B or 19A-B
• Introductory physics: either Physics 7A/L and 7B/M; or the 6A/L, 6B/M, 6C/N series or the 5A/L, 5B/M, 5C/N series
• Statistics: either Engineering 5 or 7 or Environmental Toxicology 120

Advanced Course Requirements
Nine upper-division courses to include:
• 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
• 125, Neuroscience
• 140, Behavioral Ecology

Four additional elective courses chosen from one of two areas of concentration:

Molecular Neuroscience Pathway
• 115, Eukaryotic Molecular Biology
• 126, Advanced Molecular Neuroscience
• One of the following molecular/developmental courses: 120, 128, or 135/L
• One of the following physiology or psychology courses: Biology 131/L, 132, Psychology 121, or 123
• One of the following biology laboratory courses: 105L, Genetics Laboratory
  109L, Yeast Molecular Genetics Laboratory
  116L, Eukaryotic Molecular Biology Laboratory
  119L, Microbiology Laboratory
  128L, C. elegans Neural Genetics Laboratory
  187L, Molecular Biotechnology Laboratory

Behavior Pathway
• 113, Mammalian Endocrinology
• One of the following: Biology 139/L, 140L, 141, 143, 144, or Anthropology 106

One of the following physiology or psychology courses:
• Biology 120, 127, 131/L, 132, 133/L, 136/L, 138/L
• Psychology 120, 121, 123, 135
• One of the following laboratory courses:
  109L, Genetics Laboratory
  131/L, Animal Physiology/Laboratory
  136/L, Invertebrate Zoology/Laboratory
  138/L, Biology and Ecology of the Vertebrates/Laboratory
  140L, Behavioral Ecology Field Course

Behavior Pathway Sample Sequence

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<th>Fall</th>
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<td>Biol 20B</td>
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Neuroscience and Behavior B.A. and B.S. Major Planners

Molecular Neuroscience Pathway Sample Sequence

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<td>Chem 108B/M Biol 20L</td>
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<tr>
<td>3rd</td>
<td>Phys 6A/L</td>
<td>Phys 6B/M or 7A/L Biol 115</td>
<td>Phys 6C/N or 7B/M Biol 110</td>
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Behavior Pathway Sample Sequence

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<tr>
<td>1st</td>
<td>Chem 1B/M</td>
<td>Chem 1C/N</td>
<td>gen ed</td>
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<td>Math 11A college core</td>
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<td>Biol 20B</td>
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<td>Chem 108B/M Biol 20L</td>
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* Physics 6 (or 5) series required for the B.S. option.
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, 20C (or equivalents), and 20L
- Chemistry 1B/M and 1C/N
- Organic Chemistry 108A/L and 108B/M; or 112A/L and 112B/M (112C/N recommended)
- Engineering 5 or 7 (statistics) to be taken near the time of internship/independent research
- Environmental Studies 24, General Ecology, or Biology 150, Ecology
- Mathematics 11A and 11B (calculus)
- Physics 7A/L and 7B/M or two courses from the 6 or 5 series with laboratories

Advanced Requirements

A total of nine upper-division courses

- Core courses
  - 105, Genetics
  - 175, Evolution
- One course from each of the following pairs:
  - 166*, Plant Physiology, or 167/L, Seed Plant Anatomy/Laboratory
  - 168/L, Systematic Botany, or 170/L, M. arine Botany/Laboratory
  - 169, Plant Ecology, or Environmental Studies 162/L, Plant Physiological Ecology/Laboratory
- 5 credits of biology independent study or Environmental Studies Internship
- Three additional electives chosen from the following:
  - Environmental Studies 108, Entomology
  - 122, Tropical Ecology and Conservation
  - 129, Integrated Pest Management
  - 130A/L, Agroecology/Laboratory

- 130B, Principles of Sustainable Agriculture
- 133, Agroecology Pradrum
- 138/L, Ethnobotany/Laboratory
- 150, Restoration Ecology
- 161A/L, Soil and Plant Nutrition/Laboratory
- 163, Plant Diseases as Parts of Ecosystems and Laboratory (7 credits)

Advanced Requirements

- Mathematics 11A-B or 19A-B and 22 (three quarters of calculus)
- Physics 7A/L and 7B/M; or 6A/L, 6B/M, and 6C/N; or 5A/L, 5B/M, and 5C/N

Comprehensive Requirement

The comprehensive requirement for the plant sciences B.S. major is the same as for the general biology major. More detailed information is available from the advising office.

Plant Sciences B.S. Major Planner

The following is a recommended academic plan for students who wish to pursue the plant sciences major. The second plan is designed for transfer students.

Plant Sciences Sample Course Sequence

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<th>Winter</th>
<th>Spring</th>
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Junior Transfer Course Sequence

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<td>Biol 166* elective</td>
<td>Biol 105 elective</td>
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<tr>
<td>4th</td>
<td>Biol 175 (sr)</td>
<td>Biol 105 elective</td>
<td>Biol 168/L or 170/L elective</td>
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* Envs 162/L, Biol 166, and Biol 167/L are taught in alternate years

Health Sciences B.S. Major Requirements

Introductory Requirements

- Biology 20A, 20B (or 21A and 21B), and 20L
- Chemistry 1B/M and 1C/N, and 108A/L and 108B/M or 112A/L and 112B/M (112C/N recommended)
- Mathematics 11A-B or 19A-B and 22 (three quarters of calculus)
- Physics 7A/L and 7B/M; or 6A/L, 6B/M, and 6C/N; or 5A/L, 5B/M, and 5C/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
  - 131/131L, Animal Physiology with lab

- Three of the following lecture courses:
  - Anthropology 107/107L, Human Anatomy Biology
  - 111, Immunology
  - 112, Virology
  - 113, Mammalian Endocrinology
  - 114, Cancer Cell Biology
  - 115, Eukaryotic Molecular Biology
  - 119, Mammalian Biology
  - 120, Development
  - 125, Neurosciences
  - 126, Advanced Neural Development
  - 132, Comparative Physiology of Vertebrates
  - 133, Exercise Physiology
  - 188, Advanced Women's Health

- Internship Requirement: Health Sciences 198, equivalent to a 5-credit course. 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)

Comprehensive Requirement

The comprehensive requirement for the health sciences B.S. major is the same as for the general biology B.A. major. More detailed information is available from the advising office.

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.
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<td>upper-div elective</td>
<td>upper-div elective</td>
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</table>

### Lower-Division Courses

#### 3. Concepts in Biology, W

A non-course survey course suitable for people who have not had biology. A historical and experimental approach covers five key biological concepts: homeostasis, the integration of structure and function, cell theory, the mechanism of heredity, and evolution. Students cannot receive credit for this course after receiving prior credit for course 20A, 20B, or 20C. Prerequisite(s): completion of biology placement exam. B. Marincic

#### 15. Undergraduate Research Reports (1 credit), F,W,S

Undergraduate students who work in faculty research laboratories present the results of their projects. Organized by the Minority Undergraduate Research Program and the Minority Access to Research Careers Program. Described for students with membership in the above-mentioned programs. Prerequisite(s): qualifications as determined by instructor at first class meeting. May be repeated for credit. B. Bowman

#### 20A. Cell and Molecular Biology, W,S

Introduction to molecular biology, cell physiology, and genetics. Students cannot receive credit for this course and course 21A. Prerequisite(s): course 3 or a passing score on the biology placement exam and Chemistry 1B. (General Education Code: IN.) W. J. Feldman, S. B. Bowman

#### 20B. Development and Physiology, F,S

Topics in morphology, physiology, development, genetics, and endocrinology selected to exemplify current issues and perspectives in organismic biology. Prerequisite(s): course 20A. F. B. Bowman, D. Costa, S. I. Parker, T. Williams

#### 20C. Ecology and Evolution, F,W

Introduction to ecology and evolution covering principles of evolution at the molecular, organismal, and population levels. Evolutionary topics include genetic and phenotypic variation, natural selection, adaptation, speciation, and macroevolution. Also covers behavioral, population, and community ecology including applied ecological issues. Prerequisite(s): passing score on Biology Placement Exam or course 3 or 20A or 20B. (F) D. Dook, G. Pogson, W. G. Bernardi, D. Potts

#### 20L. Experimental Biology Laboratory, F,W,S

Provides biology majors with the theory and practice of experimental biology. A wide range of concepts and techniques used in the modern laboratory are included in the exercises. Students may be enrolled concurrently in course 20C. Students are billed for materials fee. Prerequisite(s): courses 20A and 20B; satisfaction of the Subject A and Composition requirements for writing-intensive sections. Enrollment limited to 20. (General Education Code: W.) T. The Staff

#### 21A. Accelerated Cell and Molecular Biology, W

Accelerated introduction to biochemistry, molecular biology, cell biology, and genetics, with an emphasis on class discussion and problem solving. Students must have a solid foundation in general chemistry and high school biology. Students cannot receive credit for this course and course 20A. This course is equivalent to course 20A for prerequisites and major requirements. Prerequisite(s): Chemistry 1B. Students must apply for admission to this course. Admittance based on scores on the biology and chemistry placement exam and performance in Chemistry 1B. AP biology and chemistry credit will also be taken into account. Enrollment limited to 40. (General Education Code: IN.) M. Zuviga

#### 21B. Accelerated Development and Physiology, S

An accelerated introduction to topics in the organismal biology of plants and animals, covering morphology, anatomy, physiology, and development. Biology 21B counts as the equivalent of Biology 20B for prerequisites and major requirements. Prerequisite(s): grade (or equivalent performance level) of A in course 20A, or grade (or equivalent performance level) of A or B in course 21A. Enrollment limited to 40. I. Parker, T. Williams

#### 21C. Accelerated Ecology and Evolution, F

Accelerated introduction to ecology and evolution, emphasizing principles and processes spanning molecular, organismal, population, community, and ecosystem levels. Topics include history of Earth and life, physical and chemical environments, biogeochemical cycling, genetic and phenotypic variation, natural selection, adaptation, demography, species interactions, speciation, macroevolution, and biogeography. Biology 21C counts as the equivalent of Biology 20C for prerequisites and major requirements. Prerequisite(s): by application; passing score on biology placement examination. Enrollment limited to 40. D. Dook, G. Pogson

#### 42. Student-Directed Seminar, F,W,S

Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

#### 70. Introduction to Psychobiology, F

Brain sciences, behavior of animals and humans in the laboratory and field; the evolution of social behavior through natural selection. Topics include research techniques, neural mechanisms, sensory-motor processes, sensory systems, learning, biological rhythms, energy regulation. (General Education Code: IN.) E. Swift, B. Bridgeman, W. J. Davis

#### 75. Scientific Diving Certification (2 credits), F,S

Prerequisite for course 161/L, 21A. Student must also have skill level equal to Advanced Scuba Diver Certification, pass scuba physical, provide own scuba gear, be certified in CPR and First Aid; and interview pass swim test and scuba skills test. Enrollment limited to 16. (Formerly Ocean Sciences 71.) T. The Staff
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 100A, 100B, and 100C sequence with grades of Pass, C, or better. Prerequisite(s): courses 20A and 20B; and Chemistry 7 or 108A or 112A. (F) R. Ludwig. (S) 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. Prerequisite(s): courses 20A and 20B. (F) W. Sullivan. (S) J. Feldman

105L. Genetics Laboratory, F,S
Introduction to theoretical and practical aspects of genetic analysis in selected organisms presenting experiments on mutagenesis, recombination, and genetic mapping. Students are billed for materials fee. Prerequisite(s): courses 20L and 105; course 100 or Biochemistry and Molecular Biology 100A recommended. (F) W. Sullivan. (S) M. Dalbey

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. Prerequisite(s): courses 20A, 20B, 20C, 20L, and 105. Offered in alternate academic years. G. Pogson, R. Vrijenhooik

*107L. Population Genetics Laboratory (2 credits).
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 107 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. Prerequisite(s): courses 20A, 20B, 20C, 20L, and 105. Offered in alternate academic years. G. Pogson, R. Vrijenhooik

109L. Yeast Molecular Genetics Laboratory, W
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. Emphasizes comparative studies in both invertebrate and vertebrate systems to provide rigorous, first hand knowledge in yeast development. Specific topics include ATP synthesis, thermoregulation, biological rhythms, sleep, hibernation, foraging, migration, diving, reproduction, stress, social evolution, and population regulation. Prerequisite(s): courses 20A, 20B, and 20C. The Staff

111. Immunology, S
Immune systems—their manifestations and mechanisms of action. Prerequisite(s): courses 20A, 20B, and 105 or 110. M. Zühlke

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. Prerequisite(s): course 100 or Biochemistry and Molecular Biology 100A. L. Ogren

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. Prerequisite(s): course 110 or 115. A. Zähler

115. Eukaryotic Molecular Biology, W
Covers eukaryotic gene 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. Prerequisite(s): course 100 or Biochemistry and Molecular Biology 100A, and either course 105 or 106. G. Hartzog

116L. 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 scratch. Students cannot receive credit for this course and course 187L. Students are billed for a materials fee. Prerequisite(s): course 20L, Chemistry 108B/M or 112C/N, and Biochemistry and Molecular Biology 100A or Biology 115. Enrollment limited to 20. M. Zavanelli

117A. 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 200A. Prerequisite(s): course 105 and Biochemistry and Molecular Biology 100A. A. Chisholm. R. Ludwig

117B. 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 200B. Prerequisite(s): course 117A. J. Tamkun. G. Hartzog

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. Prerequisite(s): course 110 and 117B is required. W. Sullivan. D. Kelllogg

119. Microbiology, W
Cell and molecular biology of bacteria and their viruses, including applications in medicine, public health, agriculture, and biotechnology. (Also offered as Environmental Toxicology 119). Students cannot receive credit for both courses. Prerequisite(s): courses 20A and 20B. K. Ottmann

119L. Microbiology Laboratory, W
An introduction to the principles and practices of laboratory microbiology. Students are billed for materials fee. Course 119 may be taken concurrently. Prerequisite(s): courses 20L and 119. 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. Prerequisite(s): 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. Prerequisite(s): course 100 or Biochemistry and Molecular Biology 100A, and course 110. A. Chisholm

125. Introduction to Neuroscience, S
The structure and function of the nervous system. Topics include elementary electrical principles, biophysics and physiology of single nerve and muscle cells, signal transduction at synapses, development of the nervous system, and neural basis of behavior. Requires a good understanding of basic biochemistry, cell biology, and molecular biology. Concurrent enrollment in course 105 or 110 is encouraged. Prerequisite(s): course 100. (Formerly Neuroscience) D. Feldman

126. Advanced Molecular Neuroscience, S
Explores in detail cellular and molecular events that underlie the function of the nervous system. Topics include neural development, axon guidance and regeneration, advanced electrical principles (synaptic transmission through a variety of receptors), synaptic plasticity, learning and memory, as well as several neural disorders. Prerequisite(s): course 125. L. Hinck

127. Bioenergetics, S
Energy flow through living systems examined at the cellular, organismic, and population levels. Lectures given by several faculty, focusing on their individual research interests. Topics include ATP synthesis, thermoregulation, biological rhythms, sleep, hibernation, foraging, migration, diving, reproduction, stress, social evolution, and population regulation. Prerequisite(s): courses 20A, 20B, and 20C. The Staff

*128. Advanced 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 228. Prerequisite(s): permission of instructor; students need a solid background in molecular, cellular, and developmental biology. Enrollment limited to 10. (Formerly course 126, Advanced Natural Development). L. Hinck

128L. Neural Genetics Laboratory, W
A genetics laboratory course using the nematode Caenorhabditis elegans as a model organism to understand the development and function of the nervous system. Comprehensive research projects are designed to teach the basic methodology and principles of genetic analysis. Students are billed for a
130. Human Physiology, W
Function, organization, and regulation of the major organ systems of humans, with emphasis on integration among systems. Prerequisite(s): course 110; vertebrate anatomy course recommended preparation. L. O’grady

130L. Human Physiology Lab (2 credits), W
Examines fundamental principles of systemic physiology focusing on the human. Concurrent enrollment in course 130 is required. Prerequisite(s): courses 20A, 20B, and 110; 20L is strongly recommended. L. O’grady

131. Animal Physiology, F
Principles and concepts underlying the function of tissues and organ systems in animals with emphasis on vertebrate systems. Must be taken concurrently with course 131L. Prerequisite(s): courses 20A, 20B, and 20L; Physics 5C; 6C, or 7B; and Mathematics 11A or 19A; biochemistry, cell biology, and vertebrate anatomy courses recommended. L. O’grady

131L. Animal Physiology Laboratory (2 credits), F
Experiments conducted with primary focus on quantitative physiological principles of organ systems and intact organisms. Must be taken concurrently with course 131. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, and 20L; Physics 5C; 6C, or 7B; and Mathematics 11A or 19A; biochemistry, physics, cell biology, and some vertebrate anatomy courses recommended. Enrollment limited to 25. L. O’grady

132. Comparative Physiology of Vertebrates, W
Comparative physiology of mammals, birds, and fish with emphasis on locomotor performance and exercise in aquatic and terrestrial environments. Cardiovascular, respiratory, and skeletal muscle systems examined. Prerequisite(s): courses 20A, 20B, and 20C; biochemistry, cell biology, and vertebrate anatomy recommended. T. Williams

133. Exercise Physiology, S
An advanced-level course concerning physiological and biochemical processes associated with human performance. Emphasis is on the integration of organ systems for exercise. Topics include metabolism and fuel utilization, cardiovascular and respiratory dynamics during activity, and the effects of training. Requires a good understanding of basic physiological function and anatomy. Must be taken concurrently with course 133L. Students cannot receive credit for this course and course 233. Prerequisite(s): by interview; course 131 or 132 recommended as preparation. Enrollment limited to 20. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. Offered in alternate academic years. T. Williams

133L. Exercise Physiology Laboratory (2 credits), S
An introduction to basic measurement techniques used in assessing the physiological response of humans to exercise. Sessions cover oxygen consumption, respiratory rate, and heart rate monitoring during aerobic and anaerobic activity. Must be taken concurrently with course 133. Prerequisite(s): by interview; course 131 or 132 recommended as preparation. Enrollment limited to 20. Enrollment restricted to juniors and seniors in majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. Offered in alternate academic years. T. Williams

134. Comparative Toxicology, S
Emphasizes the physiologic and biochemical basis of toxicity across organ systems and animal species, including the types of cellular response to toxic compounds and the role of organ system structure/function in susceptibility to toxicity. Students cannot receive credit for this course and course 234, Environmental Toxicology 134 and 234, and Ocean Sciences 238. (Also offered as Environmental Toxicology 134. Students cannot receive credit for both courses.) Prerequisite(s): courses 20A, 20B, and 20C; courses 100 and 131 or 132 recommended. D. Smith

135. Anatomy of the Human Body, S
Study of structure and function of the human body through lectures with an evolutionary perspective including regional anatomy and body systems. (Also offered as Anthropology 107. Students cannot receive credit for both courses.) Prerequisite(s): courses 20A and 20B or Anthropology 1. The Staff

135L. 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. Concurrent enrollment in course 135 is required. (Also offered as Anthropology 107L. Students cannot receive credit for both courses.) Prerequisite(s): courses 20A and 20B or Anthropology 1. Enrollment limited to 48. The Staff

136. Invertebrate Zoology, W
An examination of invertebrates and their habitats. Lecture format. Course 136L must be taken concurrently. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 96. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. B. Marinovic

136L. Invertebrate Zoology Laboratory (2 credits), W
An examination of invertebrates and their habitats. Weekly laboratories or field trips. Biology 136 must be taken concurrently. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 96. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. B. Marinovic

137. Ichthyology, F
An introduction to the biology of jawless, cartilaginous, and bony fishes—their classification, evolution, form, physiology, and ecology. Course 137L must be taken concurrently. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 96. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. B. Marinovic

137L. Ichthyology Laboratory (2 credits), F
One laboratory session a week and several field trips to study the biology of fish. Must be taken concurrently with course 137. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Offered in alternate academic years. G. Bernardi

138. Biology and Ecology of the Vertebrates, F
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 Environmental Studies 106 series. Concurrent enrollment in course 138L required. (Also offered as Environmental Studies 105. Students cannot receive credit for both courses.) Prerequisite(s): courses 20A, 20B, 20C, or Environmental Studies 24. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. M. Fusari

138L. Biology and Ecology of the Vertebrates Laboratory (2 credits), F
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. Prerequisite to the Environmental Studies 106 series. Concurrent enrollment in course 138 is required. (Also offered as Environmental Studies 105L. Students cannot receive credit for both courses.) Prerequisite(s): Environmental Studies 24 or course 20C. Enrollment limited to 50. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. M. Fusari

139. Biology of Marine Mammals, S
A survey of cetaceans, pinnipeds, sirensians, 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 field identification and understanding of local species. Will include field trips to Long Marine Lab, Ano Nuevo, and Monterey Bay. Must be taken concurrently with course 139. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, 20C, and 20L. 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. Prerequisite(s): courses 20A, 20B, and 20C. B. Sinervo

*141. Ecological Field Methods, W
Field-oriented course in the study of animal ecology and behavior. Combines overview of methodologies and approaches to field research with practical field studies. Prerequisite(s): 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. (Formerly Field Methods for the Study of Animal Biology.) (General Education Code: 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.) Prerequisite(s): courses 20A, 20B, 20C, and 20L or equivalent; one ocean science course recommended. M. Silver

143. Herpetology, W
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 required. Prerequisite(s): course 20L, and course 140, 150, 175 or Environmental Studies 105. Enrollment limited to 25. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments. M. Silver
and Evolutionary Biology Departments, and environmental studies majors. Enrollment limited. Offered in alternate academic years. B. Sinervo

143L. Field Methods in Herpetological Research (2 credits). W
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. Prerequisite(s): course 140L, and course 140, 150, 175, or Environmental Studies 105. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments, and environmental studies majors. Offered in alternate academic years. B. Sinervo

144. Ornithology, F
Introduction to the evolution, ecology, behavior, and natural history of birds, using exemplary case histories to illustrate key concepts in evolution, ecology, and behavior. Concurrent enrollment in course 144L is required. Prerequisite(s): course 140, 150, or 175, or Environmental Studies 24 or 105. Enrollment limited to 20. Offered in alternate academic years. B. Lyon

144L. Ornithology Field Studies (2 credits). F
Field trips introduce students to field identification skills and field inventory of census, foraging behavior, migration, social behavior, and communication. Examination of specimens in the laboratory will be used to highlight the diversity and taxonomy of birds. Concurrent enrollment in course 144 is required. Students are billed for a materials fee. Some field trips may require students to provide their own transportation. Prerequisite(s): course 140, 150, or 175, or Environmental Studies 24 or 105. Enrollment limited to 20. Offered in alternate academic years. B. Lyon

145L. Behavioral Ecology Field Course. F
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, hummingbirds, sparrows, lizards, ants, bees, frogs, and salamanders. Students are billed for a materials fee. Prerequisite(s): course 20L, and course 140 or 150 or Environmental Studies 105. Enrollment limited to 25. (Formerly course 140L) Offered in alternate academic years. B. Sinervo, B. Lyon

148. Quantitative Ecology for Conservation, W
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. Course 148L must be taken concurrently. Prerequisite(s): courses 20A, 20B, 20C, and Engineering 5 or 7 (formerly Mathematics 5 or 7); and Mathematics 11A. D. Doolak

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 MATLAB. Course 148 must be taken concurrently. Prerequisite(s): courses 20B and 20C, Engineering 5 or 7 (formerly Mathematics 5 or 7), and Mathematics 11A. Enrollment limited to 25. D. Doolak

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. Prerequisite(s): 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. Prerequisite(s): course 150 or Environmental Studies 24. Enrollment limited to 50. L. Fox

158. Ecology of Reefs, Mangroves, and Seagrasses, W
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.) Prerequisite(s): course 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. (Formerly Tropical Coastal Environments) 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. Prerequisite(s): course 150 or 140 or Environmental Studies 24. M. Carr

160L. Marine Ecology Laboratory, S
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) write-up of an oral presentation. Students are billed for a materials fee. Prerequisite(s): by interview to assess ability to carry out field project; courses 20L and 160L. Enrollment limited to 20. Offered in alternate academic years. M. Carr

161L. Kelp Forest Ecology Laboratory (2 credits). F
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. Course 161 must be taken concurrently. Students are billed for a materials fee. Prerequisite(s): by interview; courses 20A, 20B, 20C, and 20L are required; courses 136/L, 150, or 170/L 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. Enrollment restricted to seniors in majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments, and the combined major in environmental studies and biology. Offered in alternate academic years. M. Carr, P. Raimondi

*162. Marine Ecology Field Quarter (19 credits).
Total immersion in marine ecology for very motivated students. Students will develop a research project during first four weeks on campus and then spend six weeks of immersion in directed research without distraction in isolated locations off campus (past locations include the Gulf of California in Mexico and Moorea in Tahiti). 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 RuleBook and by the instructors. Students are billed for a materials, transportation, and housing fee. Course credit cannot be received for this course and courses 137, 137L, 160, or 160L. Courses 162A, 162B, 162C, and 162D must be taken concurrently. Prerequisite(s); by interview during previous winter quarter. Enrollment limited to 25. Offered in alternate academic years.

*A. Marine Ecology with Laboratory.
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 will carry out a complete research project, including the formation of hypotheses; the design and implementation of experiments; the collection, analysis, and interpretation of data; and the write-up and oral presentation of results. Enrollment limited to 25. P. Raimondi, G. Bernardi

*B. Ichthyology with Laboratory.

*C. Methods in Field Ecology.
Students will learn quantitative methods for field experiments and surveys. The emphasis will be on marine environments but there will also be exposure to terrestrial systems. This course is the lecture component to course 162D. No text is required for this course; instead, readings from the current literature will be assigned. Students will be evaluated on written independent field project proposals and class participation. Enrollment limited to 25. P. Raimondi, G. Bernardi

*D. Methods in Field Ecology Laboratory (4 credits).
This is the laboratory portion of course 162C. Students will carry out independent field projects under the supervision of course instructors. All work will be done during the 3-6 week off-campus portion of course 162. Students will be evaluated on field techniques, the final
write-up of their independent field projects, and class participation. Enrollment limited to 25. P. Raimondi, G. Bernardi

163. Marine Conservation Biology. S
Initially undertake 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. Croll

165. Field Ecology of Baja California Supercourse (19 credits). F
Intensive, on-site learning experience in terrestrial field biology using the spectacular islands of the Sea of Cortez as focus. Study advanced concepts in ecology and field methods for four weeks, then experience total immersion in field research in Baja California. Student fee covers materials, transportation (not airfare), housing, and meals. Courses 165A, 165B, 165C, and 165D must be taken concurrently. Students cannot receive credit for this course and courses 141, 169, or 169L. Prerequisite(s): by application and interview during previous spring quarter. Enrollment limited to 24. Offered in alternate academic years.

A. Plant Ecology. F
Exploration of ecology of plant form, function, distribution, abundance, and diversity. Topics include photosynthesis, water relations, life history variation, pollination, competition, herbivory, and patterns of diversity. Special focus on desert plants and adaptations to life in arid environments. Prerequisite(s): satisfaction of Subject A and Composition requirements. Enrollment limited to 24. (General Education Code: W) D. Croll, L. Parker

B. Field Methods in Animal Biology. F
Field-oriented course in study of animal biology. Combines lectures on approaches and methodologies with practical field studies. Complete field projects in animal ecology and behavior and also learn natural history of animals of Baja California. Enrollment limited to 24. D. Croll, L. Parker

C. Field Methods in Plant Ecology. F
Hands-on exploration of concepts and techniques of plant ecology with focus on desert ecosystems. Complete directed field projects in plant ecology and also learn natural history of plants of Baja California. Enrollment limited to 24. D. Croll, L. Parker

D. Independent Field Research (4 credits). F
Participate in substantial field projects under the supervision of course instructor: develop research proposals, carry out field work at island and mainland locations in Baja California, analyze data, and prepare final research papers and oral presentations. Enrollment limited to 24. D. Croll, L. Parker

166. Plant Physiology. W
Cellular and organismal functions important 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. Offered in alternate academic years. L. Tailz

*167L. Seed Plant Anatomy Laboratory (2 credits).

One laboratory weekly which focuses on analysis of the vegetative and reproductive structures of plants, with emphasis on angiosperms and gymnosperms. Must be taken concurrently with course 167L. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 24. Enrollment restricted to majors sponsored by the Molecular, Cell, and Developmental Biology and the Ecology and Evolutionary Biology Departments, and the environmental studies/biology combined major. L. Tailz

168. Systematic Botany of Flowering Plants. S
An examination of the taxonomy and evolution of flowering plants. Special topics include phylogenetics and cladistics, plant species concepts, and modern methods of systematic research. Must be taken concurrently with course 168L. Prerequisite(s): courses 20A, 20B, and 20C; or Environmental Studies 24. Enrollment limited to 32. The 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. Must be taken concurrently with course 168. Prerequisite(s): courses 20A, 20B, and 20C; or Environmental Studies 24. Enrollment limited to 32. The Staff

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 course 269. Prerequisite(s): courses 20A, 20B, and 20C; or Environmental Studies 24. Course 150 is recommended. Enrollment limited to 30. (Formerly Field Methods in Plant Ecology) L. Tailz

*169L. Field Methods in Plant Ecology.

Hands-on exploration of the concepts and techniques of plant ecology with focus on desert ecosystems. Complete directed field projects in plant ecology and also learn natural history of plants of Baja California. Enrollment limited to 24. D. Croll, L. Parker

170. Marine Botany. S
An introduction to the biology of marine algae, fungi, and angiosperms with regard to form and function. Major biotic, temperate, and tropical marine plant communities. Lecture format. Must be taken concurrently with course 170L. Prerequisite(s): courses 20A, 20B, 20C, and 20L. The 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. Must be taken concurrently with course 170. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 20. The 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 Ocean Sciences 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

*174. 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. Taught conjointly with course 274. Prerequisite(s): upper-division math courses in probability theory are strongly recommended. B. Sinervo, M. Warmuth, D. Friedman

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. Enrollment limited to 75. 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. Must be taken concurrently with course 176L. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 75. (Formerly Molecular Evolution Laboratory.) Offered in alternate academic years. G. Bernardi

176L. Molecular Ecology and Evolution Laboratory (2 credits). S

One laboratory section per week that applies the theory developed in course 176 to computer and laboratory experiments. Course 176 must be taken concurrently. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, 20C, and 20L. Enrollment limited to 75. (Formerly Molecular Evolution Laboratory.) Offered in alternate academic years. G. Bernardi

185F. Hughes Undergraduate Research Lab (2 credits). F,W,S
Covers the application of modern research techniques to unanswered questions in human molecular genetics. Especially designed for self-motivated students interested in scientific discovery. Prerequisite(s): permission of instructor. Enrollment limited to 25. M. Ares Jr.

185L. Hughes Undergraduate Research Lab. F,W,S
Covers the application of modern research techniques to unanswered questions in human molecular genetics. Especially designed for self-motivated students interested in scientific discovery. Prerequisite(s): permission of instructor. Enrollment limited to 25. M. Ares Jr.

186. Experimental Design and Data Analysis. W
Focuses on problems and designs in ecology and population biology. Topics include basic experimental design; exploratory data analysis—from a graphical perspective; hands-on statistics; and graphical theory. Structured around a statistical analysis and graphics computer program to teach students to design their own surveys and experiments and analyze their data correctly. Prerequisite(s):
187L. 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 116L or 287L. Students are billed for a materials fee. Prerequisite(s): courses 20A, 20B, 20C, 20L, 100, and 110. Enrollment limited to 20. M. Zavanelli

190. Proseminar.
Selected topics in biology. The Staff

191. Teaching College Biology.
A series of courses 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.) Prerequisite(s): petition on file with 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. 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. With permission of the department, may be repeated for credit. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

An individually supervised course, with emphasis on independent research, to culminate in a senior thesis. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. A. Chisholm, R. Ludwig

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 advanced undergraduates may enroll in course 117B. J. Tamkun, G. Hartzog

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. W. Sullivan, D. Kellogg

*201. RNA Processing.
An advanced graduate-level course on biological 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 Jr.

204. Chromatin. S
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; undergrads by permission of instructor. Enrollment limited to 15. G. Hartzog, J. Tamkun

*207. Population Genetics.
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, R. Vrijenhoek

*207L. Population Genetics Laboratory (2 credits).
A companion course to 207. Population Genetics, that applies the theory developed in that course to related disciplines including conservation biology, ecology, agriculture, end population biology. Original scientific literature relating to the theory developed in course 207 is read, and applied problem sets are solved by the students. Must be taken concurrently with course 207. Students cannot receive credit for this course and course 107L. Enrollment restricted to graduate students. Offered in alternate academic years. G. Pogson, R. Vrijenhoek

*208. Cellular Signaling Mechanisms.
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 limited to 15. Enrollment restricted to seniors and graduate students. Offered in alternate academic years. D. Kellogg, A. Chisholm

210. Application and Analysis of Microarrays. W
Topics include but are not limited to microarray production techniques, experimental strategies using microarrays, extraction and analysis of microarray data, DNA and protein arrays, SNP analysis, gene expression analysis, materials analysis, and advanced analysis of data using bioinformatic techniques. Enrollment restricted to graduate students; undergraduates by permission of instructor. T. Lowe

228. Advanced Topics in Cellular and Developmental Neurobiology. S
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 limited to 15. (Formerly course 226.) Enrollment restricted to graduate students. Undergraduates may enroll by interview only. L. Hintik

233. Exercise Physiology. S
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 limited to 20. Enrollment restricted to graduate students. Offered in alternate academic years. T. Williams

234. Comparative Toxicology. S
Emphasizes the physiological and biochemical basis of toxicity across organ systems and animal species, including the types of cellular response to toxic compounds and the role of organ system structure/function in susceptibility to toxicity. Students cannot receive credit for this course and course 134, Environmental Toxicology 134 and 234, and Ocean Sciences 238. (Also offered as Environmental Toxicology 234 and Ocean Sciences 238. Students cannot receive credit for both courses.) Enrollment limited to 12. Enrollment restricted to graduate students; seniors with permission of instructor. D. Smith

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 biota. Students cannot receive credit for this course.

*Not offered in 2003–04
Lecture covers the application of ecology and genetics to conservation biology. Emphasizes mathematical analysis and quantitative thinking; features mathematical homework, computer lab sessions, and independent projects. Prerequisite(s): interview to review background. Enrollment restricted to graduating students. M. Silver

250A. Advanced Organismal Biology. F
Consists of lectures focusing on pivotal topics in ecology and evolution. Relevant background material is developed following a critical analysis of readings from the primary literature. 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. D. Costa, B. Lyon

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, herbivory, 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. Prerequisite(s): interview to review background. Enrollment limited to 15. (Formerly course 248.) Offered in alternate academic years. D. Doak

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. M. Carr

260L. Field Methods in Plant Ecology Laboratory. 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. Concurrent enrollment in course 269 is required. Students cannot receive credit for this course and course 169. Enrollment limited to 2. (Formerly Plant Ecology Laboratory.) Enrollment restricted to graduate students. I. Parker

*269L. Field Methods in Plant Ecology Laboratory. 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. Concurrent enrollment in course 269 is required. Students cannot receive credit for this course and course 169. Enrollment limited to 2. (Formerly Plant Ecology Laboratory.) Enrollment restricted to graduate students. I. Parker

*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. Taught jointly with course 174. (Also offered as Economics 272.) Students cannot receive credit for both courses.) Prerequisite(s): upper-division math courses in probability theory are strongly recommended. Offered in alternate academic years. T He Staff

279. Evolutionary Ecology. F
Analysis of the ways in which ongoing evolution and coevolution 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. 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; qualified undergraduates may enroll with approval of instructor. May be repeated for credit. M. Aris

280C. Developmental Genetics of C. elegans. F, W, S
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. (Formerly course 281C.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of the instructor. May be repeated for credit. A. Chisholm

280D. RNA Processing (2 credits). F, W, S
A discussion of current research and literature concerning the regulation of precursor messenger RNA processing. Enrollment limited to 10. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. A. Zehler

280F. Development of Vertebrate Neural Connections. F, W, S
Intensive research seminar on molecular mechanisms by which neural connections are established during mouse development. Special focus on topographic maps and role of Eph receptors and ephrins in this process. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. D. Feldheim

280G. Plant-Bacterial Interactions. F, W, S
Comprises a weekly seminar given by the faculty instructor and enrolled students on the molecular biology and biochemistry of plant-bacterial interactions. Topics are selected from those of particular relevance to ongoing laboratory research. Students are required to present and analyze results of either their own laboratory research or published papers in the research literature of the field. Prerequisite(s): courses 117A and 117B or 200A and 200B. May be repeated for credit. R. Ludwig

280H. Topics on Research into Chromatin and Transcription. F, W, S
Seminar covering research into the effects of chromatin on transcription in yeast. Enrollment limited to 10. (Formerly course 281G.) Enrollment restricted to graduate students; undergraduates may enroll with permission of instructor. May be repeated for credit. G. Hartog

280K. Topics in Cell Cycle Research. 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. (Formerly course 281K.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. D. K. Dugg

280L. Topics on Neural Development. F, W, S
Seminar covering research into the development of the embryonic nervous system. Enrollment limited to 12. (Formerly course 281H.) Enrollment restricted to graduate students. May be repeated for credit. L. H. Hinkle

280N. Structure and Function of Ribosomes. 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 limited to 20. Enrollment restricted to graduate students; qualified undergraduate students may enroll with permission of the instructor. May be repeated for credit. H. Noller

280O. Topics in Bacterial Pathogenesis. 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 Environmental Toxicology 281O. Students cannot receive credit for both courses.) Enrollment limited to 20. (Formerly course 281O.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. K. Oettmann

An intensive seminar concerning the molecular genetics of Drosophila. Recent research is discussed weekly, with an emphasis on gene regulation and development. Students present critical reviews of recent articles at least once during the quarter. Qualified undergraduates are encouraged to enroll with permission of instructor. Prerequisite(s): see the enrollment conditions section of the quarterly Schedule of Classes for courses 105, 110, 115, 120, and Biochemistry and Molecular Biology 100A are recommended as preparation. Enrollment limited to 10. May be repeated for credit. J. Tamkun

*Not offered in 2003–04
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 evaluate ongoing research in this area. Material is drawn from student research and recently published journal articles. Students are also expected to meet individually with the instructor two hours weekly. In addition to a 3–5 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. 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 limited to 18. ( Formerly course 281Z.) Enrollment restricted to graduate students. 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 ATPases. Enrollment limited to 20. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. B. Bowman

280X. Concepts in Experimental Endocrinology. F,W,S
Meets twice a week for two hours each session. Participants are required to read scientific journal in their respective areas of interest in endocrinology, present the findings in detail, and show how they relate to their research using overheads and/or slides. Students make approximately four presentations per quarter. Active participation in all discussions is required. Prerequisite(s): course 113. Enrollment limited to 20. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. F. Talamantes

280Y. Developmental Neurobiology of C. elegans. 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. (Formerly course 281J.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. Y. Jin

280Z. Cell Biology of Immune Response. 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 endocytosis and fate of endocytosed MHC molecules. Enrollment limited to 10. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. M. Zúñiga

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 limited to 10. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. 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. (Formerly course 280Q.) 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 physiological to ecological theory. Participants are required to present results of their own research or review papers of interest. (Formerly course 280F.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. D. Costa

Involves readings of current 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. Doolittle

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 limited to 10. (Formerly course 280E.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. 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 own research at least once per quarter. Prerequisite(s): consent of the instructor. Enrollment limited to 20. (Formerly course 280C.) Enrollment restricted to graduate students. 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 limited to 12. (Formerly course 280L.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. J. Langéli

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 limited to 10. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. 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 limited to 12. Enrollment restricted to graduate students. May be repeated for credit. D. Croft

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. (Formerly course 280Q.) Enrollment restricted to seniors and graduate students. May be repeated for credit. C. Ortúz

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 limited to 12. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. I. Parker

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 limited to 10. (Formerly course 280P.) Enrollment restricted to graduate students; qualified undergraduate students may enroll with permission of instructor. 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 graduate student research. Other quarters involve reading and evaluating current and classic literature on marine ecology and evolutionary biology. Enrollment limited to 10. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. 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.) (Formerly Topics in Toxicokinetic Modeling.) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. May be repeated for credit. D. Smith

281T. Species Interactions and Coevolution. F,W,S
The genetics and ecological structure of species interactions, and the role of coevolution between species in shaping biodiversity. Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit. J. Thompson

281U. Topics in Invertebrate Biology. F,W,S
An intensive study about concepts, theory, and techniques for graduate students conducting research on the ecology,
281V. Topics in Behavioral Ecology, F,W,S
A discussion of current topics and methods in behavioral ecology and life history evolution. Enrollment limited to 12. (Formerly course 280V) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. T. Potts

281W. Topics in Exercise and Environmental Physiology, F,W,S
A weekly seminar discussion on current research and techniques in mammalian exercise and environmental physiology. Areas covered include locomotor physiology, exercise testing and cardiovascular monitoring, and biomechanics. Oral presentation of ongoing research or current literature required from each student. Enrollment limited to 10. (Formerly course 280M) Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. B. Sinev

286. Experimental Design and Data Analysis, W
Focuses on problems and designs in ecology and population biology. Topics include basic experimental design; exploratory data analysis—from a graphical perspective; hands-on statistics and graphical theory. Structured around a statistical analysis and graphics computer program to teach students to design their own surveys and experiments and analyze their data correctly. Prerequisite(s): one course in statistics or by permission of instructor. Enrollment limited to 20. Enrollment restricted to graduate students. P. Raimondi

287L. 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 116L or 116L. Enrollment limited to 187L. Enrollment restricted to graduate students. Qualified advanced undergraduate students may enroll in course 187L. M. Zavandil

289. Practice of Science, W
Examination of ethical and practical scientific issues, including the collection and treatment of data, attribution of credit, plagiarism, fraud, and peer review. Career issues, including how to apply for grants and positions in industry or academia, will be discussed. Prerequisite(s): courses 200A, 200B, and 200C or permission of instructor. Enrollment limited to 20. Enrollment restricted to graduate students; undergraduates may enroll with permission of the instructor. J. Tamkun

290. Proseminar,
Special topics offered from time to time by visiting professors or staff members. Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor. T. The Staff

291A-B. Molecular, Cellular, and Developmental Biology Seminar (no credit), F,W
Topics of current interest in molecular, cellular, and developmental biology are presented weekly by graduate students, faculty, and guest speakers. One course credit given in spring quarter by enrolling in course 291C. Multiple-term course; the grade and evaluation submitted for the final quarter apply to previous quarters. May be repeated for credit. T. The Staff

291C. Molecular, Cellular, and Developmental Biology Seminar (1 credit), S
Description in course 291A-B. Prerequisite(s): courses 291A-B. May be repeated for credit. T. The Staff

292. MCD Seminar, F,W,S
Various topics by weekly guest speakers. T. The Staff

293. Readings in Ecology and Evolution, W,S
Weekly readings and discussions of recent research papers in ecology, evolution, and related topics from organismal biology. Enrollment restricted to graduate students. May be repeated for credit. T. The Staff

294. Ecology, Evolutionary Biology Seminar (no credit), F,W,S
Selected topics of current interest to ecologists and evolutionary biologists presented by weekly guest speakers. T. The Staff

296. Laboratory Research in Molecular, Cell, and Developmental Biology, F,W,S
Independent laboratory research in molecular, cellular, and developmental biology. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. The Staff

297. Independent Study, F,W,S
Independent study for graduate students who have not yet settled on a research area for their thesis. Prerequisite(s): petition on file with sponsoring agency. T. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with the sponsoring agency. T. The Staff

British Literature
Students wishing to pursue a course of study in British literature should consult the concentration in national/transnational literatures under Literature, page 279.

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 172.
W. TODD WIPKE

Organic synthesis, organoboron chemistry, heterocyclic chemistry, organometallic chemistry, asymmetric synthesis, bioisosteres, and natural products chemistry.

EUGENE SWITKES

Quantum theory applied to problems in chemistry and biochemistry; visual information processing, spatial vision, color vision.

STANLEY M. WILLIAMSON, Emeritus

W. TOOD WIPKE

Computer design of new drug candidate molecules, computer-assisted instruction, molecular modeling, computational chemistry, molecular engineering, artificial intelligence, chemical information systems, intelligent tutoring systems.

DONALD R. SMITH (Environmental Toxicology)

Anthropogenic perturbations of biogeochemical cycles.

A. RUSSELL FLEGAL (Environmental Toxicology)

Chemical oceanography, biogeochemistry of trace metals and molecules.

WILLIAM G. SCOTT

Structure and function of RNA, proteins, and their complexes.

R. SCOTT LOKEY

Organic chemistry; combinatorial synthesis, biotechnology, semiconductor and metal nanoparticles, photodrugs, and conjugated polymers.

THEODORE HOLMAN

“Living” polymerizations, designed polymers for applications in nanotechnology.

JIN Z. ZHANG

Femtosecond laser spectroscopy, ultrafast dynamics of condensed phases, advanced materials, including semiconductor and metal nanoparticles, photodrugs, and conjugated polymers.

REBECCA BRASLAU

Associate Professor

Bioorganic and biological chemistry.

Computer design of new drug candidate molecules, computer-assisted instruction, molecular modeling, intelligent tutoring systems.

Affiliate

DAVID W. DEAMER, Professor Emeritus (recalled)

Professor

KENNETH W. BRIUAND (Ocean Sciences)

Chemical oceanography, biogeochemistry of trace metals and radiouinides, aquatic chemistry, geochemistry.

A. RUSSELL FLEGAL (Environmental Toxicology)

Anthropogenic perturbations of biogeochemical cycles.

Associate Professor

DONALD R. SMITH (Environmental Toxicology)

Organic synthesis, organoboron chemistry, heterocyclic chemistry, organometallic chemistry, asymmetric synthesis, bioisosteres, and natural products chemistry.

Assistant Professor

CAROL ROHLI (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.

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 spectrophotometric 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 UC Santa Cruz Chemistry 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; and 80H, 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 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 adviser.

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, 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

Biology/Environmental Toxicology 134

Computer Science 12A or 60N

Ocean Sciences 120

Physics 110A-B, 114A-B
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 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>(frsh) Math 11A</td>
<td>Math 11B</td>
<td>Math 22</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 108A/L or 112A/L or 112C/N</td>
<td>Chem 108B/M</td>
<td>Chem 112C/N</td>
</tr>
<tr>
<td>(soph) Phys 6A/L</td>
<td>Phys 6B/M</td>
<td>Phys 6C/N</td>
<td></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 112A/L, 112B/M, and 112C/N; or 108A/L, 108B/M, and 143
Chemistry 103
Chemistry 151A/L, 163A, 163B, 163C, 200A, 100B, 220, 100C, 143
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)
- Biochemistry/Environmental Toxicology 134
- Computer Science 12A or 60N
- Ocean Sciences 120
- Physics 110A-B, 114A-B

### Comprehensive Requirement: same as for the B.A.

**B.S. Degree with Biochemistry Emphasis:** The biochemistry pathway is designed for students who intend to pursue a career in biochemistry or in a related field such as biotechnology, and it provides an exceptionally rigorous chemistry emphasis.

- 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
- Chemistry 112A/L, 112B/M, and 112C/N; or 108A/L, 108B/M, and 145
- Chemistry 151A/L, 163A, 163B, 163C

Biochemistry and Molecular Biology 100A, 100B, 100C, 110
Biology 20A, 20B, 20L

**Comprehensive Requirement:** same as for the B.A. (see above)

### Chemistry Major B.S. Planner

The following is the recommended academic plan for students to complete during their first two years as preparation for the 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>Math 22</td>
</tr>
<tr>
<td>(frsh) Chem 1B/M</td>
<td>Chem 1C/N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 112A/L or 112C/N</td>
<td>Chem 112B/M or 112C/N</td>
<td>Chem 112C/N</td>
</tr>
<tr>
<td>(soph) Phys 6A/L</td>
<td>Phys 6B/M</td>
<td>Phys 6C/N</td>
<td></td>
</tr>
</tbody>
</table>

### B.S. Degree with Environmental Chemistry Concentration

A concentration within the biology, chemistry, and Earth sciences degree programs, collectively identified as the environmental sciences degree 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 20/L, 10/L, or 5/L
- 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 Energetics
- Chemistry 108A/L, 108B/M, Organic Chemistry
- Chemistry 122, Principles of Instrumental Analysis
- Chemistry 151A/L, Chemistry of Materials and Inorganic Lab
- Chemistry 163A, Quantum Mechanics and Basic Spectroscopy
- Chemistry 163B, Thermodynamics and Kinetic Theory
- Chemistry 146A or 146B or 146C, Advanced Laboratory
- Earth Sciences 110B/M, Earth as Chemical System/Laboratory
- Ocean Sciences 120, Aquatic Chemistry: Principles and Applications
- Ocean Sciences 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.

<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>gen ed</td>
</tr>
<tr>
<td>(frsh) Math 11A or 19A</td>
<td>Math 11B or 19B</td>
<td>Biol 20A</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Chem 108A/L</td>
<td>Chem 108B/M</td>
<td>East 10/L</td>
</tr>
<tr>
<td>(soph) Phys 6A/L</td>
<td>Phys 6B/M</td>
<td>Phys 6C/N</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>Chem 163A</td>
<td>Chem 163B</td>
<td>Chem 151A/L</td>
</tr>
<tr>
<td>(jr) Chem 122</td>
<td>Chem 163B</td>
<td>Biol 134</td>
<td></td>
</tr>
<tr>
<td>gen ed</td>
<td>gen ed</td>
<td>gen ed</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>Chem 164A</td>
<td>Chem 164B</td>
<td>Chem 146A/B/C</td>
</tr>
<tr>
<td>(sr) Chem 203</td>
<td>Chem 203</td>
<td>Ocean 220</td>
<td></td>
</tr>
<tr>
<td>gen ed</td>
<td>gen ed</td>
<td>gen ed</td>
<td></td>
</tr>
</tbody>
</table>

**Senior Research (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, 163A, 164B, 164A, 146C, and 146D. The minor has no senior comprehensive requirement.
Advising and Chemistry Curriculum Guide
The chemistry adviser 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 community college adviser regarding details of course transferability, and soon after arrival at UC Santa Cruz, they should meet with a UCSC adviser 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 127 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 adviser.

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 the 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, at the same time, are expected to maintain the high intellectual standards associated with the doctoral degree. Research options include biochemistry, biophysical chemistry, bioinorganic chemistry, bioorganic chemistry, and physical chemistry. Collaborative research efforts are encouraged, both intradepartmentally and interdepartmentally. The interdisciplin ary 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 RNA. 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. 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 bioorganic 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. candidate’s 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 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, F
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 Codes: IN, Q) T. Schleich

1B. 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 Codes: IN, Q) E. Switkes, R. Bogomolni

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 Codes: IN, Q) F. Andrews

1M-N. General Chemistry Laboratory (2 credits), F-W, 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): 1M: 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. 1N: course 1M, course 1C or concurrent enrollment in 1C. T. Roberti

80A. Chemistry of Nutrition: Concepts and Controversy, S
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 prepa-
ration. Offered in alternate academic years. (General Edu-
cation Code: T2-Natural Sciences.) A. Fink

80G. Bioethics in the Twenty-First Century: Science, Business, and Society, W
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 080G and Bio-
molecular Engineering 080G. Students cannot receive credit for both courses.) (General Education Code: T2-
Natural Sciences.) D. Damari, E. Suckid

*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 pre-
 sented including history, viticulture, fermentation, winery operations, and physiology of wine consumption. Stu-
dents are billed a materials fee. (Formerly course 75, In-
troduction to Winemaking) (General Education Code: T2-Natural Sciences.) P. Crews

*80L. Introduction to Chemistry of Wines and
Mists (2 credits).
An integrated course exploring elementary aspects of wine evaluation and modern winemaking. Topics: effects of grape varieties, vineyard locations, production tech-
niques, 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. Crews

Prerequisite(s): petition on file with sponsoring agency.
May be repeated for credit. The Staff

99F. Tutorial (2 credits), F, W, S
Prerequisite(s): petition on file with sponsoring agency.
The Staff

Upper-Division Courses

103. Biochemical Structures, Reactions, and
Energetics, W
Introduces biochemical molecules that compose all living organisms. Focus on structure and function relationships in chemical components of cells, primary enzyme-cat-
 alyzed 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 7. T. Schildch

An integrated study of fundamental organic chemistry, with emphasis on materials especially relevant to the biological sciences. Students with credit for course 112A cannot re-
 ceive 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): A; course 1C
or 4B or a grade of 5 on the AP chemistry examination; B:
course 108A or 112A. J. Konovalov, C. Bernaonzi, R.
Bradau, B. Singaram

*146A. Advanced Laboratory in Organic Chemistry (2 credits).
Designed to expose students to advanced laboratory tech-
niques 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 spectroscopy. Labora-
tory: 8 hours. Students billed a materials fee. Prerequi-
site(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 anerobic manipulations, characterization of in-
organic materials through spectral assignments and syn-
thesis of coordination and organometallic complexes.
Lecture: 1-1/4 hours; laboratory: 8 hours. Students billed a materials fee. Prerequisite(s): courses 108B/M or
112C/N; 163A. P. M. ascharak

146C. Advanced Laboratory in Physical Chemistry (2 credits). S
Provides advanced and more open-ended laboratory ex-
prience in the areas of thermodynamics, kinetics, spec-
troscopy, and computer simulations. Lecture: 1-1/4
hours; laboratory: 4 hours. Students are billed a materials fee. Prerequisite(s): course 161B and 163B. Enrollment limited to 20. R. Anderson

146D. Advanced Laboratory in Computational Chemistry (2 credits). S
Designed to give experience in advanced computational chemistry through open-ended research-type problem solving. Covers molecular graphics, molecular mechanics, semi-empirical and ab initio calculations applied to con-
formational analysis, reaction predictions, and drug de-
sign. Prerequisite(s): course 108B or 112C. Enrollment limited to 40. W. Wipke

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, non-
metallic, and biological aspects of inorganic chemistry. Le-
ture: 3-1/2 hours; discussion: 1-1/4 hours. Prerequisite(s):
courses 108B/M or 112C/N; 163A; students should be concur-
rently 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 chem-
istry of nontransition elements including noble gases and
halogens. In addition, students are exposed to the concepts of extended structures, new materials, and solid-state chem-
istry. Recommended for chemistry majors. Lecture: 3-3/4
hours. Prerequisite(s): courses 108B/M or 112C/N, and 163A. S. Williamson

151L. Inorganic Chemistry Laboratory (2 credits), S
Laboratory experience in inorganic chemistry. Experi-
mients involve the preparation, purification, and charac-
terization of inorganic compounds. In addition, experiments are designed to illustrate fundamental prin-
ciples in inorganic chemistry and are coordinated with lec-
tures 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 concur-
rently enrolled in course 151A. T. Holman

163A. Quantum Mechanics and Basic Spectroscopy. F
A detailed introduction to quantum theory and the ap-
plication of wave mechanics to problems of atomic struc-
ture, bonding in molecules, and fundamentals of spectroscopy. Prerequisite(s): course 1C or 4B, Physics 5A-
B-C or 6A-B-C and Math 11C or 22 or 23B. Physics 6C can be taken concurrently. G. M. Ilhauiser

*Not offered in 2003–04.
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 3A, and Math 11C or 22. I. Benjamin

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. R. Anderson

164A. Physical Chemistry Laboratory I: Data Analysis (2 credits), F
Introduction to data analysis and statistical treatment of errors for physical chemistry experiments. Emphasizes the 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 6A-B-C or 5A-B-C; 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, R. Anderson

180A-B-C. Senior Research, F, W, S
An individually supervised course with emphasis on independent research. Multiple-term course extending over two or three quarters; the grade and evaluation submitted for the final quarter apply to all previous quarters. Prerequisite(s): petition on file with sponsoring agency; may not be repeated for credit. T. the Staff

199. Tutorial, F, W, S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. the Staff

199F. Tutorial (2 credits), F, W, S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. the 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, crystallography, and mass spectrometry. (Formerly course 200C, Biophysical Methods.) W. Scott

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. (Formerly course 200A, Advanced Biochemistry.) G. M. Illhauser

200C. Advanced Biochemistry: Structure and Function of Nucleic Acids, S
A variety of contemporary problems in biochemistry and molecular biology are investigated in a detailed manner. Lecture: 3-1/2 hours. (Formerly course 200B, Advanced Biochemistry.) W. Scott

A study of enzyme kinetics, mechanisms, and factors involved in enzymatic catalysis. Lecture: 3-1/2 hours. Offered in alternate academic years. A. Finke

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, histidine 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 100C. P. Mascharak

*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. Schlögl

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 reactions choose a mechanism. C. Bernasconi

240B. Structure and Reactivity (3 credits), W
The relationship between structure and reactivity in organic molecules is addressed. Concepts of bonding, aromaticity, stereochemistry, and strain in organic chemistry are developed. R. Lasky

240C. Organic Structure Analysis from Spectra (3 credits), W
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 spectrometry. P. Crowes

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 semiempirical AM1 calculations. W. Wipke

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 stereoselectivity in organic transformations. Strategic planning in approaching the synthesis of complex molecules focuses primarily on retrosynthetic analysis and stereochemical control. Prerequisite(s): course 143. B. Singaram

240G. Bioorganic Chemistry of Amino Acids and Peptides.
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.

*A. 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. May be repeated for credit. W. Wipke

*B. Marine Organic Chemistry.
A survey of organic natural products from marine sources. Organic chemical structures 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 organs in seawater. Lecture: 3-1/2 hours. Prerequisite(s): courses 108B/M or 112C/N. Offered in alternate academic years. May be repeated for credit. P. Crowes

*C. 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: 3-1/2 hours; laboratory: 1-1/2 hours. Offered in alternate academic years. May be repeated for credit. W. Wipke

*F. 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 allylation, boron-olates, and asymmetric reductions are discussed. Enrollment restricted to seniors and graduate students. Offered in alternate academic years. May be repeated for credit. B. Singaram

*G. 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

*H. 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. BraĎiú

I. Advanced Mechanistic Chemistry and Solution Kinetics, S
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 significance and treatment of kinetic data illustrated with examples from various branches of chemistry. Prerequisite(s): permission of instructor. C. Bernasconi

256A-B-C. Advanced Topics in Inorganic Chemistry, S
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. T. Hoffman

*Not offered in 2003-04
261. Foundations of Spectroscopy. S
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 structure and dynamics. Prerequisite(s): course 163A. Offered in alternate academic years. J. Zhang

*262. Statistical Mechanics.
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. I. Benjamin

*263. Quantum Mechanics.
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. F
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. I. Benjamin

266. Advanced Topics in Physical Chemistry. S
A graduate course covering advanced topics in physical chemistry. Topics vary from year to year.

*267. 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. 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. May be repeated for credit. T he Staff

*B. Gas Phase Kinetics.
A discussion of rate processes in gases. Descriptions of experimental and theoretical work on unimolecular, bi-molecular, and termolecular reactions and energy transfer processes. Lecture: 3-1/2 hours. Prerequisite(s): course 262. Offered in alternate academic years. May be repeated for credit. T he Staff

268. Solid State and Materials Chemistry. S
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 senior and graduate chemistry majors. J. Zhang

273. Applications of Symmetry and Quantum Mechanics. W
Group theory and quantum mechanics are applied to problems of the electronic structure and spectra of molecules. A variety of topics including molecular orbital theory, reactivity, electronic structure calculations, and spectroscopy are discussed. Lecture: 3-1/2 hours. Prerequisite(s): course 160B or 163A. Offered in alternate academic years. E. Switkes

Weekly meetings devoted to the study of asymmetric and/or enantioselective synthesis of optically active organic compounds of biological and medicinal significance. Topics drawn from the current literature and the research interests of the participants. Enrollment restricted to graduate students. 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. May be repeated for credit. C. Bernasconi

Weekly meetings devoted to the study of synthetic organic chemistry. Topics drawn from the current literature and the research interests of the participants. May be repeated for credit. R. Bradu

A detailed study of molecular mechanisms of light energy conversion and light-signal transduction processes in biological systems. Students participate in critical discussion of current literature examples. Two-hour lecture and two-hour seminar weekly. Enrollment limited to 8. May be repeated for credit. R. Bogomolni

286. Prosemir: 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. May be repeated for credit. P. Craws

287. Prosemir in Protein Aggregation and Protein Deposition Diseases. F,W,S
A detailed study of various aspects of protein structure, folding, and aggregation in the context of the molecular mechanism of protein deposition diseases, with particular emphasis on Parkinson’s disease and amyloidosis and the techniques involved in elucidating these mechanisms. May be repeated for credit. A. Finck

288. Prosemir in Bioorganic 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. May be repeated for credit. P. M. azharah, T. H olman

*289. Prosemir: 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. May be repeated for credit. T. S ladeh

290. Prosemir 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. W. Wlpeke

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. May be repeated for credit. (F) R. Bradu, (W) S. R. Lokey

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. May be repeated for credit. (F, W) W. Scott, (S) G. M. illhauser

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, postdoctoral fellows, and students. Enrollment restricted to graduate students. May be repeated for credit. P. M. azharah

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. May be repeated for credit. J. Zhang

292. Seminar (2 credits). F
Prerequisite(s): grade standing or approval of the graduate adviser. T he Staff

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. (Formerly Teaching Assistant Training Seminar.) D. Palleros

297. Independent Study. F,W,S
A topic will be studied with faculty tutorial assistance to satisfy a need for the student when a regular course is not available. Prerequisite(s): petition on file with sponsoring agency. T he Staff

Prerequisite(s): petition on file with sponsoring agency. T he Staff

Chinese

Language Program
239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Associate Professor
CHRISTOPHER CONNERY (Literature)
World literature and cultural studies, cultural production and ideologies in modern and East Asia, Chinese studies, cultural revolution

Lecturer
DAVID KEENAN
Chinese language, fiction, and history
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 262), a minor in East Asian studies through the Language Program (page 261), an individual major in East Asian studies through their college, or a global economics major (page 173).

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 262, 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 42). For information on credit applied to a major, please contact the appropriate department.

Lower-Division Courses

1-2-3. Elementary Chinese (Mandarin). F-W-S

Instruction in elementary spoken and written Chinese (Mandarin). Conversation, structural analysis, and an introduction to character texts. This sequence 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): petition on file with sponsoring agency. The Staff

4-5-6. Intermediate Chinese (Mandarin). F-W-S

Instruction in intermediate spoken and written Chinese (Mandarin). Conversation, composition, and the reading of modern texts. This sequence 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 2; course 3; course 4; or placement by examination. The Staff

50. Preadvanced Chinese. F

Places additional emphasis in the area 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. May be repeated for credit. (General Education Code: 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. Prerequisite(s): petition on file with sponsoring agency. The Staff


Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits). F,W,S

Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

104. Advanced Chinese Readings in Literature. W

Covers a body of Chinese literature of recognized merit from the modern or classical tradition. Students are introduced to the basic critical concepts, in Chinese, relating to narrative and/or poetry, revealed by the works under discussion. 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 50. May be repeated for credit. The Staff

105. Advanced Chinese Readings in History. S

Offers an appreciation of some of the central issues in Chinese history as defined by Chinese historians of the twentieth century. Through readings of graduated difficulty, the vocabulary, style, and form of modern Chinese historical writing are introduced. 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 50. The Staff

*107-108. Introduction to Classical Chinese.

Introduces the grammar and lexicon of classical Chinese and the language of China’s 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; course 107 is prerequisite for course 108. (General Education Code: IH.) The Staff


Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial. F,W,S

Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S

Prerequisite(s): petition on file with sponsoring agency. The Staff

Graduate Courses


(207-208) These courses introduce the grammar and lexicon of classical Chinese and meet with Chinese 107-108. 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): Chinese 50 or equivalent, graduate standing or strong native speaker background. Enrollment restricted to graduate students and qualified undergraduates. The Staff

Additional Courses of Interest

History 40, The Making of Modern East Asia
History 150B/150C, History of China
History of Art and Visual Culture 114, Buddhist Visual Worlds
Music 80A, Music Cultures of Asia
Women’s Studies 145, Racial and Gender Formations in the U.S.

Classical Studies

Department of History
32 Merrill College
(831) 459-2982
http://humanities.ucsc.edu

Faculty and Professional Interests

Karen Bassi, Associate Professor of Literature
Greek and Latin literatures, Greek drama, Hellenistic poetry, feminist interpretation, literary and cultural theory, pre- and early modern studies

Janina Darling, Lecturer
Visual culture of the Ancient Mediterranean (Mesopotamia, Egypt, Greece, and Rome), Pompeian studies, food and wine in Greece and Rome

Mary-Kay Gamel, Professor of Literature
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

Gildas Hamel, Lecturer
French history and culture, Celtic languages and literatures, history of Judaism and early Christianity

Charles W. Hedrick, Jr., Professor of History
Greek social, cultural, and intellectual history; Greek religion; Greek historiography; Greek archaeology

John P. Lynch, Professor of Literature
Greek and Latin literatures, Plato and Aristotle, Lucretius, Virgil, and Petronius; ancient education

Gary B. Miles, Professor of History, Emeritus
Greek and Latin literatures, Plato and Aristotle, Lucretius, Virgil, and Petronius; ancient education

Daniel L. Selden, Associate Professor of Literature
Afroasiatic languages and literatures, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

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 politics might want to concentrate in Latin, taking upper-division courses in Latin, history, and literature in translation. Students planning on pursuing a classics degree at the Ph.D. level should concentrate most of their course work in the Greek and Latin languages themselves.

Requirements for the Major
The major requires a total of ten courses plus a senior comprehensive exam and must include the following:

- One lower-division survey of ancient history or literature in translation
- Three upper-division courses in Greek or Latin
- Six additional approved upper-division courses (which may include courses in Greek or Latin language)

Requirements for the Minor
A minor in classical studies requires the lower-division sequence in elementary Greek or Latin language (Greek or Latin 1 and 2) and Greek or Latin Literature 100 plus any four of the upper-division courses listed as satisfying the classical studies major requirements.

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**College Eight**

College Office
(831) 459-2361
http://www2.ucsc.edu/eight

For college description and list of faculty, see page 87.

**Lower-Division Courses**

†10. Academic Success (2 credits).

An interactive course providing students with the opportunity to assess and revise methods of and purposes 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. Prerequisite(s): permission of college adviser. Enrollment limited to 25. The Staff

80. Environment and Society (College Eight Core Course). F

Examines 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: T3-Social Sciences.) College Eight Provost

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 limited to 10. Enrollment restricted to members of College Eight. May be repeated for credit. S. Gilesman

93. Field Study. F,W,S

The Staff


The Staff

99F. Tutorial (2 credits). F,W,S

Individual study for lower-division students directed by a faculty member affiliated with College Eight. Prerequisite(s): petition on file with sponsoring agency. The Staff

**Upper-Division Courses**

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 preceptor is needed to enroll. May be repeated three times for credit. Prerequisite(s): petition on file with sponsoring agency. The Staff


The Staff

198. Independent Field Study. F,W,S

The Staff

199. Tutorial. F,W,S

The Staff

199F. Tutorial (2 credits). F,W,S

Individual study for upper-division students directed by a faculty member affiliated with College Eight. Prerequisite(s): petition on file with sponsoring agency. The Staff

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**College Nine**

College Office
(831) 459-5034
http://www2.ucsc.edu/nine

For college description and list of faculty, see page 89.

**Lower-Division Courses**

80A. 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, global economics, and ecology. Taught in small seminar with 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 limited to 22. (Formerly World of Possibilities Writing Seminar: Honors Section.) 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 limited to 20. Enrollment restricted to College Nine members. 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’s theme of International and Global Perspectives. Prerequisite(s): current College Nine student leader; permission of instructor. R. Bauman, S. O’Shea

**Upper-Division Courses**

191. Teaching a World of Possibilities. F,W

Undergraduates at upper-division level participate in teaching discussion groups for College Nine 80 (F) or College Nine 85 (W). Prerequisite(s): permission of instructor: essay describing interest in becoming course assistant, copies of evaluations, and letter of recommendation from faculty member and/or college staff member. Enrollment limited to 20. Enrollment restricted to College Nine 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, junior, and senior college members. May be repeated for credit. A. Asher

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 sophomore, junior, and senior college members. May be repeated for credit. A. Asher

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. Prerequisite(s): approval of adviser and provost. 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. Prerequisite(s): approval of adviser and provost. Enrollment restricted to upper-division College Nine members. May be repeated for credit. The Staff

College Ten

College Office
(831) 459-5034
http://college10.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. Prerequisite(s): concurrent enrollment in Writing 10 required. Enrollment limited to 22. Enrollment restricted to first-year College Ten students who have not passed Subject A. (General Education Code: 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): passed Subject A. Enrollment limited to 22. Enrollment restricted to first-year College Ten members. (General Education Code: 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 limited to 22. Enrollment restricted to first-year College Ten members. (General Education Code: 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 limited to 20. Enrollment restricted to College Ten members. 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, R. Bauman, S. O'Shea

Upper-Division Courses

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 faculty member and/or college staff member. Enrollment limited to 20. 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 12–15 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 sophomore, junior, and senior college members. May be repeated for credit. A. Asher

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 sophomore, junior, and senior college members. May be repeated for credit. A. Asher

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. Prerequisite(s): approval of adviser and provost. Enrollment restricted to upper-division College Ten 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. Prerequisite(s): approval of adviser and provost. Enrollment restricted to upper-division College Ten members. May be repeated for credit. The Staff

Communication and Rhetoric

Writing Program
166 Kresge College
(831) 459-2431
http://humwww.ucsc.edu/writing/index.html

The Writing Program accepts students each quarter into the minor in communication and rhetoric. The minor consists of a series of courses that give students the opportunity to hone practical communication skills in a variety of contexts. It also provides a grounding in the analytical tools and critical theory that a rhetorical perspective provides.

A full description of the minor and forms for proposing a study plan and declaring the minor are available at the Writing Program Office (Kresge 166). Admission to the minor is suspended at present.

Course Requirements

To earn a minor in communication and rhetoric, students must complete six courses after having satisfied the composition (C) requirement:

• either Writing 70, Communication and Rhetoric: An Introduction; or Writing 101, An Introduction to History, Theory, and Practice of Rhetoric
• a course that concentrates on editing: either Writing 120, Editing English Prose; or Writing 163, Advanced Workshop in Expository Writing
• four electives, at least three of which must be chosen from among the following upper-division writing courses: 101, 102, 103, 104, 106, 107, 108, 109, 110, 163, 167, 169, and 191A–D. No more than one elective may be chosen from a list of courses offered by other departments (list is available from the program office).

Community Studies

207 College Eight Academic Building
(831) 459-2371
http://communitystudies.ucsc.edu

Faculty and Professional Interests

Professor

WILLIAM H. FRIEDLAND, Emeritus

NANCY STOLLER
Race and gender aspects of health, the AIDS epidemic, community organizing, sexualities, and medicine in prisons

DAVID T. WELLMAN
Working-class culture, American ethnic and racial diversity, social documentary studies, critical race theory, interrogations of whiteness, and qualitative research methods

CARTER WILSON, Emeritus

DEBORAH A. WOO
Asian Americans and social change; gas ceilings and workplace discrimination, Asian American health, and mental health
Associate Professor

DAVID T. BRUNDAGE
American working-class and immigration history, history of U.S. social movements, Irish history and politics.

MARY BETH PUDUP
Regional studies, economic justice, public policy, historical geography of the U.S.

RENEE TAJMA-PENA
Documentary film and video, Asian American and immigrant communities, media and social change.

Assistant Professor

JULIE GUTHMAN
Sustainable agriculture and alternative food movements, international political economy of food and agriculture, political ecology, economic geography of California.

PAUL ORTIZ
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.

PAMELA PERRY
Youth activism and empowerment, youth cultures, educational inequalities, race and ethnic identities, and whiteness.

Lecturer and Field Program Coordinator

MICHAEL ROTKIN
Marxist theory, capitalist ideology, community organizing, electoral politics, media, government programs, community power structure, institutional analysis, and affirmative action.

Professor

JOHN G. BORREGO (Latin American and Latino Studies)
Global political economy, national development, urban and regional planning, community organizing, social change, ethnic minorities, Meso and the Southwest.

DANA FRANK (History)
U.S. social and economic history, women's labor and working-class history, contemporary political economy.

PATRICIA ZWELLA (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 and U.S. capital.

Associate Professor

MONICA J. CASPER (Sociology)
Ethical sociology, science and technology studies, gender/feminist theory, cultural studies, qualitative research, women's health, and environmental health.

Program Description

An interdisciplinary major, community studies integrates knowledge and methodologies from the social sciences and humanities to examine theory and practice in a variety of social justice domains. The UCSC faculty offer courses related to social justice—including broad structural and social changes and community-based organizing—in the following areas: global political economy with regional and local impacts; the intersection of class, race, gender, and sexuality in relation to health; labor studies, including the history of the working class; youth cultures, youth activism, and empowerment; race and racism; cultural work in social justice; gay and lesbian issues; and resistance and social movements. The faculty has engaged in community-oriented fieldwork in the U.S., Latin America, and elsewhere.

The major provides an opportunity for the student who is actively committed to social justice to work on a full-time basis beyond the boundaries of the university. Each student in the program builds his or her curriculum around a combination of course work and a six-month field study or internship with a community organization or agency. The core curriculum includes courses in preparation for field study as well as in theory and analysis. Students prepare by preparing a senior project integrating field study, classroom, and research work. The program has no lower-division prerequisites and usually takes about two years to complete.

With the guidance of a faculty adviser and a field study coordinator, UC Santa Cruz community studies students choose field placements related to one of the department's core areas. The majority of field studies have been in California, although students have worked as far away as Mexico, Central America, New York, Thailand, London, Paris, and Nairobi. Placements have been with health centers, immigrant rights organizations, newspapers, minority media outlets, city planning departments, neighborhood organizations, civil rights groups, battered women's shelters, legal clinics, programs for seniors, tenant unions, government agencies and the offices of elected officials, trade unions, and other organizations committed to and working for social justice in communities.

Facilities

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. Special Collections at McHenry Library maintain a complete collection of community studies senior theses. A subject/keyword computer retrieval system makes these materials fully accessible.

M Major 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 individual senior project, and the senior project itself.

To begin the major and declaration process, a student must be enrolled in one of the Community Studies 100 (A–Z) seminars and the other 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 or field studies.

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.

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 seminars in which students enroll are by “interview only.” Although they are open to all students, prospective community studies majors enjoy priority enrollment.

In the eigth week of the quarter, as part of the 100 seminar, prospective majors prepare a three-page essay outlining how their social justice focus matches the emphasis of their theory and practice seminar. 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 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.

Guidelines

1. Attend a department orientation held at the beginning of each quarter at a time and location listed in the Schedule of Classes. Pick up a department handbook that fully explains the admissions process and contains the necessary forms.

2. Enroll in a Community Studies 100 (A–Z) seminar.

3. Pick up a Declaration of Major petition, and get Part 1 signed off by your college adviser. Prepare an academic study plan for completing all requirements for the major, including field-study and upper-division electives.

4. Write a three-page essay explaining how your social change focus matches the theory and practice area of the 100 seminar and describing your plans for field study. Complete the Community Studies Department application form contained in the handbook.

5. During the eighth week of the quarter, meet with your 100 seminar professor to discuss your essay, field-study plans, and other application materials. Obtain faculty signature on application form.

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 processing.

Students must be declared prior to enrolling in Community Studies 102, Preparation for Field Study.
Major Course Requirements

Summary of Requirements Credits
100 A–Z Theory and Practice 5
   (fall or winter)
102 Preparation for Field Studies 5
   (winter or spring)
198 Independent Field Study 30
   (spring/summer or summer/fall)
194 Analysis of Field Materials 5
   (fall or winter)
Three upper-division electives 15
   (all quarters)

100A–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 100A–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 so as to participate in and to 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 projects. 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. Students are strongly encouraged to complete their electives prior to the full-time field studies.

198, Full-Time Independent Field Study

A distinguishing feature of the community studies major is the six-month, full-time field placement, an arrangement facilitated by the student's Community Studies 100A–Z instructor and the field study coordinators. During the field study, students are enrolled at UCSC and receive full-time university credit. Students in the 100A–Z courses are presented with recommended organizations from which to select their placements. The Field Study Office provides full placement information and guidelines for setting up placements, along with logistical and academic support during the field study.

194, Analysis of Field Materials

This course is designed for community studies seniors returning from their full-time field study. The course has two related goals: (1) to help students, both individually and collectively, analyze and gain perspective on their field experiences and (2) to move students through the process of completing the senior projects. A central question addressed in the course is how the student's theory and practice of social justice has been affected by his/her field experience. Each student has a unique field-study experience; and, collectively, students have been involved with widely varying types of organizations with little or no relation to each other. Yet there is common ground, and students have much to learn from each other. Thus, a related objective of this course is to discover and travel the common ground.

Senior Capstone Requirement

Each student must fulfill a senior capstone requirement and can do so in one of four different ways: a senior essay, a senior thesis, a senior project, or a student-directed seminar. Students choosing one of the last three options must have a faculty advisor for their projects. Senior essay students work directly with their Community Studies 194 professor.

Senior Essay

Students complete an essay that synthesizes a combination of previously completed papers and essays written in Community Studies 194. The essay must in some way represent a response to the six-month field study. The senior essay is completed by the end of quarter when a student is enrolled in course 194.

Senior Thesis

The purpose of the senior thesis is to reconstruct and analyze the field experience in greater depth and to provide a means of communicating the experience to others. The format can vary considerably, ranging from a literary or theoretical endeavor to oral histories or community social surveys.

Senior Project

Students may complete a project in an alternative medium, such as film and video, still photography, or audio formats. The senior thesis begins during Community Studies 194 and is generally completed in the following quarter(s).

Student-Directed Seminar (SDS)

Under the direction of a faculty adviser, the student develops and teaches a seminar on a topic relating to the full-time field study. Students interested in teaching a student-directed seminar must meet with their adviser prior to the full-time field study to begin the process of obtaining course approval.

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: IS.) M. Pudup

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 pre-production, production, and post-production skills. Prerequisite(s): concurrent enrollment in course 80L. Enrollment limited to 15. The Staff

71. Basic Photography Laboratory (2 credits). F,S

Provides students with photography skills. Through lecture, demonstration, 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. Prerequisite(s): concurrent enrollment in course 80L. Enrollment limited to 15. 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. Prerequisite(s): concurrent enrollment in course 80L. Enrollment limited to 15. 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. Engelsen

80A. Chicanos 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 Chicanos' political future in the 1990s. Weekly guest lectures. (General Education Codes: T3-Social Sciences, E.) L. Trujillo
80H. Social Change and Asian Americans. S
Introduction to the study of social change and Asian Americans, with an emphasis on the idea of their mobilizing as a cohesive entity and forming coalitions with other groups, with an emphasis on community perspectives. Weekly guest lectures (General Education Codes: T3-Social Sciences, E.) N. Stoller

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 collectives. (General Education Code: T3-Social Sciences.) D. Wellman, G. Dunn

80Q. Asian American Health. S
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 Codes: 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T he Staff

93F. Field Study (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T he 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T he Staff

99F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T he Staff

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. Prerequisite(s): permission of instructor; see enrollment conditions in the Schedule of Classes.

A. The Theory and Practice of Race and Racism in American Society.
Examines four major theoretical frameworks which purport 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. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Codes: IS, E.) D. Wellman

E. 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 multi-faceted economic justice movement. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Codes: IS, E.) M. Pudup

J. 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. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 20. Enrollment restricted to sophomores and juniors. (General Education Codes: IS, E.) D. Wellman

K. Theory and Practice of Culture and Health.
Explores the role of culture as it pertains to health. Important themes include holistic perspectives and the relative applicability of the western model to diverse populations. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Code: IS.) D. Woo

M. 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. Prerequisite(s): admission determined at first class meeting. (General Education Code: IS.) A. Stánchez

P. Theory and Practice of Resistance and Social Movements. F
Where do ideas for democratic social change come from? How are new social movements formed? Emphasis will be placed on subaltern groups including slaves, peasants, workers, uprisings, and "second-class citizens" of the global economy from 1492 to the present. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. (General Education Codes: IS, E.) P. Ortiz

Q. Theory and Practice of Sexual Politics.
Examines sexuality and gender as political forces, in dominant social orders and oppositional movements. Focus on U.S. locates sexual politics in global race/class relations. Emphasize grassroots organizing on: sexual violence, abortion, arts censorship, sex work/public sex, HIV/AIDS, LGBT/queer civil rights. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Code: IS.) N. Stoller

R. Theory and Practice of Asian Pacific American Activism. F
Approaches activism is generated through working for change and social justice in Asian and Pacific American communities. Examines both the larger socio-political context in which this occurs and factors that contribute to varying degrees of success and failure. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Code: E.) D. Woo

S. 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; admission determined after first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Code: IS.) D. Wellman

T. Theory and Practice of Social Justice and Sustainability in Agro-Food Systems. F
Examines the intertwined problems of food insecurity, cheap labor, sub-optimal nutrition, and ecological degradation in contemporary food systems. Assesses both theoretical and practical efforts to link social justice, food quality, and ecological sustainability in alternative food and agriculture movements. Prerequisite(s): admission determined at first class meeting. Enrollment limited to 25. (General Education Code: IS.) J. Guthman

Y. Youth and Society. W
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- directed organizing and social change work. Prerequisite(s): admission determined after first class meeting. Enrollment limited to 25. Enrollment restricted to sophomores and juniors. (General Education Code: IS.) P. Perry

102. Preparation for Field Studies. W,S
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). W,S
A practicum in social change work in which the students works for a social change organization on a part-time basis. Concurrent enrollment in course 102 required. Prerequisite(s): interview only; P. Ortiz, N. Stoller, M. Pudup
106. Politics, Love and Revolution: C. L. R. James. A personal and political inquiry into the life and times of Afro-Caribbean revolutionary Cyril Lionel Robert James (1901-1989). A study and critique of his methods in historical analysis, cultural criticism, and social theory using film, music, and social documentary to explore connections between race, class, and gender as well as popular culture and social change. Enrollment limited to 25. (General Education Code: E.) P. Ortiz

111. Ageism and Activism. F 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 important implications for organizing social and personal life. Enrollment limited to 25. A. Steinberg

114. Whiteness, Racism, and Anti-Racism. S 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: E.) P. Perry


121. Health and Human Rights in Prison. S 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: W.) N. Stoller

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: E.) P. Ortiz

134. Youth Cultures and Identity Politics. S 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. (Formerly Youth Culture and Identity.) (General Education Code: E.) P. Perry

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. Rotkin

148. Women's Health Activism. W 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-
Community Studies Department Office. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

194. Analysis of Field Materials, F,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: W) D. Woo, D. Wellman, (W) J. Brundage, P. Perry, A. Steiner

195A-B-C. 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

198. Independent Field 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.) Up to three such courses may be taken for credit in any one quarter. The Staff

199. Tutorial, F,W,S
Tutorial. F,W,S
A program of independent study arranged between a group of students and a faculty instructor. Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 10. The Staff

297. Independent Study, F,W,S
Either study related to a course being taken or a totally independent study. Designed for graduate students. Prerequisite(s): petition on file with sponsoring agency. The Staff

Computer Engineering
See Engineering, page 193.

Computer Science
See Engineering, page 201.

Cowell College

College Office (831) 459-2253
http://www2.ucsc.edu/cowell
For college description and list of faculty; see page 75.

Lower-Division Courses

*21. Writing Workshop: Poetry (2 credits)
A workshop for beginning writers of poetry. Students generate, revise, and discuss their own work as well as study modern poems that illustrate and choices in contemporary poetry writing. Enrollment limited to 20. Enrollment restricted to members of Cowell College. May be repeated for credit. (General Education Code: 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 limited to 20. Enrollment restricted to members of Cowell College. May be repeated for credit. (General Education Code: A) The Staff

42. Student-Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

70. Book Arts, F,W
History, theory, and practice of the printer's craft. Students learn typesetting, 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 070. Students cannot receive credit for both courses.) Enrollment limited to 10. (General Education Code: A) G. Kane

80. The Cowell Core Course, F
Discussion of literary and philosophical texts which develop themes of humanistic study. Emphasis on 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. (Formerly Ide and Imagination in Western Cultural Contexts (Cowell Core Course.) (General Education Code: T4-Humanities and Arts.) The Staff

93. Field Study, F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

94. Group Tutorial, F,W,S
A program of independent study arranged between a group of students and a faculty instructor. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial, F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

*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.) J. D. Evans, M. Ellis

136A-B-C. La Francophonie (2 credits), F,W,S
Studies linguistic and cultural variety 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. Required of residents of Cowell’s Francophone House; otherwise open to all students, but priority given to Cowell students. Enrollment limited to 20. A. Etzey

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): upper-division standing; a proposal supported by a faculty member willing to supervise. The Staff

194. Group Tutorial, F,W,S
A program of independent study arranged between a group of students and an instructor. The Staff

194F. Group Tutorial (2 credits), F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Prerequisite(s): petition on file with sponsoring agency. The Staff

195F. Senior Thesis (2 credits), F,W,S
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. 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.

*Not offered in 2003–04
Prerequisite(s): approval of the student’s advisor, certification of adequate preparation, and approval by the provost. May be repeated for credit. The Staff

198F. Field Study (2 credits). F,W,S Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

199. Tutorial. F,W,S Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Crown College

College Office
(831) 459-2665
http://www2.ucsc.edu/crown

For college description and list of faculty, see page 79. A list of Crown-sponsored courses is available in the Provost’s Office.

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. Prerequisite(s): permission of college advisor. Enrollment limited to 24. F. Ferguson, D. Edwards

28. Student Developmental Theory 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 lectures, 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. May be repeated for credit. J. Smith

80. Ethical Issues in Emerging Technologies: Transgenics, Clones, Cyborgs, and Artificial Intelligence, F Explores emerging issues in science and technology—bioengineering, information systems, artificial intelligence, and animal rights. Examines ethical challenges faced as the world is regularly and cataclysmically transformed by the sciences. Requires more advanced readings than course 80. Prerequisite(s): interview only. Enrollment restricted to first-year college members. (General Education Code: T6-Natural Sciences or Humanities and Arts.) F. Ferguson

80S. Undergraduate Seminar in Science, Technology, and Society, W,S 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. Prerequisite(s): permission of the college. Enrollment limited to 20. (Formerly Freshman Seminar in Science, Technology, and Society.) The Staff

93. Field Study. F,W,S Provides for individual field study of sponsored by the college and performed off campus. Students should review 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. Prerequisite(s): Permission on file with 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. Prerequisite(s): Permission on file with sponsoring agency. May be repeated for credit. The Staff

99F. Tutorial (2 credits). F,W,S Individual study for lower-division students directed by a fellow of Crown College. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to college members. The Staff

Upper-Division Courses

123. Science and Human Values, S Study of the impact of the natural science 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 the Subject A and Composition requirements; permission of instructor. Enrollment limited to 110. (Formerly Chemistry 80B.) (General Education Code: W) F. Andrews

146. Saturday Academy Practicum (3 credits). W Crown undergraduates will develop discipline-specific activity-based learning modules for implementation in the Saturday School series. Theoretical and practical considerations will provide the bases for lesson designs. Each module will be theme driven, consist of three discrete, related lessons, and be refined in response to peer and instructor feedback as the course progresses. Enrollment limited to 15. Enrollment restricted to sophomores, juniors, and seniors. May be repeated for credit. B. Bonde

147. Teaching Saturday Academy (3 credits). S Under supervision of course instructor, students develop and teach activity-based science/technology learning modules to local public middle school students as part of the Saturday Academy outreach program. Prerequisite(s): course 146. Enrollment limited to 25. May be repeated for credit. B. Bonde

184A-B-C. Leadership and Institution Building (2 credits). F-W-S Through 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 limited to 30. Enrollment restricted to undergraduates accepted in the Chancellor’s Undergraduate Internship Program. M. Greenwood, L. Goff

198. Independent Field Study. F,W,S Provides for college-sponsored individual study programs off campus. Prerequisite(s): approval of student’s faculty sponsor and college academic provost. The Staff

199. Tutorial. F,W,S Individual study for upper-division students directed by a fellow of Crown College. Prerequisite(s): petition on file with sponsoring agency. The Staff

Dual Degree Engineering

See Engineering, page 209.

Earth Sciences

A232 Earth and Marine Sciences Building
(831) 459-4089
http://www.es.ucsc.edu

Faculty, Researchers, and Professional Interests

ROBERT S. ANDERSON, Professor Geomorphology, Quaternary science, dating methods

SUZANNE P. ANDERSON, Assistant Research Geophysicist, IGPP Geophysical, hydrology, weathering, glacial processes

ERIK ASPHAUG, Associate Professor Asteroids and comets, impact modeling, spacecraft exploration

KENNETH L. CAMERON, Emeritus

MARCIA MCNUTT, Professor Geophysicist, IGPP

B. Bonde, Emeritus

ROBERT E. GARRISON, Emeritus

THORNE LAY, Professor

ROBERT S. COE, Professor Geophysics, paleomagnetism, tectonics

ANDREW FISHER, Associate Professor Hydrogeology, crustal studies, heat flow, modeling

ROBERT E. GARRISON, Emeritus

JAMES B. GILL, Professor Igneous petrology, geochemistry of island arcs

GARY A. GLATZMAIER, Professor Computer simulation of geodynamics and planetary dynamics

GARY B. GREGGS, Professor Coastal processes, hazards and engineering

ELISE KNITTLE, Professor Mammalian physics, experimental geophysics

PAUL L. KOCH, Professor Isotope biogeochemistry, vertebrate palentology

LEO F. LAPORTE, Emeritus

THORNE LAY, Professor Sedimentology, geophysics

KAREN C. McNALLY, Emerita

MARCIA MCNUTT, Professor Tectonic marine geophysics

160 Programs and Courses
The study of Earth sciences encompasses a broad exploration and understanding of the origin and evolution of Earth and its life forms. These endeavors have been unified by the theory of plate tectonics, which considers Earth's surface to be broken into a number of interlocking plates. Plate movements result in the formation of ocean basins, the east of Santa Cruz. Most earthquakes and volcanic activity, mountain building, and plate translation along the plates result in the formation of ocean basins. Plate movements are responsible for the formation of ocean basins. The study of Earth sciences thus presents a broad array of career opportunities. Students who wish to pursue a career in Earth sciences should plan their next two years of study. Students who wish to pursue a career in Earth sciences should plan their next two years of study.

Faculty and research staff cover many Earth sciences disciplines, including igneous and sedimentary petrology, trace element and isotope geochemistry, paleontology and paleoecology, mineral physics, geology, geophysics, hydrology, geologic hazards, plate tectonics, earthquake and global seismology, crustal seismology, paleomagnetism, paleoceanography, paleoclimatology, and global climate modeling. Many related courses are offered by the Ocean Sciences Department. The large research staffs of the IGPP and the Institute of Marine Sciences further augment the research and teaching program. Weekly seminars by visiting lecturers provide an opportunity for undergraduates to gain exposure to leading researchers in Earth sciences. An internship program provides opportunities for undergraduate (and graduate) students to gain practical work experience, which may prove beneficial in the industrial and governmental Earth sciences job market.

The Earth Sciences Department offers both bachelor of arts and bachelor of science degrees. Combined majors leading to a B.A. degree in Earth sciences/anthropology or environmental studies/Earth sciences are also offered; for the latter program description, see page 220. A minor in Earth sciences is also available. Students planning to transfer into the program are strongly encouraged to satisfy prerequisites to upper-division courses for the B.S. or B.A. degree before transferring to UCSC.

Those interested in the M.S. or Ph.D. degree should see the description below and request further information and applications through the Division of Graduate Studies. The Earth Sciences Department web sites offers valuable information about the graduate program: http://www.es.ucsc.edu/grad/gradprog.html

Academic Advising

A student who wants to become an Earth sciences major should contact the Department of Earth Sciences undergraduate adviser as soon as possible. After developing a formal study plan on a declaration of major petition, students are asked to meet with a faculty adviser who can help the student plan his or her program in detail and provide information about independent study, thesis research, advanced study, career options, and other educational opportunities. For the combined major with environmental studies, students begin the advising process with the Department of Environmental Studies; after which they meet with the Department of Earth Sciences for dual advising. Relevant courses taken at UCSC or other institutions may be substituted for required electives by approved petition. Please see the undergraduate adviser for the substitution petition form and more information on this process.

Transfer Students

Those planning to major in Earth sciences are encouraged to call for advice on courses they should complete 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 transfer Earth sciences majors and prospective majors should meet with department advisers 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 students with expertise in one or more subdivisions within Earth sciences.

Elective 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. At least 1 credit's participation in the Earth sciences mentorship class, which introduces students to research programs and analytical facilities in the department, is also required of all majors.

**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

**Requirements for the Standard Major (B.S.)**

Courses 5L, 10L, or 20L; 110A/L, 110B/M, 110C/N, 113 (or Physics 6C/N or 5C/N), 190; Mathematics 22 or 23A-B

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, 114, 116, 117/L, 119, 120/L, 140/L, 141, 142, 146, 150/L*. 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 meet 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 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*, 120/L*, 122, 128, 134, 140/L*, 142*, 146*, 148, Environmental Toxicology 144.

**Earth system sciences** Focuses on terrestrial, marine, and atmospheric processes and their relations through time; may include paleoclimatic and paleoenvironmental dynamics, global change issues, and surface geological processes such as weathering, erosion, and hydrology: 101/L, 102, 107, 109/L*, 116*, 120/L*, 121, 122, 128, 140/L*, 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*, 118, 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*, 114*, 118, 142*, 170.


**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, 114*, 117/L*, 146*, 150/L*, 152*, 168*, 170.

**Water resources** Focuses on water resources quality and quantity and relations between climate and water in and on the crust: 105, 109/L*, 114*, 116, 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.

Students preparing themselves for more quantitative aspects of Earth sciences or other disciplines should also consider Mathematics 23A-B and Physics 6C (or 5C), which are prerequisites to almost all higher-level courses in mathematics and physics, respectively.

**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 graduate course or seminar (which requires permission from the instructor in order to enroll)

**Earth Sciences Standard B.S. Major Planner**

Students planning a professional career in the Earth sciences should take 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 already have some of their preparatory courses in calculus, chemistry, and physics before entry. Further advice can be obtained from the undergraduate adviser and from faculty members.

**Note:** Chemistry 1B and 1C are offered fall-winter and spring-summer. Physics 6A and 6B are offered fall-winter and winter-spring, and Mathematics 11A-B and 19A-B are offered every quarter. Students desiring to emphasize quantitative studies requiring more math and physics should take Mathematics 23A-B and Physics 6C or 5C.

**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 101L 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, 190, Biology 150 At least four of the following Earth sciences courses: 101/L, 102, either 104 or 105, 107, 109/L, 110C/N, 114, 116, 120/L, 140/L, 142, 146.

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 (Environmental Geology) B.S. Major Planner**

**Year** **Fall** **Winter** **Spring**

<table>
<thead>
<tr>
<th>1st</th>
<th>(15th)</th>
<th>college core</th>
<th>Chem 1B/M</th>
<th>Eart 20/L</th>
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<td>Biol 20B</td>
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<tr>
<td>(soph)</td>
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<tr>
<td>3rd</td>
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<td>Phy 6A/L</td>
<td>Phy 6B/M</td>
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<tr>
<td>(jr)</td>
<td>Eart 190 (cred)</td>
<td>Eart elective</td>
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<td>senior thesis</td>
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</tr>
<tr>
<td>(sr)</td>
<td>elective</td>
<td>elective</td>
<td>senior thesis or Eart 188A/B</td>
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</table>

**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 3/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, 190; Chemistry 108A/L and 108B/M or 112A/L and 112B/M and 112C/N; Ocean Sciences 101 or 102

Four electives from the following list:

- Courses 101, 102, 105, 120/L, 122, 128, 172; Chemistry 122; Ocean Sciences 118, 120, 130, 142, 156, 200, 220, 238, 285
- Students also complete the comprehensive requirement by writing a senior thesis with ocean science faculty and/or Earth sciences faculty sponsorship. A topic emphasizing ocean sciences is recommended.

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**Earth Sciences (Ocean Sciences) B.S. Major Planner**

**Year Fall Winter Spring**

<table>
<thead>
<tr>
<th>1st Year</th>
<th>Math 11A</th>
<th>Math 11B</th>
<th>Chem 1B/M</th>
<th>Eart 10/L</th>
</tr>
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<tr>
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<td>Eart 110B/M</td>
<td>Eart 110C/N</td>
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</tbody>
</table>

**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.

The preparatory courses in chemistry, mathematics, and physics and four of the six basic courses required for the standard B.S. degree are required for the Earth sciences B.A.; but only two additional electives, which can be chosen from the entire list of upper-division courses, are required. At least 1 credit's participation in the Earth sciences mentorship class, which introduces students to research programs and analytical facilities in the department, is also strongly recommended for all majors.

The combined major in environmental studies and Earth sciences is designed to provide enhanced exposure to geological concepts and processes for students emphasizing environmental policy and social science topics. For the requirements of the combined environmental studies/Earth sciences B.A., see page 220.

Note that B.A. students who want to take courses 188A-B, Senior Field Internship, must first complete courses 109/L, 110A/L, and 110B/M.

**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; Ocean Sciences 118, 120, 130, 142, 156, 200, 220, 238, 285

**Comprehensive Requirement for the Standard Major (B.A.)**

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>
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<td>college core</td>
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</tr>
<tr>
<td>2nd</td>
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<td>Math 11B cog sci</td>
<td>cog sci</td>
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<tr>
<td>3rd</td>
<td>Earth 110A/L</td>
<td>Anth upper/div</td>
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</tr>
<tr>
<td>4th</td>
<td>elective</td>
<td>elective</td>
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</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 course toward both majors.

Minor Requirements

Students can earn a minor in Earth sciences by taking courses 5L or 10L or 20L and five upper-division Earth sciences courses. Two of the five upper-division courses may be substituted by up to two of courses 1, 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 used 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 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. A GRE Subject Test is optional.

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. Thesis-track students, whether planning to continue to a Ph.D. or terminate with an M.S. degree, are required to have a preliminary interview. In their first year, all thesis-track graduate students register for courses 203, Introductory Teaching Seminar; 205, Introductory Graduate Seminar; 206, Great Papers in the Earth Sciences; and, in consultation with the graduate preliminary interview committee, choose at least one from among courses 207, Tectonics; 208, M t h o d s i n Paleoclimatology; 209, Solid Earth Geochemistry, or 220, Groundwater Modeling. In subsequent years, all students participate in courses 295, 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.

Each in the fall quarter, each first-year, thesis-track student has a one-hour 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. It is recommended that all thesis-track graduate students attain some teaching experience while at UCSC.

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 an advising interview in which to 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. 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. 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 the field related 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 certain chapters of them, in a form suitable for publication. A defense of the dissertation is required.

There is no foreign language requirement for either the M.S. or 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 academic 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 49.

Lower-Division Courses

1. Oceanography, FW
An introduction to the physical environment of the ocean. Origin and evolution of ocean basins; sea-floor morphology; 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. Laboratory/discussion 1.5 hours. (General Education Codes: IN, Q) J. Griggs, J. Zachos

3. Geology of National Parks, W
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. (General Education Code: IN) S. Schwartz

5. California Geology, F
An introduction to physical geology 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 5L required for majors and minors. (General Education Code: IN) T The Staff

5L. California Geology Laboratory (1 credit)
Laboratory sequence illustrating topics covered in course 5 with particular emphasis on rock and mineral identification and map interpretation. Field trip. Laboratory 3 hours. T The Staff

6. Concepts in Environmentalism, F
Learn scientific concepts required to be an informed environmentalist. Topics include urban smog; water resources 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: IN) P. Chuang

7. The History of Life, S
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. Offered in alternate academic years. (General Education Code: IN) T The Staff

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 Codes: IN, Q) A. Fisher
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. A. Fisher

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 effects, and global change, all from a unique geological/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: 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. S. Tulaczyk

*65. Natural History of Dinosaurs.
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. Will be offered in the 2004-05 academic year. Offered in alternate academic years. (General Education Code: IN.) The Staff

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 Codes: T2-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. Prerequisite(s): course 10 or 5 or 20, and 10L or 5L or 20L. Enrollment limited to 25. P. Koch

100. 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 100L is required. Will be offered in the 2004-05 academic year. Offered in alternate academic years. The Staff

*101. The Fossil Record.
An introduction to paleobiology; the use of fossil evidence to pose and solve evolutionary and geologic questions. Concurrent enrollment in course 101L is required. Will be offered in the 2004-05 academic year. Prerequisite(s): course 10 or 5 or 20; Biology 20C, or Anthropology 1. Offered in alternate academic years. P. Koch

*101L. The Fossil Record Laboratory (1 credit).
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. Will be offered in the 2004-05 academic year. 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 oceanic 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. Prerequisite(s): course 5 or 10 or 20 or Biology 20C. M. D. Dancy

*104. Geologic Hazards.
The recognition, evaluation, and mitigation of geologic hazards: earthquakes and faulting, tsunamis, volcanism, landslides and mass movements, flooding, subsidence, and coastal erosion. Will be offered in the 2004-05 academic year. Prerequisite(s): 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. Course 10L or 5L or 20L is suggested as an optional preparation for non-Earth sciences majors. Prerequisite(s): course 10 or 5 or 20. G. Griggs

107. GIS and Remote Sensing: Applications in the Geosciences. 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. Prerequisite(s): course 5 or 10 or 20. Enrollment limited to 28. 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. Concurrent enrollment in 109L is required. Laboratory–2 hours; Recommended for courses 120, 130, 150, and required for 188A-B. May not be taken concurrently with course 120. Prerequisite(s): course 10 or 5 or 20, and 10L or 5L or 20L. Enrollment limited to 25. The Staff, K. Cameron

109L. Field Geology Laboratory (2 credits).
Laboratory exercises essential to the successful completion of fieldwork required in course 109. Topics include topographic maps, Brunton compass, rock identification and description, structure sections, and landslide recognition. Prerequisite(s): concurrent enrollment in 109. Enrollment limited to 25. The Staff, K. Cameron

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. Enrollment is permitted by permission code with equivalent or exceptional background, or if enrolled concurrently in course 10 and Mathematics 11A. Prerequisite(s): course 10 or 5, 20, and 10L or 5L or 20L, and Mathematics 11A. Q. Williams J. Zachos

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): courses 10 or 5 or 20, and 10L or 5L or 20L, and Chemistry 1B or 4A; Mathematics 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 10 or 5 or 20, and 10L or 5L or 20L, and Mathematics 11A or 19A; Physics 6A or 5A recommended as preparation. R. Côté

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 J. Zachos

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; Precrystalline (pre-); 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. Côté

*116. Hydrology. S
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. Will be offered in the 2004–05 academic year. Prerequisite(s): course 10 or 5 or 20, and Mathematics 11A or 19A. Offered in alternate academic years. A. Fisher

117L. Paleomagnetism Laboratory (2 credits). F
A hands-on research project in the Paleomagnetic Laboratory. Students collectively drill orientated 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 117 is required. R. Côté

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): Mathematics 11A or 19A. (General Education Code: 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 tectonic facies and basin analysis. Course includes four Saturday field exercises. Course 110B is recommended as preparation. May not be taken concurrently with course 109. Prerequisite(s): course 110A, satisfaction of the Subject A and Composition requirements. (General Education Code: W) The Staff

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. The Staff

*121. The Atmosphere. S
Course focuses on understanding basic atmospheric weather and climate phenomena starting from the fundamental principles 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. Will be offered in the 2004–05 academic year. Prerequisite(s): Mathematics 11B or 19B, and Chemistry 1C. P. Chuang

*122. Paleoclimatology. S
Reconstruction of the chemistry, biology, circulation, and temperature of the ocean and of climate systems throughout geologic time. Emphasis on interpretation of the marine sedimentary record and geochemical cycling. Discussion-1 hour. Will be offered in the 2004–05 academic year. Prerequisite(s): course 102 or 110A, or Ocean Sciences 101 (may be taken concurrently) or 102. M. D. Dynesie

*128. Stable Isotope Geochemistry: Applications in Earth and Marine Sciences. S
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 the 2004–05 academic year. Prerequisite(s): course 110B; Ocean Sciences 120 recommended as preparation. Offered in alternate academic years. J. Zachos

130. Magma Formation and Volcanism. S
Introduction to the relationship between tectonic environments and the generation of rocks assemblages, primarily igneous and metamorphic. Examples from California and elsewhere are used to illustrate petrogenetic processes and characteristic petrologic features of rocks from all major tectonic settings. Prerequisite(s): course 110B. (Formerly California Rocks and Tectonics) J. Gill

*134. Thermochemistry of Geologic Systems. S
Introduction to the thermodynamic and kinetic principles with a strong emphasis on applications to Earth materials.

Implications for phase equilibria, geothermometry/geochemistry, element partitioning, and physical properties of minerals, magmas, and solutions. Will be offered in the 2004–05 academic year. Prerequisite(s): course 110B. Offered in alternate academic years. Q. Williams

140. Geomorphology. F
An introduction to the evolution of the Earth’s landscape, with emphasis on the processes responsible. Review of climatic and tectonic forcing followed by detailed discussion of weathering, glaciers, hillslopes, wind, rivers, and coastal processes with emphasis on their geographic distribution. Concurrent enrollment in 140L is required. One single day and one three-day field trip. Prerequisite(s): course 110A. The Staff

140L. Geomorphology Laboratory (2 credits). F
Laboratory sequence illustrating topics covered in course 140. These extensive laboratory exercises emphasize the quantification of the geomorphic processes and forms, and on the writing of concise summaries of the science in the form of abstracts. Concurrent enrollment in course 140 is required. W credit is granted only upon successful completion of course 140. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code: W) The Staff

*142. Soil Properties and Mechanics. S
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. Will be offered in the 2004–05 academic year. Prerequisite(s): course 110C. Offered in alternate academic years. S. Tulaczyk

146. Groundwater. W
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. Prerequisite(s): course 5 or 10 or 20, and Mathematics 11A or 19A. Offered in alternate academic years. A. Fisher

148. Glaciology. S
Introduction to the role of snow and ice in the dynamics of the earth surface system. Snow deposition and metamorphism. Heat and mass balance at snow and ice surfaces. Flow of glaciers, ice sheets, and sea ice. Methods of climate reconstruction. Ice age theories. Prerequisite(s): course 110C or 116 or 140; Mathematics 11B or 19B. 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 single day field trips on weekends. Prerequisite(s): course 110B or 110C; course 109 recommended. J. Moore

150L. Structural Geology Laboratory (1 credit). W
Structural analysis of faults, folds, and maps. Use of stereographic projections. Cross section construction and balancing from field data. Concurrent enrollment in course 150 is required. J. Moore

152. Active Tectonics. S
The processes, techniques, and interpretations involved in the study of active crustal movements; constraints from plate tectonics; horizontal and vertical motions and rates; geodesy, including GPS; stress measurement; image

*Not offered in 2003–04
interpolation; fault system analysis; paleoseismicity; fluid effects. Examples from the circum-Pacific. Laboratory-2 hours. Students cannot receive credit for this course and course 207. Prerequisite(s): course 10 or 20 and 10L, or 5L or 20L, and Physics 6A; course 110C recommended. E. Silver

162. 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 Mathematics 22 or 23A-B; and course 113 or Physics 6C or 5C. (Formerly Geodynamics.) E. Knittle

*165. Formation of the Solar System.
Physics and chemistry of planetary accretion and the early morphological and dynamical evolution of the solar system. Meteorites and the nebula; impacts large and small; formation of cores and lithospheres; atmospheric evolution and loss; resonances and planet migration; satellites, asteroids, and comets. Will be offered in the 2004–05 academic year. Prerequisite(s): Mathematics 11B or 19B; and Physics 5A or 6A. Offered in alternate academic years. The Staff

166. Planetary Surfaces. F
Comparative study of surfaces and atmospheres of planetary bodies in 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. Prerequisite(s): course 165 or Astronomy 118, Mathematics 11B, and Physics 5B or 6B. (Formerly Comparative Planetology.) Offered in alternate academic years. E. Agnew

*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 2004–05 academic year. Prerequisite(s): course 111 or Mathematics 11A-B or 19A-B. Offered in alternate academic years. J. Moore, E. Silver

172. Geophysical Fluid Dynamics. F
Study of fluid flow: physical concepts, governing equations. Focuses on thermal convection and global circulation of 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. Prerequisite(s): courses 110C and 111, or Mathematics 22 or 23A-B; and Physics 114B or 5B or 6B. Offered in alternate academic years. G. Glatzmaier

188A-B. Senior Field Internship. S
A two-semester course to be taken concurrently. Six weeks of summer field study of geologically complex areas in the eastern Sierra Nevada and the Mono Basin. Activities include geologic field mapping, sample collection, laboratory research, and preparation of a formal written report for each class. Strongly recommended for all seniors. A fee is required for participation. Contact sponsoring agency for details. Prerequisite(s): courses 110A/L, 110B/M, and 109L. The Staff

190. Earth Sciences Mentorship (1 credit). F,W
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 limited to 24. Enrollment restricted to majors in Earth sciences and Earth sciences/environmental studies and Earth sciences/anthropology combined majors. May be repeated for credit. The Staff

Prerequisite(s): senior standing and petition on file with sponsoring agency. 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 203. Future participation in 196B is encouraged. Course may not be counted toward upper-division major requirements. Enrollment restricted to Earth sciences majors. The Staff

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. Participation in course 196A is expected. May not count toward upper-division major requirements. Prerequisite(s): approval of sponsoring agency; interview and selection by primary instructor of specific courses. Enrollment restricted to Earth sciences and environmental studies/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. Participation in course 196A is expected. May not count toward upper-division major requirements. Prerequisite(s): approval of sponsoring agency; interview and selection by primary instructor of specific courses. Enrollment restricted to Earth sciences and environmental studies/Earth sciences majors. The Staff

198. Earth Sciences Internship. 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. Prerequisite(s): consult sponsoring agency for enrollment criteria. After instruction on resume preparation and interview skills, students must interview and be selected for internship by approved sponsoring organizations. Enrollment restricted to Earth sciences majors. A. Fisher

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. Prerequisite(s): consult sponsoring agency for enrollment criteria. After instruction on resume preparation and interview skills, student must interview and be selected for internship by approved sponsoring organizations. Enrollment restricted to Earth sciences and environmental studies/Earth sciences majors. May be repeated for credit. A. Fisher

199. Tutorial. F,W,S
Introduction to research in laboratory, field, or theoretical subjects. Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
Introduction to research in laboratory, field, or theoretical subjects. May not be counted toward upper-division major requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

203. Introductory Teaching Seminar (3 credits). F
Intended for new Earth sciences graduate students. Focus on preparation, assessment, and feedback. Classroom techniques, organizational and time management strategies, practice teaching sessions specific to laboratory and/or science instruction. Required follow-up meetings to discuss practical teaching experience. Students cannot receive credit for this course and course 196A. Enrollment restricted to graduate students. The Staff

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. Enrollment restricted to Earth sciences graduate students. S. Schwartz

206. Great Papers in the Earth Sciences. W
Exposure to the most important ideas in the Earth sciences through exploration of the primary literature. Seminal 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. W
Addresses methods used to reconstruct aspects of paleoclimates and paleoenvironments from the geologic record, focusing primarily on terrestrial records. Topics to be covered include dendrochronology and dendroclimatology, paleo-palynology, paleobotany, ice cores, and palaeosol studies. Lectures, discussions, and laboratory work. (Formerly 255.) Enrollment restricted to graduate students. Offered in alternate academic years. L. Sloan

209. Solid Earth Geochemistry. F
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-Hf/U isotopic tracers. Course designed for graduate students, but available to qualified earth sciences majors per instructor permission. (Formerly 208.) Enrollment restricted to graduate students. J. Gill

*220. Groundwater Modeling.
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 computers expected. Course designed for graduate students, but available to qualified Earth science majors. Will be offered in the 2004–05 academic year. Prerequisite(s): Graduate standing or permission of instructor required. One year of calculus is recommended as preparation. Offered in alternate academic years. A. Fischer

*245. Advanced Geomorphology. Rigorous presentation of major subsets of geomorphology: I. Mechanics of sediment transport. Physics of sediment transport in both air and water. II. Mechanics of hill slope processes. III. Glaciology and glacial geology. Topics vary from year to year between these three. Will be offered in the 2004–05 academic year. Prerequisite(s): Courses 140 and 113 or 110C. Enrollment restricted to graduate students. Qualified Earth sciences majors may enroll with permission of instructor. May be repeated for credit. R. Anderson

*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. Ruby

*256. Paleoclimate Modeling: Methods and Applications. Addresses methods of paleoclimate modeling on global and regional scales, from both surface and atmospheric perspectives. Applications of models to current significant paleoclimate problems will be examined. Includes both lecture and seminar formats. Will be offered in the 2004–05 academic year. Enrollment restricted to graduate students; undergraduates by permission of instructor only. The Staff

*270. Global Seismology. 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 source such as explosions and faulting, earthquake rupture scaling, modern methods of modeling seismic recordings to study source complexity, and an introduction to seismitectonics. Laboratory: 3 hours. Offered in alternate academic years; will be offered in the 2004–05 academic year. 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. Läny

*271. Current Research Topics in Deep Earth Processes. Students 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 defining multidisciplinary significance of each article and its relationship to fundamental processes in deep Earth, including core and mantle. Designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2004–05 academic year. May be repeated for credit. T. Läny

272. Geophysical Fluid Dynamics. F Study of fluid flow: concepts, governing equations. Focuses 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. Enrollment restricted to graduate students. Offered in alternate academic years. G. Glatzmaier

*275. Magnetohydrodynamics. 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. Will be offered in the 2004–05 academic year. 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 Americas 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 2004–05 academic year. Enrollment limited to 15. Enrollment restricted to graduate students. P. Koh

*278A-B-C. Advanced Seismology. A: Elastic wave propagation. Advanced topics in ray theory, WKB solutions in seismology, singularities and non-linearities, surface wave theory, propagating matrices, normal modes, and inversion theory. Selected topics in time series analysis and seismic signal processing, seismic wave dispersion. B: 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. C: 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. Offered in alternate academic years. May be repeated for credit. T. The Staff

290. Proseminar. Special topics offered from time to time by visiting professors or staff members. May be repeated for credit.

A. Tectonic Hydrogeology. S 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. Offered in alternate academic years. J. M core

*B. Topics in Glaciology. Advanced review of the physics and chemistry of ice and snow. Mass 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. Will be offered in the 2004–05 academic year. Enrollment restricted to graduate students. May be repeated for credit. S. Tulaczýk

C. Topics in Geophysics. S 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. May be repeated for credit. R. Coe

*D. 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 2004–05 academic year. Offered in alternate academic years. May be repeated for credit. J. Gill

E. 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. Asphaug

F. 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

G. Topics in Global Tectonics. F 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. May be repeated for credit. E. Silver

*H. 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 2004–05 academic year. May be repeated for credit. A. Fisher

*I. Topics in Geomorphology and Quaternary History. Selected topics in Earth surface processes and Quaternary history are treated in detail. Emphasis is placed on recent advances, both in theory and in field and dating techniques. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2004–05 academic year. Offered in alternate academic years. May be repeated for credit. R. Anderson

*K. Paleontology Seminar (3 credits). 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. Will be offered in the 2004–05 academic year. Offered in alternate academic years. May be repeated for credit. P. Koh

*L. Topics in Climate Change. Explores current issues 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 the 2004–05 academic year. Enrollment limited to 20. Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. L. Sloan

*M. 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; urban air pollution; greenhouse effect; stratospheric ozone depletion; impacts on humankind and ecosystems. Will be offered in the 2004–05 academic year. Enrollment restricted to graduate students, undergraduates with permission of instructor. May be repeated for credit. P. Chuang A. Ravlo

*N. 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 2004–05 academic year. May be repeated for credit. E. Kittle

P. 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 2004–05 academic year. Prerequisite(s): graduate standing or permission of instructor. May be repeated for credit. S. Schwartz

R. 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 2004–05 academic year. Offered in alternate academic years. May be repeated for credit. Q. Williams

T. Current Research Topics in Paleoceanography and Paleoclimatology. Students and instructor lead discussions of recent and significant problems in paleoceanography and palaeoclimatology. Articles structured around current themes of interest are selected by the instructor. Emphasis on major climatic transitions or events which noticeably differentiated, evolution, and structure of the terrestrial planets. Course designed for graduate students but available to qualified Earth sciences majors. Will be offered in the 2004–05 academic year. Offered in alternate academic years. May be repeated for credit. J. Zachos

292. Seminar (no credit), F,W,S
Weekly seminar attended by faculty, graduate students, and upper-division undergraduate students. T he 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. T he Staff

296. Special Student Seminar, F,W,S
Prerequisite(s): permission of instructor. T he Staff

297. Independent Study, F,W,S
Prerequisite(s): permission of instructor. T he Staff

298. Earth Sciences Internship, F,W,S
A supervised learning experience involving practical, graduate-level application of Earth sciences through working with approved companies, governmental organizations, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work. Consultant sponsoring agency for enrollment criteria. After instruction on resume preparation and interview skills, students must interview and be selected for internship by approved sponsoring organizations. A. Fisher

299. Thesis Research, F,W,S
Prerequisite(s): permission of instructor. T he Staff

East Asian Studies

239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty

DILIP K. BASU, Associate Professor of History
Asian history, modern China, modern India; colonialism, nationalism, dile, cinema, and visual culture

RAOUL BRINBAUM, Professor of History of Art and Visual Culture
Buddhist studies, religion and visual culture in China

NANCY N. CHEN, Associate Professor of Anthropology
Medical anthropology, visual anthropology, urban anthropology, Asian American identity, traditional medicine, mental health, anthropology of food, China

ALAN S. CHRISTY, Associate Professor of History
Early modern and modern Japan; history of social sciences, colonialism, nationalism

CHRISTOPHER CONNERY, Associate Professor of Chinese Literature
World literature and cultural studies, globalism and geographical thought, the 1990s, Marxism, pre-modern and modern Chinese cultural studies, cultural revolution

KWOK-CHIU FUNG, Professor of Economics
International trade, environmental economics, and economies of the Asia-Pacific

JOHN HAY, Professor of History of Art and Visual Culture
Visual and conceptual representation in pre-modern China, especially landscape painting, Asian art history

GAIL B. HERSHATTER, Professor of History
Modern Chinese social and cultural history; labor history; women's history; history of sexuality; feminism; history, memory, and nostalgia

EMILY HONIG, Professor of Women's Studies and History
Gender, sexuality, and ethnicity in modern Chinese history, comparative labor history; Chicania history, nationalism, and sexuality in the Third World; oral history

CHIYOKO ISHIHASHI, Lecturer in Japanese Language
Modern Japanese literature and film

JUNKO ITÔ, Professor of Linguistics
Phonology, morphology, Scandinavian languages, Japanese

EARL JACKSON JR., Associate Professor of Literature
Japanese intellectual history; medieval Japanese literature, modern Japanese literature, Japanese cinema, semiotics, psychoanalysis, Korean cinema, Korean language and culture, Buddhist philosophy, and film theory

DAVID KENNEDY, Lecturer in Chinese Language
Chinese language, fiction and history

JACQUELINE KU, Lecturer in Chinese Language
Chinese language pedagogy, modern Chinese drama, drama as pedagogical tool

BRUCE D. LARKIN, Professor of Politics
Global politics, disarmament, theory of war, Chinese politics and society

LISA ROEFL, Associate Professor of Anthropology
Critical theory, anthropology of modernity, popular/public culture, gender and sexuality, transnational political economy, postcolonial feminist anthropology, China

NEFERTI TADAAR, Assistant Professor of History
Consciousness of Third World feminism, postcolonial theory, critical theories of race and subjectivity, social theory, cultural studies of the Asia Pacific region

DANA Y. TAKAGI, Professor of Sociology
Family, stratification, race relations, social theory, Asian Americans and higher education, identity politics

ALICE YANG MURRAY, Associate Professor of Literature
Historical memory, Asian American history, gender history, race and ethnicity, 20th-century U.S., oral history

JUDY YUNG, Professor of American Studies
Asian American history, culture, and contemporary issues, comparative race and ethnicity, oral history

Program Description

Students of East Asian studies at UC Santa Cruz may select from among the following programs:

• 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 study in China or Japan and use Chinese or Japanese source material for research. A student who wishes to complete the East Asian studies program should enroll in beginning Chinese or Japanese 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.

• A major or minor in the Chinese or Japanese concentration of language studies. Requirements for this major are found on page 263.

• 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 student’s 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).
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 Cowell 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 course: 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, Tenth-Century B.C.E. through Sixth-Century C.E.
- History 152, Classical Chinese Culture and Literature, Sixth Century C.E. through Sixteenth Century
- History 154J, 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 100D, The World of the Lotus Sutra
- History of Art and Visual Culture 100G, 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 154J, Comparative Studies in Modern Asian History

### Ecology and Evolution

See Biological Sciences, page 129.

### Economics

Social Sciences 1 Building
(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

MENZIE CHINN

International finance, macroeconomics

MICHAEL P. DOOLEY

International finance, monetary theory and policy

DANIEL FRIEDMAN

Macroeconomic theory, experimental economics, evolution and learning, behavioral economics, financial markets

K.C. FUNG

International trade, environmental economics, and economies of the Asia-Pacific

RONALD E. GRIERSON

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

DAVID E. KAUN

Political economy of capitalism (and the impact of the conservative think tanks on public dialogue and policy), labor economics, economics of art and culture

KENNETH KLETZER

International economics, economic theory, economic development

LORI G. KLETZER

Employment and wage determination, impact of globalization on the domestic labor market, industrial relations, government labor market policies, higher education, and the labor market

JACOB B. MIEHEISEN, Emeritus

PEGGY B. MUSGRAVE, Emerita

TIBOR SICTOVSKY, Emeritus

NIRVIKAR SINGH

Industrial development, political economy, economic development, technology and innovation, South Asian immigrants in the U.S.

CARL E. WALSH

Mortary theory and policy, macroeconomics, political economy

DONALD A. WITTMAN

Economic theory, politics, law

**Adjunct Professor**

RICHARD A. MUSGRAVE

Public finance, macroeconomics

JURG NIEHANS

International trade, monetary economics, economic history

**Associate Professor**

BERNARD L. ELBAUM

Economic history

ROBERT W. FARRIE

Labor economics, public policy, entrepreneurship, applied econometrics

**Assistant Professor**

EILEEN BROOKS

International trade, international political economy, industrial organization

BINBIN GUO

Financial economics, portfolio management, econometrics, applied time series

PHILLIP MCCALMAN

International trade, intellectual property rights, industrial organization

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**Programs and Courses**

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3. Either a senior thesis (translations 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.

### 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 Cowell 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 course: 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, Tenth-Century B.C.E. through Sixth-Century C.E.
- History 152, Classical Chinese Culture and Literature, Sixth Century C.E. through Sixteenth Century
- History 154J, 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 100D, The World of the Lotus Sutra
- History of Art and Visual Culture 100G, 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 154J, Comparative Studies in Modern Asian History
Economics courses help them understand current affairs and satisfy their curiosity about the ways society allocates resources. The department provides topical courses in the 80 series for students who are interested in economics or business but do not plan to become majors.

The economics curriculum begins at the introductory level; no specific high school preparation is required. All economics majors study a substantial core of economic theory and mathematical and statistical methods, and then choose among a wide variety of upper-division electives. Economics majors may combine their upper-division elective choices in a variety of ways to achieve specialization in a number of possible areas, including environmental economics, public policy, political economy, international economics, economic development, and quantitative methods. Highly qualified seniors may take appropriate graduate courses and earn an M.S. as well as a B.A. degree in five years.

General Requirements
Admission into an Economics Major and Minor

The Economics Department administers three undergraduate majors: economics, business management economics, and global economics. The admission requirements are the same for the three.

Students must take two courses prior to petitioning for entry to an economics major: course 1 (principles of microeconomics) and course 2 (principles of macroeconomics).

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 UCSC.

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. In the case of courses taken on a Pass/No Pass basis, the department will use "shadow grades," assigned by the instructor but not reported to the Office of the Registrar, in its assessment of eligibility for the major.

Courses for which the grade of W is given are not counted in the computation of the GPA. If courses 1 or 2 are repeated, the department will evaluate the grades from the first attempt in determining whether students qualify for admittance into the major.

Students may petition for admission to the major by filling out the campus’s Declaration of Major form and by supplying evidence of their performance in the two pre-major courses.

For purposes of advising, students who are interested in pursuing an economics major are encouraged to declare the pre-economics major with the understanding that this does not automatically provide entry to the economics major.

Appeal of Negative Decisions

Appeals of negative decisions must be submitted to the Economics Department in writing within 30 days of notification that entrance into the major was denied. Letters of appeal should describe any extenuating circumstances that might affect the student’s record.

Introductory Requirements for all Economics Majors

Courses 1 and 2, 11A, 11B, 100A, 100B, and 113 are required for all economics majors and are prerequisites for most upper-division courses. Students are strongly urged to complete these courses as soon as possible. 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 at least courses 1, 2, 11A, and 11B by the end of their sophomore year.

Mathematics Requirement

Successful completion of Economics 11A and 11B (or equivalent) is required of all economics majors and is prerequisite to courses 100A and 100B. (Course 11B can be taken concurrently with courses 100A and 100B.) Therefore, students are advised to take courses 11A and 11B or their equivalent as early as possible in 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 199 may be counted only once toward the upper-division minor requirement.)

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 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 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 at 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/economics (see page 221). Global economics is offered in a combined major with Latin American and Latino studies (see page 266). 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 bachelor of science degree (see page 216). 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 fall 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 student's 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. Economists 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. Economic Development
5. The Political Economy of the U.S.
6. Why Economic Success Failed or Succeed
7. Poverty and Public Policy
8. Political Economy of Policy Reform
9. Money and Banking
10. Performing Arts in the Public and Private Economy
11. International Trade
12. International Finance
13. Advanced Topics in International Finance
14. The Modern European Economy
15. The Political Economy of Japan
16. Latin American Economics
17. The Economics of East and Southeast Asia
18. Public Finance
19. Setting Domestic Priorities
20. Cost-Benefit Analysis
21. The Political Economy of Military Spending in the Cold War Era
22. Industrial Organization
23. Economics as an Experimental Science
24. Economic Analysis of the Law
25. Environmental Economics
26. Natural Resource Economics
27. Energy Economics
28. Labor Economics
29. Women in the Economy
30. Labor Wars in Theory and Film

189. Political Economy of Capitalism (or equivalent, see General Requirements)
Global Economics Major Requirements

Introductory and core requirements. Students who major in global economics are required to take the following courses:

1. Introductory Macroeconomics
2. Intermediate Macroeconomics
3. Advanced Macroeconomics
4. Microeconomics
5. Intermediate Microeconomics

Upper-division electives. Students are required to take six additional courses: four in business management and two in 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 (*).

- Managerial Economics
- Managerial Cost Accounting and Control
- Macroeconomics
- Microeconomics
- International Macroeconomics
- International Political Economy

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 six upper-division major requirements.

Field study. One quarter of field study is strongly recommended. Placements and credit for course 193 or 198 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 to 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.

Economics 10B - Economics of Accounting (or equivalent, see under General Requirements)
Economics 11A - Mathematical Methods for Economists (or equivalent)
Economics 11B - Mathematical Methods for Economists (or equivalent)
Economics 100A - Intermediate Macroeconomics
Economics 100B - Intermediate Macroeconomics
Economics 113 - Introduction to Econometrics

Computer literacy requirement. Students must complete a minimum of two courses, one course from each list as follows (with department approval, a student may substitute other computing courses):

List 1:
- Computer Engineering 80N, Introduction to Networking and the Internet
- Computer Science 10, Introduction to Computer Science and Innovation
- Information Systems Management 50, Business Information Systems
- Information Systems Management 58, Systems Analysis and Design

List 2:
- Computer Engineering 12C/L, Computer Organization
- Computer Science 12A, Introduction to Programming
- Computer Science 66G, Beginning Programming: Social Sciences and Humanities
- Computer Science 60N, Beginning Programming: Natural Sciences
- Computer Science 80B, Systems and Simulation
- Economics 216, Applied Econometric Analysis (with permission of instructor)

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.

One of the five courses must be selected from the following:

1. Economic Development
2. International Trade
3. International Finance

A second course must be chosen from one of the following:

**Economics**
120 Economic Development
126 Why Economies Succeed or Fail: Lessons from Western and Japanese History
129 Political Economy of Policy Reform
131 International Macroeconomics
140 International Trade
141 International Finance
142 Advanced Topics in International Economics
144 The Modern European Economy
147 The Political Economy of Japan

**Latin American and Latino Studies**
122 Introduction to Latin American Development Economics
140 Rural Mexico in Crisis
165 Political Economy of Crisis and Transition in Latin America
168 Economic History of Latin America
169 Latin American Industrialization in a Global Perspective Past, Present, Future

**Politics**
140B Comparative Post-Communist Politics
175 The New Europe
176 International Political Economy

**Sociology**
163 Global Corporations and National States
167 Development and Underdevelopment

The other 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 other than economics 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 welcomed when they are part of the student's overseas program or from other UCSC departments, but substitute courses must be approved by the adviser for the global economics major.

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, or to meet some of the upper-division economics course requirements.
Admission to the Global Economics Major

As with the economics and business management economics major, students submit a proposed study plan to the Economics Department. Continuation in the program beyond the economics core program (courses 1, 2, 11A, 11B, 100A, 100B, and 113) requires good standing in the major and a program of study approved by the global economics major adviser. The program of study must show how all requirements for the major will be met. All global economics students are eligible to apply to specified EAP programs as long as they are in good standing and have the permission of the global economics major adviser. A scholarship fund has been established to provide support for overseas travel for students who need additional financial aid. Students who are not accepted in 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 of 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 our 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, macroeconomics, 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 M (Microeconomic Analysis
- 201 Applications in M Microeconomics
- 202 M (Macroeconomic Analysis
- 216 Applied Econometric Analysis I
- 217 Applied Econometric Analysis II
- 233 Finance

In addition, a student will normally enroll 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 should take another economics course or a course in another discipline. Students may opt to enroll in a 5-credit course instead of 294A or 294B. 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 course work, 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. 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 subfield.

The large number of internationally recognized faculty in the department who are actively engaged in research in international trade and finance provides a unique focus to the program and the department. While the core emphasis is on international economics, 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.

Lower-Division Courses


For all interested students and 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: 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: IS.) The Staff

10A. Economics of Accounting. F,W

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. R. Shepherd, S. Osborne, D. Guion

10B. Economics of Accounting. W,S

Managerial accounting emphasizing analysis 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. R. Shepherd, S. Osborne, D. Guisan

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 Engineering 011A. Students cannot receive credit for both courses.) Prerequisite(s): score of 28 or higher on Math Placement Exam. Students who do not place into precalculus should enroll in Mathematics 1. (General Education Code: Q.) J. Katznelson

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, Laplace multipliers, matrix algebra, and solving systems of linear equations. (Also offered as Engineering 011B. Students cannot receive credit for both courses.) Prerequisite(s): course 11A or Engineering 11A or a course in differential calculus (e.g., Mathematics 11A or 19A) is required for preparation for this class. (General Education Code: Q.) J. Katznelson

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 explored 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: T3-Social Sciences.) D. Kaun

*80F. Immigration. The economic and social causes and consequences of immigration into the United States. Both historical and current immigration are considered. Emphasis placed on California’s experience, on national and state policy, and on the ethics of immigration policy. (General Education Code: T3-Social Sciences.) J. Idsardi

80G. Money and the Arts: Two All-Consuming Passions. W Analysis of the performing arts: a commodity providing a rich and varied source of satisfaction, an occupation for Passions. W

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: T3-Social Sciences.) B. Elbaum

93. Field Study. F,W,S Supervised fieldwork experience, off campus, in an area connected with economics or business. Prerequisite(s): petition on file with 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; petition on file with sponsoring agency. The Staff

99. Tutorial. F,W,S The Staff

Upper-Division Courses

100A. Intermediate Microeconomics. F,W,S Covers major theoretical issues arising in the study of utility 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 and 11A; course 11B is strongly recommended. The Staff

100B. Intermediate Macroeconomics. 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 these issues as they relate to the global economy. Prerequisite(s): courses 1, 2, and 11A. The Staff

101. Managerial Economics. W 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. W Theory and analysis of long-run and short-run forecasts of economic activity. Emphasis is 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. A seminar in advanced macroeconomics focusing on a selection of theoretical issues. Emphasis is on detailed modeling and analysis of macroeconomic processes. Course 100B is strongly recommended as preparation. May be repeated for credit. The Staff

106. Evolutionary Thought in the Social Sciences. F 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: W.) D. Friedman

107. Economic Justice. F 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: W.) J. Idsardi

*108. History of Economic Thought. The evolution of economic ideas from the early eighteenth to the late nineteenth century. The intellectual and social background that influenced the more important contributions is considered. Prerequisite(s): courses 1 and 2. The Staff

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 10B. 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 10B. R. Shepherd

113. Introduction to Econometrics. F,W,S Practical methods for organizing and analyzing economic data, testing economic hypotheses, and measuring economic relationships. Regression analysis is the main empirical method, and basic statistical and probability theory is included. Students gain hands-on computer experience with an econometric software package. Students cannot receive credit for this course and Engineering 113. Prerequisite(s): courses 1, 2, and either course 11B or Mathematics 22. Courses 100A, or 100B strongly recommended as preparation. (General Education Code: Q.) J. Idsardi

114. Advanced Quantitative Methods. F Application of statistical methods to estimating and testing economic relationships, i.e., econometric techniques. Topics include the effects of misspecification, choice of functional form, serial correlation, heteroscedasticity, limited dependent variables, and simultaneous equations. Includes discussion of existing empirical work and econometric projects by students. Prerequisite(s): courses 100A and 113. The Staff

115. Introduction to Management Sciences. S The scientific study of management decision making. Topics include linear, integer, and non-linear programming. Special emphasis on a wide variety of practical applications, including production scheduling, optimal transportation assignments, and optimal inventory policy. Prerequisite(s): course 100A. The Staff

117. Tax Factors of Business and Investment. W Focuses on various tax subjects providing a strong foundation in tax concepts and preparation for work in either public or corporate accounting. Topics include historical perspective of the U.S. tax system, introduction to estate and gift taxes, employment and self-employment taxes, tax concepts and laws, business expenses, capital recovery, tax credits, capital gains and losses, capital investments, and corporate operations. Prerequisite(s): course 108. The Staff
119. Advanced Accounting, S
Accounting for business organizations; partnerships; govern-
ment and non-profit organization funds; branches, consolidations, and installment sales. Projects involving spreadsheet software required. Prerequisite(s): courses 111A and 111B. R. Shepherd, S. O’Dorne.

120. Economic Development, S
A comparative approach to the study of the economic de-
velopment of low-income countries. Various obstacles to growth are identified, and different types of solutions are analyzed. Prerequisite(s): courses 1 and 2. (General Education Code: E.) The Staff.

125. Economic History of the U.S. F
The development of the American economy from colonial times to the present, with emphasis on the interaction between institutional structure and economic development. Topics include the economics of slavery, the rise of big business, and the causes of the Great Depression. Prereq-
quisite(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 indus-
trialization, 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 re-
sponse to urban poverty in the U.S. Topics include how public policy, the macroeconomy, race, gender, discrimi-
nation, marriage, fertility, child support, and crime affect and are affected by urban poverty. Emphasizes class dis-
cussion and research. (Also offered as Legal Studies 128. Students cannot receive credit for both courses.) Prereq-
quisite(s): satisfaction of the Subject A and Composition re-
quirements: courses 100A and 113; or permission of instructor. Enrollment limited to 20. Enrollment re-
stricted to majors in economics, business management economics, global economics, legal studies, or combined majors in environmental studies/economics or Latin American and Latino studies/global economics. (General Education Codes: W; E.) R. Fairlie, L. Klitza.

137. Performing Arts in the Public and Private Economy, W
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 ac-
tivity whose funding (public and private) is susceptible to significant controversy. Economics 1 is strongly recom-
manded as a preparation. Students cannot receive credit for this course and course 80G. D. Kaufl.

138. The Economics and Management of Technology and Innovation, S
Examines the analytics of issues in technology and innova-
tion, including cooperation in research and development (R&D), standardization and compatibility, patents and in-
tellectual property rights, and strategic management, using economic models and firm case studies. Prerequisite(s): courses 10A and one of the following courses: 101, 115, 135, or 136. The Staff.

139A. The Economics of Electronic Commerce, W
An analysis of the broad spectrum of issues affecting com-
mercial use of the Internet and the next-generation in-
mformation 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. Overview of trends in e-commerce. Online re-
tailing 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 strat-
gy responses. Prerequisite(s): course 139A. N. Singh.

140. International Trade, F
The theory of international production and trade. The ef-
effects of tariffs and quantitative trade restrictions; the na-
ture of economic integration; multinational firms; effects of trade and protection on economic stability and welfare. Prerequisite(s): course 100A. T. He Staff.

141. International Finance, F
Topics include national accounting, balance of payments theories, parity conditions in international finance, exchange rate determination models, forward-looking finan-
cial instruments, international monetary systems, country interdependence and exchange rate regimes, inter-
national monetary integration, and Eurocurrency mar-
ket. Prerequisite(s): courses 100B, T. He Staff.

142. Advanced Topics in International Economics, S
Selected issues in contemporary international economics: theory, empirical evidence, and public policy. Seminar em-
phasizing 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: W.) T. He Staff.

143. Policy Issues in the International Economy, S
Covers selected issues concerning the international econ-
omy. Topics include U.S. competitiveness, U.S. trade pol-
icy, immigration, trade and the environment, the developing countries, foreign investment, foreign ex-
change markets and international economic institutions. Students cannot receive credit for this course and course 80B. Prerequisite(s): courses 1, 2, and 100A. I. Kohli.

144. The Modern European Economy, S
A comparative study of major European economies since 1945. Focuses on the alternative means with which Euro-
pean countries have pursued social and economic objec-
tives. The approach is analytical and requires a thorough background in micro- and macroeconomics. Prerequi-
tive(s): courses 1 and 2; courses 100A and 100B are strongly recommended. T. He Staff.

Study of centrally planned systems and their problems of transition to market mechanisms. Focus on issues of re-
source mechanisms, income distribution, and the role of ideology in economic decisions. Prerequisite(s): courses 1, 2, and 100A. T. He Staff.

147. The Political Economy of Japan, F
Deals with various aspects of the contemporary Japanese economy. The first part of the course focuses on the do-
mestic structure, with emphasis on the internal structure of the Japanese firms. The second part focuses on trade issues of Japan. Prerequisite(s): courses 100A and 100B. T. He Staff.

148. Latin American Economies, F
This course is designed to familiarize students with the economic and business environment in Latin America. Prerequisite(s): courses 1 and 2; T. He Staff.

149. The Economics of East and Southeast Asia, S
Examines the pattern of international trade, investment, and industrial structure in Asia. Examines competing explana-
tions of rapid growth of Japan, Korea, and Taiwan; presents an overview of economic developments in China, Hong

*Not offered in 2003-04
150. Public Finance. F
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. The Staff

152. Setting Domestic Priorities. S
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. Course 100B strongly recommended as preparation. Students cannot receive credit for this course and course 80E. Prerequisite(s): course 100A. 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. The Staff

*154. The Political Economy of Military Spending in the Cold War Era.
The growth, size, and composition of post WW II military expenditures are analyzed in terms of alternate theories-mainstream, Marxist, bureaucracy, and private interest group-followed by analysis of the economic effects and effectiveness of military expenditures in the U.S. Prerequisite(s): courses 1 and 2. D. Kaun

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. (Also offered as Legal Studies 160). Students cannot receive credit for both courses.) Prerequisite(s): course 100A. 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. 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 enterprise. (Also offered as Legal Studies 162). Students cannot receive credit for both courses.) Prerequisite(s): course 100A. The Staff

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 strategic standpoint as well as public policy perspective. Prerequisite(s): course 100A and 113. The Staff

*165. Economics as an Experimental Science.
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: 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 procedures. (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
Environmental 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. 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. The Staff

175. Energy Economics. S
Applications of micro, welfare, international, and intertemporal 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; redistributitional policies. Prerequisite(s): course 100A. 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 neo-classical as well as institutional and radical perspectives. Prerequisite(s): courses 1 and 2; courses 100A and 113 are strongly recommended as preparation. D. Kaun, L. Kletzer

181. Economics of Real Estate. F
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. The Staff

*182. Industrial Relations.
An analysis of institutions and public policy in labor economics and industrial relations. Major topics include the nature of organized labor, the economic impact of unions, labor relations law, and management personnel practices. Prerequisite(s): courses 1 and 2. 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 the Subject A and Composition requirements; courses 1, 2, and 100A; 113 is strongly recommended. (General Education Code: W) 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. work force. 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): courses 100A, 100B, and 113; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (General Education Code: W) D. Kaun

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 MS or Pathway Programs. The Staff

188. Management in the Global Economy. W
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. Enrollment limited to 75. The Staff

189. Political Economy of Capitalism. S
An assessment of modern day capitalism from the three major economics paradigms-liberal, conservative, radical. Theories of Smith, Marx, and Keynes are explored in contemporary writing, with focus on the U.S. from WW II to present. Students cannot receive credit for this course and course 80A. Prerequisite(s): courses 1 and 2; courses 100A and 100B are recommended as preparation. D. Kaun

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 group in connection with core economics courses. Facilitators complete course readings and meet with instructor as a group to discuss the teaching process. May be counted toward the 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 be counted toward the upper-division major requirements. Prerequisite(s): petition on file with 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

*Not offered in 2003–04
faculty supervision is by correspondence). May not be counted toward the upper-division major requirements. Prerequisite(s): petition on file with 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 the upper-division major requirements. Students spend 8-10 hours per week at job site. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit.  The Staff

*194. Advanced Topics in Business Management Economics (2 credits).
This honors course for business management economics majors provides detailed analyses of specialized topics in finance and technology management. Topics may include venture capital, financial services industry, e-business, high tech entrepreneurship, high tech marketing, risk management, and options value approaches to business strategy. Corporate executives give guest lectures. Prerequisite(s): permission of instructor; review of performance in economics courses. Enrollment limited to 20. Enrollment restricted to senior business management economics majors. N. Singh

A supervised research project. If the project is of unusual scope, the course may be repeated for credit. Prerequisite(s): satisfaction of the Subject A and Composition requirements, petition on file with sponsoring agency. (General Education Code: W)  The Staff

198. Independent Field Study. F,W,S
Provides for department-sponsored individual study program off campus for which faculty supervision is not impersonal, but by correspondence. May not be counted toward the upper-division major requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit.  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 impersonal, but by correspondence. May not be counted toward the upper-division major requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit.  The Staff

199. Tutorial. F,W,S
May be repeated for credit, but may be counted only once toward the upper-division major requirements. Undergraduates may not take graduate courses for credit as 199. Prerequisite(s): petition on file with sponsoring agency.  The Staff

199F. Tutorial (2 credits). F,W,S
Specialized study with individual faculty. May not be applied toward the major requirement. Prerequisite(s): petition on file with 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

*203. Applications in Macroeconomics.
Applies concepts and tools developed in course 202 to practical problems and policy-related issues. Emphasis is on empirical applications and student projects. Topics covered include the relationships between budget deficits and interest rates, money and prices, and tax policy and personal savings. Course 202 is strongly recommended as preparation.  The Staff

204A-B-C. Advanced Microeconomic Theory. F-W-S
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. Prerequisite(s): 204A is prerequisite for 204B; 204B is prerequisite for 204C.  The Staff

205A-B-C. Advanced Macroeconomic Theory. F-W-S
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. Prerequisite(s): 205A is prerequisite for 205B; 205B is prerequisite for 205C.  The Staff

209A. Accounting I. 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.
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 techniques, difference and differential equations, optimal control theory, decisions under uncertainty, game theory, and stochastic calculus. Course 210A or equivalent is strongly recommended as preparation.  The Staff

211A-B. Advanced Econometrics. W,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

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 220A and 220B 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.
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, debt, futures, and options. Prerequisite(s): course 233.  The Staff

*Not offered in 2003-04
235. Corporate Finance. F
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, W
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. Courses 204A-B-C are strongly recommended as preparation. Enrollment restricted to graduate students. 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. (Formerly Advanced International Finance.) 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. (Formerly Theory and Practice of International Economic Policy.) 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. (Formerly Empirical Applications in International Finance.) The Staff

243. History of the International Economy. F
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. B. Elbaum

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, the 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 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 and other distortions with regard to measurement of benefits, costs, and the discount rate. Course 200 strongly recommended as preparation. The Staff

Focuses on the economy's utilization of natural resources and ecosystems from the perspectives of New Institutional Economics (NIE) and Ecological Economics (EE). Concepts and tools from NIE and EE are introduced and then explored in deposition/recycling of natural resources. Open to advanced undergraduates with instructor permission. (Also offered as Environmental Studies 260. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. B. Haddad

Examines the property rights bases of environmental change and resource-based conflict. Early sessions offer a theoretical understanding of property rights. Subsequent sessions apply the theory to local, national, and international environmental issues and conflicts. Companion course to Environmental Studies 260/275. (Also offered as Environmental Studies 262. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. B. Haddad

*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. Upper-division math courses in probability theory are strongly recommended. (Also offered as Biology 274 and Computer Science 272. Students cannot receive credit for both courses.) 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, strategic 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 SPIRES EconLit databases. (Formerly Economics 294.) 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

*Not offered in 2003-04
Education

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http://education.ucsc.edu
e-mail: 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; ethnicity, 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

DAVID SWANGER
Aesthetic education, educational philosophy, creative writing, poetry, politics, 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.; related issues in teacher education

LUCINDA POESE-ALVAREZ
Language and literacy development, language minority education, bilingualism, informal learning

TRISH STODDART
Teacher education, science education, educational reform

KIS 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 education reform

DORIS ASH
Informal science learning, teacher professional development, science discourse in and out of the classroom

JUDIT MOSCHOVICH
Mathematics learning and teaching, student conceptions of linear functions, discourse in mathematics and science classrooms, language and minority mathematics education, informal mathematics learning

JUDITH SCOTT
Literacy and language learning, academic language, reading, writing, vocabulary development; teacher professional development through collaboration and inquiry

Director of New Teacher Center

ELLEN R. MOIR
Bilingual education, English language development, new teacher development and support

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.

Although the UCSC teaching credential program is a graduate program, undergraduate students are welcome to take any education elective course and can also declare a minor in education. 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 the other courses selected from a list (available from the Department of Education) 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 Major/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. The program offers both the Crosscultural, Language, and Academic Development (CLAD) and the Bilingual, Crosscultural, Language, and Academic Development (BCLAD) emphasis teaching credentials. Graduates of the program are prepared to teach K–12 English language learners. 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 subjects 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:

295A-B-C. Directed Reading, F,W,S
Reading in research area of student interest, with faculty supervision through weekly discussion. Prerequisite(s): interview with sponsoring agency. May be repeated for credit. The Staff

296A-B-C. Third Year Ph.D. Seminar, F,W,S
Student presentations of literature and/or original 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, F,W,S
Independent study and research under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

298. Dissertation Research, F,W,S
Research toward Ph.D. dissertation under faculty supervision. Prerequisite(s): advancement to candidacy and petition on file with sponsoring agency. May be repeated for credit. The Staff

299. Thesis Research, F,W,S
May be taken once to meet course requirements for the master's degree. Prerequisite(s): petition on file with sponsoring agency. The Staff

Prerequisite Admission Requirements

To enter the program, applicants must hold a baccalaureate degree from a regionally accredited college or university and must fulfill the graduate admission requirements of the Graduate Division. In addition, applicants should submit the following:

Application: Candidates must file an application for graduate admission through the UCSC Graduate Division. The application will include a $70 application fee. The application deadline is January 15 of the year to which the candidate desires to enter the program.

Transcripts: All applicants are required to submit official transcripts from all colleges and universities attended. Transcripts should be sent directly to the UCSC Graduate Division. Undergraduate GPA of 3.0 or better is preferred.

Letters of Recommendation: Applicants must arrange for three letters of recommendation to be submitted to the UCSC Graduate Division. These letters should reflect the skills and qualities that applicants possess and are considered candidates for graduate study.

Statement of Purpose: Applicants are required to submit a statement of purpose. The statement should be two to three pages in length and should reflect the applicant's interest in the field of education and rationale for pursuing graduate study at UCSC.

Statement of Financial Support: Applicants are encouraged to seek sources of financial support for their graduate studies. This may include teaching assistantships, research assistantships, fellowships, and other forms of financial aid.

Additional 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:

Aesthetic education, educational philosophy, creative writing, poetry, politics, literary theory

Language and literacy development, analysis of discourse in learning and teaching, inquiry-oriented curriculum; socio-cultural theory and education, collaborative action research

Teacher education, science education, educational reform

Preparation of teachers for linguistic and cultural diversity, second language learning, studies of the school curriculum, educational assessment

Mathematics teaching and learning, student conceptions of linear functions, discourse in mathematics and science classrooms, language and minority mathematics education, informal mathematics learning

Literacy and language learning, academic language, reading, writing, vocabulary development; teacher professional development through collaboration and inquiry

Preparation of 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. The program offers both the Crosscultural, Language, and Academic Development (CLAD) and the Bilingual, Crosscultural, Language, and Academic Development (BCLAD) emphasis teaching credentials. Graduates of the program are prepared to teach K–12 English language learners. The BCLAD emphasis authorizes primary language instruction and dual language immersion education. The BCLAD language of emphasis is Spanish.

The preliminary multiple subjects 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 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
(For UCSC, Graduate Application for Admission) 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. Refer to the Supplemental Application online at http://www.graddiv.ucsc.edu for more information about these required application documents.

The UCSC Application and the Education Department Supplemental Application must be completed and submitted by the stated deadline. The Supplemental Application can be found online at http://www.graddiv.ucsc.edu.

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.

Subject Matter Competence
Multiple Subjects
- The Multiple Subjects Assessment for Teachers (MSAT) or the California Subject Exam for Teachers (CSET): Multiple Subject or verification of an approved subject matter program from the applicant’s undergraduate institution is required. Admitted applicants must submit verification of having passed at least one of the required MSAT or two of the three CSET multiple subject exams or verification of an 80 percent subject matter program in order to enroll in the program. It is recommended that documentation be submitted with the application.
- Single Subject: Appropriate PRAXIS exam(s) and Single Subject Assessment for Teachers (SSAT) or the California Subject Exam 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 either the PRAXIS or SSAT exam or two of the three CSET exams (or in the case of English, three out of four Single Subject exams) or an approved 80–100 percent complete subject matter program 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 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 the 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. UC 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, Congress, 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 (fingerprints) 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 master teachers. Master of arts in education teacher preparation candidates obtain classroom experience at two different levels—in primary and middle school grades for multiple subjects candidates and in middle school/junior 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 initiative shown in public school settings, as well as successful completion of Education 203.

For Further Information
Phone the Education Department Advising Center at (831) 459-2589, 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 leading scholars who engage in research focused on the educational needs of students from linguistic, social, and cultural groups that have historically not fared well in our nation’s public schools. The 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 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 quantitative and qualitative 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 concentration. The program offers three concentrations: social context of education, language and literacy studies, and mathematics and science education. Each student is primarily associated with one of these
three areas. 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 courses, 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 concentration. The number of concentration courses and seminars required 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, F, W, S
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 try to accomplish and what kinds of learning teachers should foster. 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: 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, compulsion in schooling, and questions concerning developmental theory, moral education, and aesthetic education. Course enrollment is unrestricted. (General Education Code: IS.) D. Swanger

92B. Introduction to Theories of Education, W
A general survey of theories and partial theories of education organized into three recurrent topics: teaching and learning, schooling and education in society. Each is considered in terms of the partial theories of James, Dewey, and Skinner. Constructivist conceptions, particularly the theories of cognitive science; and, finally, an integrated sociocultural theory of education. (General Education Code: IS.) 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 state’s and our nation’s increasing diversity. (General Education Code: E.) The Staff

99. Tutorial, F, W, S
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 Practiceum (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 is linked to other courses in education (e.g., Education 140, Education 151). Enrollment limited to 30. May be repeated for credit. L. Pease-Alvarez

*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. The Staff

*119. Community Teaching Fellowship Seminar.
Purpose of the seminar is to discuss and reflect on experiences in the Community Teaching Fellowship (CTF) classrooms and to discuss topics in mathematics and science education. Prerequisite(s): participation in Community Teaching Fellowship Program. Enrollment limited to 40. Enrollment restricted to mathematics, sciences, engineering, and computer science majors. J. Moschkovich

119F. Community Teaching Fellowship Seminar (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 Mathematics 188. Prerequisite(s): participation in the Community Teaching Fellowship in Mathematics and Science (CTFMS) Program. Enrollment limited to 40. Enrollment restricted to mathematics, sciences, engineering, and computer science majors; restricted to CTF members only by permission of the instructor. May be repeated for credit. The Staff

119G. Community Teaching Fellowship Seminar: Science (2 credits), W, S
Students reflect on their experiences in secondary science classrooms, discuss topics in science education, and make connections to relevant readings. Prerequisite(s): participation in Community Teaching Fellowship in Mathematics and Science (CTFMS) Program. Enrollment limited to 40. Enrollment restricted to Natural Sciences and School of Engineering majors. May be repeated for credit. J. Moschkovich

120. The Arts in Schools: Aesthetic Education Theory and Practice, W
Explores the nature of art, the historical legacy of the arts within education; considers aesthetic education as an interarts philosophical and practical endeavor; studies alternatives to the current situation of the arts in education; develops theory necessary to teach the arts. Theory or curriculum course for credential students. Enrollment limited to 20. D. Swanger

125. Introduction to Teaching Children’s Literature in Grades K-8, S
Offers opportunities for undergraduate and graduate students to learn about fundamental aspects of children’s literature, to increase their knowledge of range and quality of children’s literature, to enhance their understanding of multicultural children’s literature, and to develop ways to integrate children’s literature into elementary and middle-school curriculum areas. Enrollment limited to 25. Enrollment restricted to juniors and seniors. J. Scott

128. Immigrants and Education, F, S
Research and theory on the education of immigrant students. Major topics include the Americanization movement and America’s changing demography, identity maintenance and change, home-school relations, and educators’ roles in meeting the needs of culturally and linguistically diverse student populations. Enrollment restricted to juniors and seniors. (General Education Code: E.) M. Gibson

133. Language Awareness.
Prepares students to teach in a linguistically and culturally diverse society. Focuses on developing greater awareness of language issues so teachers enact challenging and equitable teaching for all their students. Emphasis is given to language as experiential and as a process and to the analysis of authentic texts. L. Pease-Alvarez

135. Gender and Education, W
Addresses the changing but continuing patterns of unequal expectations, opportunities, and treatment throughout the educational system for all students, female and male, who do not match a standard model of gender performance. Fieldwork required. D. Ash

140. Language, Diversity, and Learning, F
Class members work as a community of educators focused on their own learning as they participate in practice experience with youth at a local agency. Teaching and learning in linguistically and culturally diverse communities becomes content and focus of course discussions, readings, and collaborative projects. Concurrent enrollment in course 111 required. Enrollment limited to 32. Enrollment restricted to junior and senior students. (General Education Code: E.) L. Pease-Alvarez

141. Bilingualism and Schooling, S
Introduces participants to issues related to the schooling of students who speak languages other than their own in addition to English. Uses a multidisciplinary perspective to understand the circumstances these students face in schools and considers approaches and policies that best meet their

*Not offered in 2003-04
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/UCSC Links, an after-school program serving a culturally diverse group of children. Enrollment limited to 25. (General Education Code: E.) The Staff

*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: 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. 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: E.) J. Gordon

164L. Urban Education Fieldwork (2 credits).
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).
Fieldwork in diverse schools and/or communities which involves interview and/or tutoring and research. Must be taken concurrently with course 170. Schooling and Asian Cultures. J. Gordon

Focuses on involvement in classroom practice pertaining to student 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 course work 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 limited to 50. Enrollment restricted to juniors and seniors. (General Education Code: 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, investigates 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. Enrollment limited to 20. (General Education Code: E.) The Staff

185B. 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. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. Enrollment restricted to junior and senior majors in mathematics, physics, computer science, computer engineering, and electrical engineering. (General Education Code: W.) J. M. Sroick

185C. Introduction to Teaching Science. F
An introduction to the principles and practices for teaching science in secondary classrooms. Course examines theoretical and practical approaches to teaching science, provides an introduction to national and state standards and an overview of science curricula and current issues in science teaching. Enrollment limited to 40. (Formerly Introduction to Teaching in the Content Area: Science.) Enrollment restricted to junior and senior science majors. D. Ash

192. Directed Student Teaching. F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): petition on file with sponsoring agency. The Staff

193. Advanced Field Study. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

194. Group Projects. F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

194F. Group Projects (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

198. Independent Field Study. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

198F. Independent Field Study (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

199. Tutorial. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

*200A. Introduction to Educational Inquiry. F
Addresses foundational knowledge needed to understand and conduct educational inquiry and research. Topics include epistemology in the humanities, philosophical foundations of modern research strategies, and general classes of research investigations in education. Enrollment limited to 15. Enrollment restricted to graduate education majors. 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 limited to 15. Enrollment restricted to graduate students. The Staff

*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. (Formerly Education 201.) 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. E. Mof

211A. Reading and Language Arts for Elementary Classrooms. F,W
This course provides both a 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 limited to 30. Enrollment restricted to graduate students. J. Scott

*Not offered in 2003–04
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 limited to 30. Enrollment restricted to graduate students. J. Scott

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 beliefs about 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 elementary science. Enrollment limited to 50. (Formerly 225B: Science Instruction.) Enrollment restricted to graduate students admitted to the credential program. 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 limited to 50. Enrollment restricted to program enrollees. 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 limited to 50. Enrollment restricted to graduate students. 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 theories 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 secondary mathematics. Required for mathematics secondary credential. Prerequisite(s): course 213B. Enrollment limited to 50. Enrollment restricted to graduate students admitted to the credential program. T he Staff

214A. English Teaching: Theory and Curriculum, F
Required for the single subject English credential. 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 graduate students majoring in education. J. Scott, J. M amotts

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 limited to 30. Enrollment restricted to graduate students. 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 suggests best practice while practice informs theory-formation and testing. Enrollment restricted to graduate students majoring in education. The Staff

215B. Social Science Teaching for Secondary Classrooms, W
Prepares 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 curriculum units that are used in student teaching. Enrollment limited to 50. Enrollment restricted to graduate students. The Staff

*216. Teaching Writing in the Content Areas. Designed for single subject credential candidates who wish to become more knowledgeable, thoughtful, and effective teachers of writing. Students will be asked to look at writing through the lenses of education theorists and engage in dialogue about what constitutes effective writing instruction. Enrollment limited to 100. Enrollment restricted to graduates. The Staff

*219. Theories of First and Second Language Learning. This course is designed to orient future educators to theoretical and practical perspectives on first and second language learning. Topics include sociolinguistic, sociocultural, and sociocultural approaches to the development of oracy and literacy in first and second language learners. Enrollment limited to 30. Enrollment restricted to graduate students admitted to the credential program. L. Pease-Alvarez

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 limited to 50. (Formerly An Integrated Approach to Curriculum and Technology.) Enrollment restricted to graduate students admitted to the credential program. T he Staff

*221. Advanced Instruction in Literacy Learning. Designed to enhance practicing and preservice teachers’ understanding of their students’ literacy development. Using a teacher-as-researcher model, students will participate in an intensive institute where they explore new methodologies and engage in discussions about educational reform. Following the institute, teachers will work collaboratively with mentors and coaches to implement change and reflect on its effectiveness. Enrollment restricted to graduate students. The Staff

*240. Linguistic and Cultural Diversity in Schools and Classrooms. Addresses CLAD/BCLAD standards for teacher certification in the areas of language and language learning for a linguistically and culturally diverse student population. Focus is on the following areas: 1) social and political issues; 2) linguistic issues; 3) pedagogical issues. Specific topics include theories of language proficiency, development of first and second languages, bilingualism, approaches to English language development, cultural considerations, and teaching in the content areas. Enrollment restricted to graduate students admitted to the credential program. The Staff

242. Promoting Biliteracy and Bilingualism. Designed to meet specific goals for students pursuing the Bilingual Crosscultural, Language and Academic Emphasis Credential (BCLAD). 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. (Formerly 242B.) Enrollment restricted to graduate students admitted to the credential program. A. Wiese

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 to the credential program. L. Pease-Alvarez

250. Teaching, Learning, and Schooling. Required for master’s students in education. Three basic units comprise the subject matter: teaching/learning, with such topics as development, learning, and socialization; second, schooling, as the context of educational institutions; third, the sociocultural context in which educational institutions exist, topics such as cultural and historical forces, political and economic condition, family, and community structures. (Formerly Teaching, Learning, and Schooling in Social Context.) 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 limited to 30. Enrollment restricted to program enrollees. The Staff

254. Educational Assessment: Practice and Policy. Presents participants with an opportunity to examine the concepts of assessment and evaluation in education, explore the principles underlying the assessment process, and develop the skills needed to implement evaluations wisely. Participants will gain skills needed to develop assessment tools for use in classrooms and other applied settings. (Formerly Portfolio Development.) Enrollment restricted to graduate students. 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 limited to 15. Enrollment restricted to graduate education majors. J. M. Ashcraft

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 limited to 15. Enrollment restricted to graduate students. M. Gibson

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 limited to 10. Enrollment restricted to graduate students. R. Ogawa

265. Becoming a Professional Educator.
Meets 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. (Formerly The Expanded Role of the Teacher.) Enrollment restricted to graduate students. J. Gordon

269A-B-C. 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 and practice, and are introduced to research by Education Department faculty. Enrollment limited to 15. Enrollment restricted to graduate students. J. Aguirre

272. Teaching English Language Learners in the Content Areas (2 credits). F
Introduces students to instructional approaches for supporting the English language development of middle and high school English language learners. Emphasis placed on strategies used to support English language development along with content learning in various subject areas. Enrollment restricted to graduate students. The Staff

273. Topics in Elementary Education. Summer
Examines pedagogical understanding in visual and performing arts and physical education. Candidates are introduced to theoretical and research basis in each area, content standards and frameworks, and investigate and present instructional practices. Enrollment restricted to graduate students. The Staff

274. Theoretical Foundations of Mathematics/Science Learning and Teaching (2 credits). F
Examines theoretical foundations of teaching and learning mathematics and science. Explores these foundations from historical and current perspectives. Theories are the lenses with which students examine mathematics and science learning and teaching. Enrollment restricted to graduate students. J. Aguirre

275. Classroom Management and Organization. Prepares teachers to establish a positive, challenging learning environment that actively engages each student. Current theory and research on classroom management as well as effective teaching practices are explored. The diversity of California students is promoted as a rich resource for learning in the classroom. Strategies for addressing the needs of California’s diverse student population are central to the course. 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 as well as pedagogical practices support this. Enrollment limited to 50. (Formerly Ethnicity and Education.) Enrollment restricted to program enrollees. 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 Course staff are required. Prerequisite(s): course 203. Enrollment limited to 50. Enrollment restricted to graduate students majoring in education. The Staff

284A-B-C. 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

285. Portfolio Development (2 credits). Summer
Provides student and faculty advisor with time to confer over the completion of the required portfolio. Enrollment restricted to graduate students. L. Peña-Alvarez

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 limited to 15. Enrollment restricted to science graduate students. D. Ash

296. Teaching Apprenticeship. F,W,S
An elective course for education major/minor options: Bioinformatics B.S. Computer engineering B.S. or combined B.S./M.S. Computer engineering minor Computer science B.S. Computer science B.A. Computer science minor

*Not offered in 2003–04
Dual degree engineering program (B.A. in the social sciences, humanities, or arts from UC Santa Cruz with a B.S. degree in engineering from UC Berkeley (excluding EECS))

Electrical engineering B.S. Information systems management B.S.

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 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. 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 (digital hardware). The emphasis of our program is on design rather than analysis—in making things work, rather than on explaining the abstract theory of computation or 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 strong academic foundation for 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.A. 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 EECS). Many combinations of fields are possible, such as economics and environmental studies or philosophy with civil, mechanical, or industrial engineering.

Electrical Engineering. The electrical engineering curriculum provides a balance of engineering science and design and allows students to specialize in both the traditional topics and the latest subjects. The curriculum is designed to attract motivated students who, upon graduation, will be sought by employers in the high-tech industry.

Information Systems Management. The information systems management (ISM) curriculum combines the fundamental intellectual content of both computer science and business management economics. It is designed to provide a balance of courses on computer programming, systems analysis and design, database systems, and telecommunications with courses in economics and business. It is an excellent major for those students wanting to pursue a career of solving business problems through the use of information technology.

Preparation for the major and the major requirements for each degree program offered by the School of Engineering are described in detail in subsequent sections listed under the individual academic programs.

Undergraduate Advising Office

The School of Engineering Undergraduate Advising Office (Room 115, Baskin Engineering Building) offers general advising for prospective and declared undergraduates majoring in School of Engineering programs. The office handles student petitions (i.e., major declarations, transfer credits, course substitutions), articulations, and degree certifications. Students may obtain additional information and assistance on the School of Engineering web site: http://www.soee.ucsc.edu/advising/undergraduate

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 these majors.

The School of Engineering strongly encourages applicants 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 these programs at UCSC in two years. For more information on transfer admission into the UCSC School of Engineering program, 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 substituted for Biology 3, Concepts in Biology, and exempt student from the biology placement exam.

**Chemistry:** a score of 4 or 5 on the AP Chemistry exam fulfills the prerequisite for enrollment in Chemistry 1B/M in lieu of the chemistry placement exam.

**Computer Science:** a score of 4 or 5 on Exam A satisfies Computer Science 12A, Introduction to Programming; a score of 4 or 5 on Exam AB satisfies both Computer Science 12A, and Computer Science 12B, Introduction to Data Structures.

**Economics:** a score of 4 or 5 on the Microeconomics exam satisfies Economics 1, Introductory Microeconomics; a score of 4 or 5 on the Macroeconomics exam satisfies Economics 2, Introductory Macroeconomics.

**Mathematics:** a score of 4 or 5 on the Calculus AB exam satisfies Mathematics 19A, Calculus for Science, Engineering, and Mathematics; or Economics 11A. Students approved for admission to Mathematics 19A-B or Economics 11A. There is no advanced placement exam in mathematics for Economics 11B credit.

Students may check with the Office of Admissions for details on other AP examinations that also satisfy university requirements.

Direct Admission to School of Engineering Majors (Freshman Admissions)

First-year applicants to UCSC may apply for direct acceptance to a School of Engineering major by indicating the major as their first or second choice on the application. Applicants will be granted direct acceptance based on their high school records, scores on standardized tests, and/or their personal statement.

To take advantage of direct acceptance, first-year students must declare the major in their first term at UCSC. Freshmen who are admitted to UCSC but do not receive direct acceptance to the major may still petition for admission to the major after completing the required foundation courses (listed 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 UCSC 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 declined. 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 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 reapply 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 may require that a Petition for Course Substitution be approved before credit is applied to any School of Engineering major requirement. The undergraduate advising staff can help determine if
This petition process is necessary based on transcript information provided to them by the student. This petition is in addition to and separate from the transfer credit awarded by the university. Forms are available at the Undergraduate Advising Office. Each petition must be accompanied by a course description, syllabus, and verification of the number of credits earned with a grade of C or better. To guarantee equivalency, departments may sometimes require a grade of B or better. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations.

**Current Students Admissions into Majors**

UCSC students may petition to declare a School of Engineering major (or minor) upon completion (with a grade of C or better) of all the foundation courses for that major. Approval of the declaration petition 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 12A, 12B (or 13H); Chemistry 1B/M, 1C/N; Mathematics 19A-B
- **Computer Engineering**: Computer Science 12A, 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; Engineering 27; Physics 5A and either 5B, or 5C
- **Information Systems Management**: Computer Science 12A or 13H; Computer Engineering 16 or 16H; Mathematics 19A-B (or Economics 11A, 11B);
- **Information Systems Management**: Computer Science 10, or Computer Engineering 3.

- **Electrical Engineering**: Mathematics 19A-B; Engineering 27; Physics 5A and either 5B, or 5C
- **Information Systems Management**: Computer Science 12A or 13H; Computer Engineering 16 or 16H; Mathematics 19A-B (or Economics 11A, 11B);
- **Information Systems Management**: Computer Science 10, or Computer Engineering 3.

**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.

**Petition Process**

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.

The departments will inform students by e-mail of the status of their petitions by the beginning of the pre-enrollment period (usually the eighth week of the term). 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.

**Appeal Process**

Appeal of negative decisions will be evaluated by the academic department to which the student applied. Appeals letters must be submitted in writing to the Undergraduate Advising Office by the last day of classes in 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**

Many 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 major**: 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.
- **Computer science major**: All courses required for the major must be taken for a letter grade. 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.
- **Information systems management major**: All courses required for the major must be taken for letter grades. Two lower-division exceptions are allowed.

Note: for the purpose of admission into any School of Engineering major, a grade of Pass will be treated as a C, which may adversely affect your admission to the major.

**Disqualification Policy**

**GPA Requirement**

Your cumulative 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 departmental 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. If your term School of Engineering GPA falls below 1.5 in any term, you are also subject to disqualification from the major.

**Ethics Requirement**

Graduates of the 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 iee.org/about/what/sgc/code.html, and www.acm.org/garvin/sgc/code.htm.

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.

Computer Science and Information Systems Management 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. Since one can withdraw during the ninth week of instruction, a class in which a W is given is counted as an attempt.

**Courses Taken Elsewhere After Enrollment**

It is the intent 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 preapproval to be obtained prior to taking the class. Applications and procedures for preapproval are obtained from and given to the School of Engineering Undergraduate Advising Office.

Petitions for declaration of the major are accepted at the Undergraduate Advising Office by the last day of classes. Students whose petitions and appeals have been turned down may not reapply for the same major.

**Honors Courses**

As the first step in the establishment of an honors program, the School of Engineering began by offering two honors courses in the 2002–03 academic year: Computer Engineering 16H, Honors Introduction to Programming and Data Structures. Computer Engineering 16H provides a more challenging version of Computer Engineering 16, and Computer Science 13H provides a more challenging version of both Computer Science 12A, Introduction to Programming and Computer Science, and 12B, Introduction to Data Structures. Other honors courses are being planned. Honors courses have limited enrollment, typically fewer than 30 students, and students are eligible for them based on performance in high school and college courses, standardized test scores, and a personal interview.

**Graduate Study**

The School of Engineering offers eight 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:

- Bioinformatics M.S. (pending approval)
- Bioinformatics Ph.D. (pending approval)
- Computer Engineering M.S.
- Computer Engineering Ph.D.
- Computer Science M.S.
- Computer Science Ph.D.
- Electrical Engineering M.S.
- Electrical Engineering Ph.D.

These programs are described in subsequent sections. Development of a new applied mathematics and statistics graduate program is also in progress. The aim of these programs is to develop professionals who can address the complex scientific and technological problems of today and tomorrow.

School-Wide Information and Policies

Computing Facilities

The 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 1000-processor Linux cluster, logic analyzers, microprocessor development systems, a wireless network for mobile computers, and network support at 100MB/sec (see Baskin School of Engineering Computer Facilities, page 59).

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 57.

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 taken and passed all of a course’s prerequisites before attempting to enroll in a course with a prerequisite. Pre-enrolled students who then fail a prerequisite are no longer eligible to be enrolled in the course and will be dropped.

To enroll in Computer Science 101, a prerequisite to many upper-division courses, the prerequisite courses that must be completed or in progress are Computer Science 12B (or 13H), Computer Engineering 16 or 16H, Mathematics 19B, and one of the following: Mathematics 21, 22, 23A or 24, or Engineering 27L (formerly Mathematics 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 Codes

Students not meeting the regular prerequisite requirements for courses sponsored by the School of Engineering may consult with the course instructor to request a permission code to enroll. The instructor may ask a student to demonstrate the ability and potential to succeed in the course or may request additional information to formulate a decision.

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 Baskin Engineering Lab Support web page for specific course material fee amounts: http://www.soee.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 Baskin Engineering Laboratory Support web page for more information: http://www.soee.ucsc.edu/administration/labs.

Lower-Division Courses

1. Introduction to Engineering and Information Sciences (2 credits), F
   Exploratory 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 limited to 20. Enrollment restricted to first-year students. F. Ferguson, The Staff

2. Preparatory Calculus (2 credits), F,W,S
   Includes real and complex numbers, inequalities, linear and quadratic equations, functions, exponential and logarithmic functions, trigonometry, and analytic geometry, with applications in science and engineering. Students cannot receive credit for both this course and Mathematics 2A and 2B or 3. Mathematics 3 can substitute for course 2. Prerequisite(s): score of 20 or higher on Mathematics Placement Exam or Mathematics 2. (General Education Code: Q.) H. Zhou

5. Statistics, F,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 Mathematics 5.) (General Education Codes: IN, Q.) The Staff

7. Biostatistics, W
   Standard statistical techniques in biology and the medical sciences; examples taken from these fields are presented. Description of statistics and 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 Introduction to Biostatistics) (General Education Codes: 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 or 19A should not take this course. (Also offered as Economics 011A. Students cannot receive credit for both courses.) Prerequisite(s): score of 28 or above on Math Placement Exam. Students who do not place into precalculus should enroll in Math 1. (General Education Code: Q.) J. Katznelson

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. (Also offered as Economics 011B. Students cannot receive credit for both courses.) Prerequisite(s): course 11A or Economics 11A or a course in differential calculus (e.g., Mathematics 11A or 19A) is required as preparation for this class. (General Education Code: 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. Concurrent enrollment in course 27L is required. Prerequisite(s): Mathematics 19B or 22 or 23A or 26 or permission of instructor. (Formerly Mathematics 27.) T. He Staff

27L. Mathematical Methods for Engineers Laboratory (1 credit), F,W,S
   Elementary programming in Matlab. Graphical tools for visualizing solutions and solving equations numerically with Matlab software. Concurrent enrollment in course 27 is required. Prerequisite(s): Mathematics 19B or 22 or 23A or 26 or permission of instructor. T. He Staff

50. Engineering Mechanics, S
   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(s): Physics 5B/M or 6B/M, and concurrent enrollment in course 50L. (Formerly Electrical Engineering 50.) T. He Staff

50L. Engineering Mechanics Laboratory (1 credit), S
   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 50. T. He Staff

Upper-Division Courses

113. Managerial Statistics. W
   Practical methods for analyzing data relevant to the management sciences, with particular emphasis on information systems management. Basic topics in probability and statistics, including correlation and simple linear
regression, and multiple and logistic regression. Experience using statistical software package. Case studies drawn from business problems. Students cannot receive credit for this course and Economics 113. Prerequisite(s): Economics 1 and 2; and either Economics 11B or Mathematics 11B or 19B. (General Education Code: Q; H. Lee)

131. Introduction to Probability Theory. S
Introduction to probability theory and its applications. Conditional probability, axioms of probability and independence, random variables (discrete and continuous), joint probability distributions, properties of expectation, Central Limit Theorem, Law of Large Numbers, Markov chains. Students cannot receive credit for this course and Computer Engineering 107. Prerequisite(s): Mathematics 100 or Computer Science 101. (Formerly Mathematics 131A) R. Prado

*146. Chaotic Dynamical Systems.
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 Mathematics 145. Prerequisite(s): course 27, or Mathematics 27, or Mathematics 21 and 24. (Formerly Discrete Dynamical Systems) N. Balmforth

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. Prerequisite(s): course 27 or Mathematics 27. H. Wang

*162. Design and Analysis of Computer Simulation Experiments.
Methods for the design and analysis of computer simulation experiments: random number generation; estimation of sample size necessary to achieve desired precision goals; antithetic variables and other devices for increasing simulation efficiency; analysis of the output of large "deterministic" computer programs, exploring the sensitivity of outputs to changes in the inputs. Applications drawn mainly from engineering and environmental sciences. Prerequisite(s): course 5 or 7 or Computer Engineering 107 or permission of instructor. T. The Staff

Graduate Courses

203. Stochastic Processes. F
Probabilistic and statistical analysis of random processes: Markov chains, Markov random fields, hidden Markov models, point processes, Brownian motion, diffusions, and stochastic differential equations. Simulation of sample paths, probabilistic properties, parameter estimation, data analysis, applications to a variety of fields. Prerequisite(s): graduate standing or Engineering 131 (formerly Mathematics 131A) and Mathematics 21. A. Kottas

205. Mathematical Statistics. F
Graduate introduction to topics in mathematical statistics from the frequentist point of view: sufficiency, exponential families, least squares and maximum likelihood estimation, optimality theory for estimation, confidence intervals and significance testing, decision theory, convergence in probability and in law, central limit theorems, and efficiency and asymptotic normality. Enrollment restricted to graduate students. H. Lee

206. Bayesian Statistics. W
Introduction to Bayesian statistical methods for inference and prediction; exchangeability; prior, likelihood, posterior, and predictive distributions; coherence and calibration; conjugate analysis; Markov Chain Monte Carlo methods for simulation-based computation; hierarchical modeling; Bayesian model diagnostics, model selection, and sensitivity analysis. Students cannot receive credit for both this course and course 181. Prerequisite(s): graduate standing or permission of instructor. (Formerly course 181.) D. Draper

207. Intermediate Bayesian Statistical Modeling. S
Hierarchical modeling, linear models (regression and analysis of variance) from the Bayesian point of view; intermediate Markov chain Monte Carlo methods; generalized linear models, multivariate models, mixture models, hidden Markov models. Prerequisite(s): course 206 or permission of instructor. B. Sanó

Serves a dual purpose: provides an introduction to the ideas underlying the mathematical modeling of physical phenomena; and in discussing the various phenomena, this course either reminds or introduces mathematical concepts and techniques. Models described from diverse topics such as population dynamics, chemical reactions, fluid and solid mechanics, quantum theory, and probability. Mathematical techniques covered include advanced theory of ordinary and partial differential equations, eigenvalue problems, and linear stability theory. Enrollment restricted to graduate students or permission of instructor. T. The Staff

211. Applied Mathematical Methods I. F
Focus is on practical, analytical solution methods for partial differential equations. Topics include separation of variables, transform methods, classification, characteristics, shocks, nonlinear waves, and similarity solutions. Enrollment restricted to graduate students. H. Wang

212. Applied Mathematical Methods II. W
Covers perturbation methods: asymptotic series, stationary phase and expansion of integrals, matched asymptotic expansions, multiple scales and the WKB method, Padé approximants and improvements of series. Prerequisite(s): course 211. M. Mangel

Focuses on numerical solutions of differential equations. Topics include Runge-Kutta methods; error estimation and error control; consistency, stability, and convergence; conjugate gradient method; multigrid method; CFL condition; and high-resolution methods for conservation laws. Enrollment restricted to graduate students or permission of instructor. T. The Staff

Application of ordinary and partial differential equations and stochastic processes to problems in cell, organismal, and population biology. Topics include life history theory, sex ratio, nonlinear diffusion, effects of aggregation on population dynamics, and the population biology of disease. Prerequisite(s): graduate standing or consent of instructor. Enrollment restricted to graduate students. M. Mangel

216. Stochastic Population Theory. F
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. Enrollment restricted to graduate students or consent of instructor. M. Mangel

223. Time Series Analysis. S
Graduate level introductory course on time series data and models in the time and frequency domains: descriptive time series models; 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; DLMs for trends and seasonal patterns; and autoregression and time series regression models. Enrollment restricted to graduate students. R. Prado

241. Bayesian Nonparametric Methods. S
Theory, methods, and applications of Bayesian nonparametric modeling. Prior probability models for spaces of functions. Dirichlet processes. Polya trees. Nonparametric mixtures. Models for regression, survival analysis, categorical data analysis, and spatial statistics. Examples drawn from social, engineering, and life sciences. Prerequisite(s): course 206 or 207 or permission of instructor A. Kottas, The Staff

256. Linear Statistical Models. F
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 model diagnostics and model selection. Case studies drawn from natural, social, and medical sciences. Students cannot receive credit for this course and course 156. Prerequisite(s): course 131 or Computer Engineering 107 or permission of instructor. Enrollment restricted to graduate students. D. Draper, The Staff

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. Prerequisite(s): course 131 or Computer Engineering 107 or permission of instructor. Students cannot receive credit for this course and course 174. Enrollment restricted to graduate students. A. Kottas, The Staff

Prepares engineering 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. P. M. Atty, J. Callon

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 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. S. Kang, A. Kell

297. Independent Study or Research. F,W,S
Independent study or research under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to graduate students. T. The Staff

*Not offered in 2003–04
### Applied Mathematics and Statistics

Applied mathematics and statistics faculty offer courses under the sponsorship of the School of Engineering. These courses are designated ENGR and are listed in the engineering section of the catalog (see page 188). Applied mathematics and statistics faculty also teach courses in collaboration with Mathematics, Economics, and other departments.

#### Faculty and Professional Interests

**Professor**

- **Neil Balmforth**
  - 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 issues in fishery management; mathematical and computational aspects of disease

**Assistant Professor**

- **Athanassios Kottas**
  - Bayesian modeling and inference, survival analysis, semiparametric regression modeling, categorical data analysis, spatial statistics, inference under probability order constraints

- **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

- **Hongyun Wang**
  - Molecular modeling and biophysics, numerical analysis, fluid mechanics, computer animation, partial differential equations, parallel computing, statistical physics, data structures, fast algorithms

#### Bioinformatics

**Faculty and Professional Interests**

- **Manuel Ares, Jr.** (Molecular, Cell, and Developmental Biology)
  - Gene expression, RNA processing, structure and function of small nuclear RNAs

- **David Deaner, Emeritus** (Chemistry and Biochemistry)
  - A. Russell Flegal (Environmental Toxicology)
  - Anthropogenic perturbations of biogeochemical cycles

- **David Haussler** (Computer Science; Director, Institute for Quantitative Biomedical Research)
  - Genomics, bioinformatics, computational molecular biology, statistical models, machine learning, neural networks, decision theory, theory of computation

- **Richard Hughey** (Computer Engineering)
  - Computer architecture, parallel processing, computational biology

- **Kevin Karplus** (Computer Engineering, Undergraduate and Graduate Director of Bioinformatics)
  - Analysis of biological sequences, protein structure prediction

- **Suresh Lodha** (Computer Science)
  - Scientific visualization, geographic information visualization, sensor and computer vision, image processing, multi-modal human-computer interaction

- **Todd Lowe** (Computer Engineering)
  - Experimental and computational genomics, ncDNA gene finders, DNA microarrays to study the biology of archaea

- **Karen Ottemann** (Environmental Toxicology)
  - Environmental responses to pathogenic bacteria

- **Carol Rohlf** (Biomolecular Engineering)
  - Protein design, protein structure and function prediction, protein-protein interactions

- **Joshua Stuart** (Biomolecular Engineering)
  - Computational genomics

- **John Tamkun** (Molecular, Cell, and Developmental Biology)
  - Transcriptional regulation, molecular regulation of Drosophila development, regulation of gene expression

- **Hongyun Wang** (Engineering (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

- **Manfred K. Warmuth** (Computer Science)
  - Online learning, machine learning, statistical decision theory, neural computation, analysis of algorithms

- **W. Todd Wipke** (Chemistry and Biochemistry)
  - Computer design of new drug candidate molecules, computer-assisted instruction, molecular modeling, computational chemistry, molecular engineering, artificial intelligence, chemical information systems, intelligent tutoring systems

#### Program Description

The program in bioinformatics is a multidisciplinary program involving faculty of the Center for Biomolecular Science and Engineering. The program currently offers a B.S. degree in bioinformatics. The M.S. and Ph.D. degrees in bioinformatics are awaiting final approval as this publication goes to press.
Biomolecular 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.

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 foundation 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 have completed 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 adviser, assigned by the Baskin School of Engineering Undergraduate Advising Office, and with that adviser 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**:
  - 21A, Accelerated Cell and Molecular Biology (or 20A, Cell and Molecular Biology)
  - 21B, Accelerated Development and Physiology (or 20B, Development and Physiology)

- **Biomolecular Engineering**
  - 1B/M and 1C/N, General Chemistry Laboratory

- **Computer Engineering**
  - 16H, Honors Applied Discrete Mathematics or 16, Applied Discrete Mathematics

- **Computer Science**
  - 13H, Introduction to Programming and Data Structures (Honors), or both 12A, Introduction to Programming and 12B, Introduction to Data Structures

- **Engineering**
  - 27 and 27L, Mathematical Methods for Engineers Laboratory (formerly Mathematics 27); or both Mathematics 21, Linear Algebra, and 24, Ordinary Differential Equations

- **Mathematics**
  - 19A-B, Calculus for Science, Engineering, and Mathematics (Credit for one or both can be granted with adequate performance on the CEEB calculus AB or BC Advanced Placement examination.)
  - 23A-B, 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**
  - Biomolecular Engineering 100/L, Introduction to Bioinformatics Laboratory
  - One of the following:
    - Biomolecular Engineering 220, Protein Bioinformatics or 230, Computational Genomics or 195, Senior Thesis Research

- **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 or Engineering 131, Introduction to Probability Theory (formerly Mathematics 131A); and 206, Bayesian Statistics

- **Computer Engineering**
  - 185, Technical Writing; or W section of Biology 20L, Experimental Biology Laboratory

- **Computer Science**
  - 101, Abstract Data Types
  - 180, Database Systems

Advanced Programming

One of the following four courses:

Computer Engineering 177, Applied Graph Theory and Algorithms or Computer Science 104A, Fundamentals of Compiler Design I, or 109, Advanced Programming, or 115, Software Methodology

Required Electives

With preapproval from the undergraduate director for bioinformatics, students must select two additional courses as electives. The following courses are typical of the ones chosen:

- Biomolecular Engineering 110, 220, 230 Chemistry 108B/M
- Computer Engineering 108, 150, 151, 177
- Computer Science 104A, 104B, 109, 115, 116, 130, 160

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 Biomolecular Engineering 220, Protein Bioinformatics, or Biomolecular Engineering 230, Computational Genomics, which includes substantial projects, or Biomolecular Engineering 195, Senior Thesis Research. Students electing the senior thesis must submit a written thesis proposal to the undergraduate director of bioinformatics for approval prior to submitting the final thesis.

Bioinformatics Major Planners

Plan One is a suggested plan for students who are undecided between bioinformatics and another School of Engineering major. Plan Two is suggested for students undecided between bioinformatics and some other field in biology or chemistry.

Plan One

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>1st</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td>Math 23A</td>
</tr>
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<td>(fsh)</td>
<td>Cmps 12A core</td>
<td>Cmps 12B gen ed</td>
<td>Cmps 14H (or 16) gen ed</td>
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<td>(jun)</td>
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<td>3rd</td>
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<td>Cmps 185 elective</td>
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<td>4th</td>
<td>Brme 100A/L gen ed</td>
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<tr>
<td>(sr)</td>
<td>Brme 220 gen ed</td>
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</tbody>
</table>
Graduate Program

The pending graduate program in bioinformatics will offer 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 credits)—seven are required

Biomolecular Engineering

- 100L, Introduction to Bioinformatics Laboratory
- 220, Protein Bioinformatics
- 230, Computational Genomics

One graduate course, approved by the faculty, in each of the following three areas:

- Statistics (Engineering 206 recommended)
- Biology (Biology 200B recommended)
- Chemistry (Chemistry 200A recommended)

Electives (5 credits)—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-sampling 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

Adequate 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 advisor 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 advisor 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 advisor 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. 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 are required to present their research 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 research committee. The candidate must submit his or her 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 defense of the dissertation to the reading committee and attending faculty, who will then decide whether the dissertation is acceptable or requires revision.

Lower-Division Courses

The following courses are offered under the subject area of Biomolecular Engineering (BME).

60. Programming for Biologists and Biochemists, S

Lecture and lab-based course teaching programming skills needed by biologists and biochemists. No programming experience required, but basic computer skills assumed. Students without prior programming experience will be given the basic proficiency in Perl, BioPerl, and other Perl libraries needed to analyze, transform, and publish biological data. Prerequisite(s): Biology 20A or 21A. (General Education Codes: 1N, Q) C. Rohl

80G. Bioethics in the Twenty-First Century: Science, Business, and Society, W

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 Chemistry and Biochemistry 080G. Students cannot receive credit for both courses.) (General Education Code: T2-Natural Sciences.) D. Deamer, E. Suckid

Upper-Division Courses

100L. Introduction to Bioinformatics, F

Introduction to bioinformatics, the use of computational techniques to convert the masses of information from biochemical experiments (DNA sequencing, DNA chips, and other high-throughput experimental methods) into useful information. The emphasis is on DNA and protein sequence alignment and analysis. Prerequisite(s): Computer Science 12B, Computer Engineering 107 or Engineering 131; concurrent enrollment in course 100L required. Corequisite: Biochemistry 100A. Enrollment limited to 30. K. Karplus

100L. Introduction to Bioinformatics Laboratory (1 credit), F

Introduction to bioinformatics, the use of computational techniques to convert the masses of information from biochemical experiments (DNA sequencing, DNA chips, and other high-throughput experimental methods) into useful information. The emphasis is on DNA and protein sequence alignment and analysis. Prerequisite(s): Computer Science 12B; Computer Engineering 107 or Engineering 131; concurrent enrollment in course 100L required. Corequisite: Biochemistry 100A. Enrollment limited to 30. K. Karplus

110. Computational Biology Tools, F

Hands-on laboratory geared to teach basic tools used in computational biology (motif searching, primer selection, sequence comparison, multiple sequence alignment, gene finders, phylogenetics analysis, X-ray crystallography software), Web- and Unix-based tools/databases are used. Open to all science students; no prior Unix experience required. Prerequisite(s): Biology 100 or Biochemistry 100A. Enrollment limited to 25. T. Lowe

193. Field Study, F.W.S

Provides for individual programs of study with specific aims and academic objectives carried out under the direction of a BME faculty member and a willing sponsor at a field site, using resources not normally available on campus. Credit is based upon written and oral presentations demonstrating the achievement of the objectives of the course. Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. The Staff
193F. Field Study (2 credits). F,W,S
Provides for individual programs of study with specific aims and academic objectives carried out under the direction of a BME faculty member and a willing sponsor at a field site, using resources not normally available on campus. Credit is based upon written and oral presentations demonstrating the achievement of the objectives of the course. Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

A program of study arranged between a group of students and a faculty member. Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. 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. Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

195F. Senior Thesis or Research (2 credits).
Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

198. Individual Study or Research. F,W,S
Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

198F. Individual Study or Research (2 credits).
F,W,S
Prerequisite(s): Petition on file with sponsoring agency. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

199. Tutorial. F,W,S
For fourth-year students majoring in bioinformatics. Enrollment restricted to Bioinformatics majors. May be repeated for credit. The Staff

Graduate Courses

200. Research and Teaching in Bioinformatics (3 credits). F
Basic teaching techniques for teaching assistants, including responsibilities and rights of teaching assistants, resource materials, computer security, leading discussion or lab sessions, presentation techniques, maintaining class records, electronic handling of homework, and grading. Examines research and professional training, including use of library and online databases, technical typesetting, writing journal and conference papers, publishing in bioinformatics, giving talks in seminars and conferences, and ethical issues in science and engineering. Required for all teaching assistants. Enrollment restricted to graduate students. K. Karplus, T. Lowe, C. Rohl

200B. 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. (Formerly Computer Engineering 280B.) Enrollment restricted to graduate students or permission of instructor. T. Lowe

297. Independent Study or Research. F,W,S
Independent study or research under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Thesis research conducted under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Computer Engineering

Faculty and Professional Interests

Professor

ALEXANDRE BRANDWJN
Computer architecture, performance modeling, queueing networks, models of computer systems, operating systems

WAYNE WEI-MING DAI
Computer-aided design of VLSI circuits, layout synthesis, multichip modules, field-programmable gate arrays

J. JOAQUIN GARCIA-LUNA-ACEVES
Wireless networks, Internets, multimedia information systems

RICHARD HUGHES
Computer architecture, parallel processing, computational biology

KEVIN KARPLUS
Analysis of biological sequences, protein structure prediction, programming SIMD machines, VLSI chip design, technical writing

GLEN G. LANNON JR., Emeritus

PATRICK E. MANTY
Image systems, image processing, visualization, image and multimedia systems, digital signal processing, 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

TRACY LARRABEE
Test pattern simulation and generation, fault modeling, fault diagnosis, design verification, logic simulation

Assistant Professor

LUCA DE ALFARO
Embedded software, software engineering formal modeling, and analyses of systems: reactive, hybrid, and stochastic game theory

GABRIEL EKAIMI
Embedded systems, robust control and sensor-based reactive systems with applications to autonomous unmanned vehicles, cooperative vehicle swarms, and robotics

TODD LOWE
Experimental and computational genomics, ncRNA gene finders, DNA microarrays to study the biology of Archaea

TARA MADHYASTHA
Storage systems, high-performance computing, educational technology

ROBERTO MANDUCHI
Sensor processing and image understanding with application to autonomous navigation, sensor networks, and deep-space communications

KATIA OBRAZCZKA
Computer networks, distributed systems, operating systems, Internet information systems, mobile computing, wireless networks

HAI TAO
Image and video processing, computer vision, vision-based graphics, and human-computer interaction

LINDA WERNER
Software engineering testing, usability engineering, educational and social issues
Professor

BENJAMIN FRIEDLANDER (Electrical Engineering) Image and video processing, computer vision, vision-based graphics, and human-computer interaction.

DARRELL D. 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.

DOMINIC W. MASSARO (Psychology) Understanding language, speech perception and reading, language learning and speech technology, pattern recognition, concept learning, decision making, development of perception and cognition, human-machine interaction.

CHARLES E. MCDOWELL (Computer Science) Programming languages, parallel computing, operating systems, compilers.

IRA POHL (Computer Science) Artificial intelligence, programming languages, heuristic methods, educational and social issues, combinatorial algorithms.

R. MICHAEL TANNER (Computer Science) Information theory, error-correcting codes and graphs, complexity, VLSI systems, fault tolerance.

JANE P. WILHELM (Computer Science) Computer graphics, computer animation, modeling articulated bodies, dynamic simulation, behavioral animation, human and animal modeling, scientific visualization.

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. LOHDA (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.

ALEX T. PANG (Computer Science) Computer graphics, scientific visualization, and virtual reality interfaces.

Assistant Professor

ETHAN L. MILLER (Computer Science) File and storage systems, operating systems, computer security, distributed systems, performance evaluation, information retrieval.

HAMID SADJADPOUR (Electrical Engineering) Coding theory, equalization techniques, wireless communications, communication theory.

Adjunct Professor

HARWOOD G. KOLESKY, Emeritus

Program Description

Computer engineering focuses on the design, analysis, and application of computers and 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 the field is so broad, four specialized tracks for completing the program have been identified: systems programming, computer systems, networks, and digital hardware. Descriptions of these tracks follow in the section on major requirements.

Many computer engineering students continue their education through the M.S. degree. The Department of Computer Engineering offers an accelerated combined B.S./M.S. degree in computer engineering that enables undergraduates to move without interruption to the graduate program. Interested computer engineering majors should contact their adviser for more details. The graduate program of the Department of Computer Engineering also offers both the standard M.S. and the Ph.D. degrees.

Every major and minor must have a computer engineering faculty advisor, assigned by the Baskin School of Engineering Undergraduate Advising Office, and with that adviser must formulate a program of proposed course work that meets the major or minor requirements.

Courses for Nonmajors

The Computer Engineering Department offers courses 3, Personal Computer Concepts Software 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 12C, Computer Organization, 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 20N, 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. Admission to the major after a student has entered UCSC is based on performance in the foundation courses: Computer Science 12A and 12B, Computer Engineering 16, 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.

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 12C/L, Computer Organization/Laboratory

Computer Science 12A, Introduction to Programming

Computer Science 12B, Introduction to Data Structures

Electrical Engineering 70/L, Introduction to ElectroScience Laboratory

Mathematics


Mathematics 19A-B, Calculus for Science, Engineering, and Mathematics

Mathematics 23A-B, Multivariable Calculus

Engineering 27/L, Mathematical Methods for Engineers/Laboratory (formerly Mathematics 27); or Mathematics 21, Linear Algebra; and Mathematics 24, Ordinary Differential Equations

Science

Students must complete Physics 5A/L or 6A/L, 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 10F, 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
- 107, Mathematical Methods of Systems Analysis: Stochastic
- 110, Computer Architecture
- 121/L, Microprocessor System Design/Laboratory
- 185, Technical Writing for Computer Engineers

Computer Science
- 101, Abstract Data Types

Specialized Tracks

The following four tracks are specializations 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; or
- 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. 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
- 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
- 117/L, Embedded Software/Laboratory

Computer Science
- 104A, Fundamentals of Compiler Design I
- 104B, Fundamentals of Compiler Design II
- 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, or 126/L, Advanced Logic Design/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

Networks Track

The networks track focuses on communication between computers, covering both network hardware and protocols. Students finishing this track are well prepared for the design of wired and wireless network systems.

Computer Engineering
- 150, Introduction to Computer Networks
- 151, Network Administration
- 154, Data Communication; or Electrical Engineering 103, Signals and Systems and Electrical Engineering 151, Communications Systems
- Computer Science 111, Introduction to Operating Systems
- Electives: Computer Engineering 250, Multimedia Systems or 108, Data Compression, or 113, Parallel and Concurrent Programming or 152, Analysis and Design of Communication Protocols or 177, Applied Graph Theory and Algorithms

Digital Hardware Track

The digital hardware track focuses on hardware design and includes more electronics than the other tracks. Students finishing this track are well prepared for building hardware systems. This track is the closest one to an electronics major; the main differences are that it does not require as much electronics theory or analog electronic design, but because of the core computer engineering requirements, requires more software skills.

Computer Engineering
- 125/L, Logic Design with Verilog/Laboratory, or 126/L, Advanced Logic Design/Laboratory
- 173/L, High-Speed Digital Design
- Electrical Engineering 171/L, Analog Electronics or course 172/L, Linear and Nonlinear Circuits Laboratory
- Elective: any approved computer engineering or electrical engineering upper-division or graduate elective

Comprehensive Requirement

The senior comprehensive requirement for computer engineering majors is in two parts: a capstone course and a portfolio exit requirement.

Core Examination

Successful completion of the Computer Engineering Core Examination is a prerequisite to all capstone project courses and a requirement for graduation. The core examination is offered the first Saturday after instruction begins each fall, winter, and spring quarter. This examination verifies proficiency in the material covered in courses 100, 107, 110, and 121. Students are strongly encouraged to plan their course schedule to ensure completion of the core courses in the junior or early senior year and to take the examination as soon as possible thereafter.

Portfolio Exit Requirement

Students are required to submit a portfolio and exit survey. Students whose submissions are deemed inadequate, or whose submissions are not received by the required deadline, may be asked to revise and rewrite the portfolio or to complete an additional project course. The portfolios must be turned in electronically via http://www.soe.ucsc.edu/programs/ce/undergraduate/portfolio.html at least seven days before the end of instruction in the quarter of graduation.

The portfolios will be reviewed quarterly by the computer engineering undergraduate committee and must include the following:

- A hardware-oriented project report
- A software-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.soe.ucsc.edu/programs/ce/undergraduate/portfolio.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 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

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<th>Year</th>
<th>Fall</th>
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<td>Cmps 12A</td>
<td>Cmps 12B</td>
<td>Cmps 12C/L</td>
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Plan Two

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<td>Cmps 12B</td>
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<tr>
<td>2nd</td>
<td>Phys 54/L</td>
<td>Math 23A</td>
<td>Phys 5C/N</td>
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<td>Math 23B</td>
<td>Cmps 100/L</td>
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<td>Cmps 16 or 16H</td>
<td>Cmps 80E</td>
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Minor Requirements

Requirements for the minor in computer engineering are the following:

Mathematics
19A-B, Calculus for Science, Engineering, and Mathematics
23A, Multivariable Calculus

Engineering 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 Discrete Mathematics

Science
Physics 5A/L or 6A/L, and 5C/N or 6C/N

Core Requirements

Computer Engineering
123/L, Computer Organization/Laboratory
100/L, Logic Design/Laboratory
110, Computer Architecture
121L, Microprocessor System Design/Laboratory
Computer Science
12A, Introduction to Programming
12B, Introduction to Data Structures
101, Abstract Data Types
Electrical Engineering
70/L, Introduction to Electronic Circuits/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, advance planning is essential. Interested students should contact the department and their faculty adviser 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 the 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 Electronic Circuits/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.

In addition, the selection of graduate elective courses from Computer Engineering’s list of approved graduate courses (available online or from the department) 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 Worksheet 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 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

Up to 10 credits of either graduate courses (not seminars) in related disciplines outside the School of Engineering (requires adviser and computer engineering graduate committee approval) or upper-division undergraduate courses when necessary to strengthen the student’s preparation for graduate studies (requires adviser 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 adviser for the proposed thesis. In consultation with the adviser, 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 Worksheet for the list of associated courses and instructions on fulfilling this requirement.

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 (or project when deemed appropriate by the faculty responsible) of an associated course. Students should obtain a Computer Engineering Base Worksheet for the list of associated courses and instructions on fulfilling this requirement.

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 (or project when deemed appropriate by the faculty responsible) of an associated course. Students should obtain a Computer Engineering Base Worksheet 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
course 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 (subject to 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 adviser approval. Undergraduate courses may not be used to satisfy Ph.D. course requirements. Ph.D. students who have satisfied the requirements for the master's degree are eligible to receive a master's degree.

Examinations and Dissertations
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, by 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 adviser 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. 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 adviser 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 syllabi, 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 no 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 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 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.

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. Designed for students with little or no experience using computers. (General Education Code: IN) P. Mantey, The Staff

12C. Computer Organization, F,W,S
Introduction to computer organization and assembly language programming. Topics include assembly language, number systems, instruction sets, machine data structures, computer architecture, and memory organization. Also covers assemblers, monitors, compilers, debuggers, linkers, loaders, and operating systems. Prerequisite(s): Computer Science 12B or 13H; previous or concurrent enrollment in course 12L required. Enrollment limited to 140. (General Education Code: IN) R. Hughey, F. Ferguson, The Staff

12L. Computer Organization Laboratory (1 credit), F,W,S
Laboratory sequence in assembly language programming. The lab examines both RISC and microprocessor programming. One two-hour laboratory per week with an optional second two-hour laboratory. Prerequisite(s): Computer Science 12B or 13H; previous or concurrent enrollment in course 12C required. Enrollment limited to 140. R. Hughey, F. Ferguson, The Staff

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 Mathematics 19A or 11A. (General Education Code: Q) L. deAlfaro, M. Schlag, T. Larrabee, H. Tao, The Staff

16H. Honors Applied Discrete Mathematics, S
Honors version of course 16: 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 16, then petition to be
accepted into 16H. Top students will be accepted. Prerequisite(s): permission of instructor. Enrollment limited to 60. (General Education Code: Q.) K. Karplus

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: T6-Natural Sciences or Humanities and Arts.) G. Cok

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. CAT3 accounts are recommended. (General Education Code: T2-Natural Sciences.) R. Manduchi, K. Obraczka, A. Varma, 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. The Staff

Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. The Staff

99F. Tutorial (2 credits). F, W, S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. The Staff

Upper-Division Courses

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. F. Ferguson, T. Larrabee, S. Peterson

100L. Logic Design Laboratory (1 credit). F, W, S
Laboratory sequence illustrating topics covered in course 100. One two-hour laboratory session per week. Weekly laboratory assignments which require the use of the oscilloscope, TTL circuits, computer-aided design and simulation tools, and programmable logic. Students are billed for a materials fee. Prerequisite(s): course 16 or 16H; previous or concurrent enrollment in course 100 required. Enrollment limited to 60. F. Ferguson, T. Larrabee, S. Peterson

Introduction to fundamental tools of stochastic analysis. Probability, conditional probability, Bayes Theorem, random variables, independence, discrete-time stochastic processes, and Markov chains. Instructor’s choice of additional topics, most likely drawn from confidence measures, difference equations, transform methods, stability issues, applications to reliability, queues, and hidden Markov models. Students cannot receive credit for this course and Engineering 131. Prerequisite(s): course 16 or 16H; and Engineering 27 (formerly Mathematics 27) or Mathematics 2A. A. Brandwajn, J. García-Luna-Aceves, K. Karplus, R. M. andouchi, H. Sabdjapour

*108. Data Compression.

Random variables, information theory, Bernoulli trials, Markov models, probabilities, statistical data compression, Huffman codes, arithmetic codes, run-length codes, Ziv-Lempel codes. Adaptation to the statistics of the data. Data context modeling and predictive coding. Programming of data compression algorithms in the C language. Knowledge of C language and Unix required. Prerequisite(s): course 107 or Engineering 131 (formerly Mathematics 131A); and Computer Science 101. G. Liangdon Jr., R. Manduchi

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, performance. Offered in alternate quarters. Prerequisite(s): courses 12C, 12L and 16. A. Brandwajn, F. Ferguson, R. Hughey, T. The Staff

*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 other platforms. Prerequisite(s): course 110 and Computer Science 101. R. Hughey, K. Obraczka, L. de Alfaro, T. Madhyasta

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. L. de Alfaro

117L. Embedded Software Laboratory (1 credit).

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 (event-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 117 is required. Enrollment limited to 30. L. de Alfaro

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. Prerequisite(s): courses 12/L and 100/L; Electrical Engineering 70/L; previous or concurrent enrollment in course 121 required. Enrollment limited to 40. R. Hughey, P. Chan, S. Petersen

123A. Computer Engineering Design Project I. (3 credits), F
First of a two-course sequence that is culminating of computer engineering (CE) program. Apply knowledge and skills gained in elective track to complete a major design project. Complete research, specifications, planning, and procurement for a substantial project. Includes technical discussions, design reviews, and formal presentations as well as engineering design cycles, engineering teams, and professional practices. Formal technical specification of approved project presented to CE faculty. Prerequisite(s): courses 121L and 121L; previous or concurrent enrollment in course 185; passed core exam if computer engineering major; permission of instructor. T. The Staff

123B. Computer Engineering Design Project II. W, S
Second of a two-course sequence in computer engineering design. Fully implement and test system designed and specified in course 123A. Formal written report, oral presentation, and demonstration of successful project to review panel of computer engineering faculty required. Students billed a materials fee. Prerequisite(s): courses 12A, 12S, and 185. Enrollment limited to 35. T. The Staff

125. Logic Design with Verilog. F
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. All examples and assignments will use the Verilog Hardware Description Language. Prerequisite(s): courses 121L and 121L; concurrent enrollment in course 121L. Students required to pass computer engineering core exam in first week of class to remain enrolled. Enrollment limited to 20. P. Chan, K. Karplus, A. Varma

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(s): courses 121L and 121L; concurrent enrollment in course 125. Enrollment limited to 20. P. Chan, K. Karplus, A. Varma

126. Advanced Logic Design. S
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. Prerequisite(s): courses 121L 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. Prerequisite(s): 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

150. Introduction to Computer Networks. F, S

151. Network Administration. F, S
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 formal 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, The Staff

Analysis and design of communication protocols for computer networks. Random processes and queuing theory applied to performance analysis of communication protocols. Protocol verification methods. Channel access protocols, protocols for point-to-point and point-to-multipoint reliable transmission, routing protocols, multicast protocols, and congestion control protocols. Prerequisite(s): courses 107 and 150. J. Garca-Luna-Aceves

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. (Also offered as Electrical Engineering 153. Students cannot receive credit for both courses.) Prerequisite(s): Electrical Engineering 103, P. M. Imanfar

154. Data Communications. W
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(s): Electrical Engineering 70 and 70L, and course 107 or equivalent background in probability theory and random variables. P. Mainey

163. Multimedia Processing and Applications. W
Introduction to basic concepts and techniques in multimedia systems with emphasis on acquisition, processing, and transmission of digital media. Topics include digital image formation and acquisition, image enhancement and compression, digital video standards, 3D graphics and animation as digital media, audio representation and transmission, and basic concepts in speech recognition. Prerequisite(s): course 107; concurrent enrollment in course 163L. H. Tao

163L. Multimedia Processing and Applications Laboratory (1 credit). W
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. H. Tao

172. Linear and Nonlinear Circuits. F
Kochhoff’s laws. Telelegen’s theorem. Linear and nonlinear resistive elements. Linear, nonlinear, passive, and active circuits. First- and second-order linear and nonlinear dynamic circuits (including switching, triggering, and memory circuits). General network analysis. Sinusoidal steady-state analysis. Laplace transform. Natural frequencies and network functions such as poles, zeros, stability, and convolution. Sparse tableau analysis and modified nodal analysis. Introduction to numerical methods for computer aided analysis: Gaussian Elimination and LU decomposition, Newton-Raphson algorithm, forward and backward Euler method and Trapezoidal method. Prerequisite(s): Electrical Engineering 70L; previous or concurrent enrollment in course 172L. R. Da i

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 70L; previous or concurrent enrollment in course 172L. R. Da i

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 different logic families, measurement techniques, transmission lines, ground planes and grounding, terminations, power systems, connectors/ribbon cables, clock distribution, shielding, electromagnetic compatibility and noise suppression, and bus architectures. Prerequisite(s): Electrical Engineering 70L; previous or concurrent enrollment in course 173L is required. Enrollment limited to 30. P. Chan, S. Petersen

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 70L; previous or concurrent enrollment in course 173 is required. Enrollment limited to 30. P. Chan, S. Petersen

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 connectivitiy, routing, matching, and embedding of graphs. Graph theory and algorithms are developed around applications in computer engineering. Prerequisite(s): Computer Science 101. M. Schlag, The Staff

185. Technical Writing for Computer Engineers. W,S
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 puzzle, survey article, proposal, progress report, formal technical report, and oral presentation. Ability to read Pascal or C is assumed. Courses such as Computer Science 12A or 60G or 60N are sufficient and recommended for students lacking Pascal or C reading ability. Prerequisite(s): satisfaction of the Subject A and Composition requirements, Computer Science 12B. Enrollment limited to 60. Enrollment restricted to bioinformatics, computer engineering, computer science, electrical engineering, and information systems management majors. (General Education Code: W.) K. Karplus, T. Larabee, The Staff

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 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. May not normally be repeated for credit. Prerequisite(s): petition on file with sponsoring agency. 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 Computer Engineering Department 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. May not normally be repeated for credit. Prerequisite(s): petition on file with sponsoring agency. The Staff

A program of independent study arranged between a group of students and a faculty member. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

Prerequisite(s): petition on file with sponsoring agency. The Staff

195F. Senior Thesis Research (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

*Not offered in 2003–04
198. Individual Study or Research, F, W, S
Prerequisite(s): petition on file with sponsoring agency. The Staff

198F. Individual Study or Research (2 credits), F, W, S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F, W, S
For fourth-year students majoring in computer engineering. Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F, W, S
For fourth-year students majoring in computer engineering. Prerequisite(s): petition on file with 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, resource 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 T.A.s. Enrollment restricted to graduate students. A. Brandwajn, K. Karplus, T. Larrabee, P. Kadalis, M. Schlag

202. Computer Architecture, F, S
Provides a thorough and fundamental treatment of the art of computer architecture. Topics include concepts of von Neumann architectures, methods of evaluating CPU performance, instruction-set design and examples, compiler issues, instruction pipelining, superscalar processors, methods for reduction of branch penalty, memory hierarchies, I/O systems, floating-point arithmetic, and current issues in parallel processing. Prerequisite(s): course 110. Enrollment limited to 30. Enrollment restricted to graduate students; undergraduates may enroll if they have completed course 110 and with consent of instructor. P. Chan, A. Varma, R. Hughey

*220. Parallel Processing
An introduction to massively parallel computing on array processors and multiprocessors. A study of special- and general-purpose parallel architectures and the applications they support. Networks and memory hierarchies for multiprocessors. Evaluation of programming methodologies. Emphasizes architectures that scale to thousands of processing elements. Prerequisite(s): course 202. Enrollment restricted to graduate students; undergraduates may enroll with permission of instructor. Published in alternate academic years. R. Hughey

222. VLSI Digital System Design, S
Introduction to custom integrated circuit design. Topics include nMOS and pMOS switches as logic devices, CMOS logic design, 2-phase clocking, stick diagrams, cell layout, regular control structures, simulation, RC timing, CAD design tools, and design for testability. Intended to familiarize students with the design techniques and tools needed for full-custom chip design. Undergraduates may enroll if they have completed course 123/L or 126/L. Offered in alternate academic years. W. Dai, K. Karplus

*224. Testing Digital Circuits
An introduction to the theory and practice of testing. Topics are chosen from fault and defect models, test generation for combinational and sequential circuits, fault simulation, scan-design and built-in self-test. Enrollment restricted to graduate students; undergraduates may enroll if they have completed Computer Science 101. T. Larrabee, F. Ferguson

*225. Introduction to ASIC Systems Design, S
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 designs. Final project is the complete design of a small system using FPGAs. Enrollment limited to 10. Enrollment restricted to graduate students; undergraduates may enroll if they have completed courses 171/L and 202. Offered in alternate academic years. P. Chan

*226. Computer-Aided Analysis of Electrical Circuits
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 171/L. Offered in alternate academic years. P. Chan

*227. Advances in Computer-Aided Synthesis of VLSI Circuits
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 are 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. Dai

*228. Semiconductor Fabrication Technology
A graduate-level introduction to the processes used to make integrated circuits, surveying the underlying science behind the technology, using current process techniques as examples. Where appropriate, the implications of the process for the design of integrated circuits are discussed. Prerequisite(s): course 222. Enrollment limited to 32. Offered in alternate academic years. F. Ferguson

Introduction to methods of analysis of computer system performance. Predictive performance models with emphasis on queuing models. Exact and appropriate solution methods, discrete-event simulation, and numeric iterative approaches. Analytical solutions and their computation. Separable queueing networks, decomposition approaches. Examples of practical application. Performance measurement, model validation, robustness of models and operational analysis. Enrollment limited to 20. Enrollment restricted to graduate students. Offered in alternate academic years. A. Brandwajn

*232. Arithmetic Processors
Concept of number systems: binary additions, multiplications, divisions, elementary function evaluations; algorithm acceleration; floating-point and significant arithmetic; IEEE standards; technology-related issues; algorithm evaluation by implementation with gate arrays. Prerequisite(s): course 202. Enrollment limited to 15. Enrollment restricted to computer engineering graduate students. 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, video, 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): enrollment restricted to graduate students; undergraduates may enroll if they have completed course 150 and either course 108 or Electrical Engineering 103. Enrollment restricted to graduate students. R. M anduch

251. Error-Control Coding, W
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. Sadeghpour

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 networks, 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 is 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. (Former course 252, Computer Networks). J. Garcia-Luna-Aceves, A. Varma

253. Digital Computer Implementation of Linear Systems
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 computing speed. Applications in audio, communications, medicine, and control systems. Enrollment restricted to graduate students; undergraduates may enroll in this course if they have completed course 153 or have other background in signals and systems and with consent of the instructor. Offered in alternate academic years. P. Mantey

254. High Speed Computer Networks, S
Fiber-optic technology; fiber-optic link design; network protocols; 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

*Not offered in 2003-04
*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, inter-networking, 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. García-Luna-Aceves.

*257. Wireless and Mobile Networks. 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-layer issues. Prerequisite(s): course 252B or permission of instructor. Enrollment limited to 20. K. Obraczka.

263. Data Compression and Image Coding, W 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 Jr.


*265. Image and Video Coding. Topics include still image compression and moving picture coding based upon the international standards called JPEG and MPEG. Theory of transforms including the Hadamard transform, 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 limited to 29. Enrollment restricted to computer engineering, computer science, or electrical engineering majors. G. Langdon Jr.

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, F Introduction to methods for modeling, analyzing, and reasoning about discrete systems, such as hardware and software designs. First part of course presents basic models for hardware and software systems and introduces methods for system specification, verification, abstraction, and stepwise refinement of a design into an implementation. Second part discusses role of structure: hierarchy, system composition, and interface specification. Prerequisite(s): some mathematical background is assumed. Enrollment restricted to graduate students or by permission of instructor. L. de Alfaro.

280N. Seminar on Networks (2 credits), F, W, S 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. García-Luna-Aceves, K. Obraczka.

280P. Seminar on Parallel Processing (2 credits), F, W, S 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 limited to 20. Enrollment restricted to graduate students. May be repeated for credit. R. Hughes.

*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. J. Yellin, P. Maranty, W. Dai.

290L. Advanced Topics in VLSI Computer-Aided Design. 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. M. Schlag, T. Larrabee, W. Dai, K. Karplus, F. Ferguson, P. Chan.

*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, systolic 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. R. Hughes, T. Madhyastha.

290N. Topics in Computer Performance. S Selected topics of current interest in the area of computer system performance. Subjects may include aspects of large systems, performability, 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 limited to 20. Enrollment restricted to seniors and graduate students. H. Tao, S. Lodha.

*293. Advanced Topics in Computer Engineering. 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. Prerequisite(s): petition on file with sponsoring agency. The Staff.

299. Thesis Research, F, W, S Thesis research conducted under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. The Staff.

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Computer Science

Faculty and Professional Interests

**Professor**

- **Martin Abadi**
  - Computer and network security, principles of programming languages, specification and verification methods

- **David Haussler**
  - Genomics, bioinformatics, computational molecular biology, statistical models, machine learning, neural networks, decision theory, theory of computation

- **David P. Helmbold**
  - Machine learning, computational learning theory, analysis of algorithms

- **Harry D. Huskey**
  - Emeritus

- **Phokion G. Kolaitis**
  - Logic in computer science, automated deduction, computational complexity, database theory

- **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

- **Ira Pohl**
  - Artificial intelligence, programming languages, heuristic methods, educational and social issues, combinatorial algorithms

- **R. Michael Tanner**
  - Information theory, error-correcting codes and graphs, complexity, VLSI systems, fault tolerance

- **Allen Van Gelder**
  - Logic in programming 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. Wilhelms**
  - Computer graphics, computer animation, modeling of articulated bodies, dynamic simulation, behavioral animation, human and animal modeling, scientific visualization

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*Not offered in 2003–04*
Associate Professor

ROBERT A. LEVINSON (Computer Engineering)
Artificial intelligence, machine learning, heuristic search, associative pattern retrieval, hierarchical reinforcement learning, neural networks

SURESH K. LODHA (Computer Engineering)
Scientific visualization, geographic information visualization, sensor and computer vision, image processing, multi-modal human-computer interaction

ETHAN L. MILLER (Computer Engineering)
File and storage systems, operating systems, computer security, distributed systems, performance evaluation, information retrieval

ALEX T. PANG (Computer Engineering)
Computer graphics, scientific visualization, and virtual reality interfaces

Assistant Professor

SCOTT A. BRANDT (Computer Engineering)
Soft real-time systems, quality of service, distributed systems

CORMAC FLANAGAN (Computer Engineering)
Programming languages and software engineering, with an emphasis on specifying and checking correctness properties of sequential and multithreaded programs

RAYMOND V. RAY (Computer Engineering)
Software engineering

WANG-CHEW TAN (Computer Engineering)
Data provenance/forensics, data archiving, scientific database, database query languages, semistructured data, combinatorial optimization on databases, problems

E. JAMES WHITEHEAD III (Computer Engineering)
Software engineering, software configuration management, web, hypertext, collaborative authoring, hypertext versioning, Internet information systems

Acting Assistant Professor

NEOKLES POLYZOTIS (Computer Engineering)
Synopses for XMI, data, visual query interfaces, query processing, and optimization

Adjunct Professor

MARTIN GRISS (Software Engineering)
Software Engineering

MICHAEL ZYDA (Computer Engineering)
Computer graphics, networked 3-D virtual environments, modeling and simulation

Lecturer

WESLEY MACKLEY (Computer Engineering)
Compiler construction, programming languages

LINDA WERNER (Film and Digital Media)
Software engineering, testing, usability engineering, educational and social issues

Professor

ALEXANDRE BRANDWAJN (Computer Engineering)
Computer architectures, performance modeling, queueing network models of computer systems, operating systems

WAYNE WEI-MING DAI (Computer Engineering)
Computer-aided design of VLSI circuits, layout synthesis, multi-chip 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

J. MIGHTY G. HAKAMBER (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 SIM D machines, VLSI chip design, technical writing

GLEN G. LANGDON JR., Emeritus (Computer Engineering)

PATRICK E. MANTY (Computer Engineering)
Computer imagery, systems, image processing, visualization, image and multimedia systems, digital signal processing, real-time control

GEOFFREY K. PULLUM (Linguistics)
Syntax, English grammar, mathematical and computational linguistics, philosophy of linguistics

MARTINE E. F. SCHLAG (Computer Engineering)
VLSI design tools and algorithms, VLSI theory, field-programmable gate arrays, FPGA-based computing engines

ANUJAN VARMA (Computer Engineering)
Computer networking, computer architecture, optical networks

W. TODD WIPKE (Chemistry and Biochemistry)
Computer design of new drug candidate molecules, computer-assisted instruction, molecular modeling, computational chemistry, molecular engineering, artificial intelligence, chemical information systems, intelligent tutoring systems

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

JOEL YELLIN (Natural Sciences, Environmental Science)
Classical and quantum lattice dynamics, nonlinear waves

Associate Professor

PAK K. CHAN (Computer Engineering)
Placement and routing algorithms, field-programmable gate arrays, spectral-based partitioning, circuit theory, computer arithmetic

TRACY LARRABEE (Computer Engineering)
Test pattern simulation and 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 instruction 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; 10, Introduction to Computer Science; 80A, Systems and Architecture; 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 12C, 16, and 16H may, at the discretion of the department, be disqualified from the major.
The department may, at its sole discretion, disqualify from the major any student making two unsuccessful attempts in any one of the following principle courses commonly used to satisfy degree requirements:

- Computer Engineering 12C, 16, 16H, 100, 107, and 110;
- Engineering 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, such as maintaining 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**

Effective fall 2001, the Computer Science Department requires letter grading for all courses applied toward the B.A., B.S., and minor in computer science 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 science majors but sponsored by other departments.

**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 that 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 and 12B, exposes students to both Java and C. Many upper-division courses that involve programming use the C programming language. Transfer students who are not familiar with both Java and C may need to take a remedial course. Students familiar with C++ only 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 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 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, 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. Out 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 nine required preparatory courses:

- Computer Science 12A, Introduction to Programming
- 12B, Introduction to Data Structures
- 101, Abstract Data Types
- Computer Engineering
- 12C/L, Computer Organization/Laboratory
- 16, Applied Discrete Mathematics, or 16H, Honors
- 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
- Engineering
- 27, Mathematical Methods for Engineers (formerly Mathematics 27)
- 28A, Engineering Mathematics I
- 28B, Engineering Mathematics II
- 28C, Engineering Mathematics III
- 28D, Engineering Mathematics IV
- 11, Parallel and Concurrent Programming
- 112, Embedded Software Laboratory
- 121/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
- 154, Data Communications
- 155, Computer Networks Project
- 163/L, Multimedia Processing and Applications Laboratory

**Computer Science**

102, Introduction to Analysis of Algorithms
130, Computational Models
132, Computability and Computational Complexity

**Computer Engineering**

107, Mathematical Methods of Systems Analysis
108, Data Compression
154, Data Communications
177, Applied Graph Theory and Algorithms

**Electrical Engineering**

103, Signals and Systems
153, Digital Signal Processing (formerly Computer Engineering 153)

**Engineering**

131, Introduction to Probability Theory (formerly Mathematics 131A)
146, Discrete Dynamical Systems
147, Computational Models and Applications
156, Linear Statistical Models

**Mathematics**

115, Graph Theory
117, Advanced Linear Algebra
126, Mathematical Control Theory
146, Linear Programming
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, Introduction to Computer Graphics
161, Visualization and Computer Animation
180, Database Systems
190X, Mathematical Cryptography
204, Compiler Design

**Computer Engineering**

100/L, Logic Design/Laboratory
110, Computer Architecture
113, Parallel and Concurrent Programming
117/L, Embedded Software Laboratory
121/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
154, Data Communications
155, Computer Networks Project
163/L, Multimedia Processing and Applications Laboratory
Electrical Engineering
130, Introduction to Optoelectronics and Photonics

**Depth Sequence List**
- **Mathematics**
  - 104A, Introduction to Linear Algebra
  - 104B, Calculus of Several Variables
- **Computer Engineering**
  - 100/L, Computer Science 111, and Computer Engineering 110 or 121/L
- **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

**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, Introduction to Programming
12B, Introduction to Data Structures
101, Abstract Data Types ‡
102, Introduction to Analysis of Algorithms ‡
104A, Fundamentals of Compiler Design ‡
111, Introduction to Operating Systems ‡
12A, Comparative Programming Languages ‡
130, Computational Models ‡

**Computer Engineering**
12C/L, Computer Organization/Laboratory
16, Applied Discrete Mathematics or 16H, Honors Applied Discrete Mathematics
107, Mathematical Methods of Systems Analysis
131, Introduction to Probability Theory ‡ (formerly Mathematics 131A)
110, Computer Architecture ‡

**Mathematics**
19A-B, Calculus for Science, Engineering, and Mathematics
23A, Multivariate Calculus

**Engineering**
27/L, Mathematical Methods for Engineers
27/L, Linear Algebra; and 24, Ordinary Differential Equations

**Physics or Chemistry**

Either two physics or two chemistry courses, with their associated laboratories, from the following:
- Physics 5A/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 1CN, General Chemistry Laboratory
- Chemistry 4A/L, General Chemistry with Quantitative Analysis Laboratory
- Chemistry 4B/M, General Chemistry with Quantitative Analysis 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 exit requirements: pass the department's senior comprehensive exam, 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.

The senior comprehensive exam is offered once a year during spring quarter. It is designed to be passed by a student who has a good grasp of the material covered in courses 101, Abstract Data Types, and at least five of the courses marked with a double dagger (‡) in the listings above. Students who take mathematics or computer engineering courses for their theory and practice requirements, or who substitute a course not listed in the catalog, are advised that the senior comprehensive exam includes only material covered in course 101 and courses marked with a double dagger (‡) in the listings above.

A student is allowed to take the comprehensive examination a maximum of two times; if the examination is taken twice, the second score will be the official score appearing on the student's record. However, if a student fails the exam on 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 this 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 in place of the senior comprehensive exam 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 One A and Two A are suggested guidelines for students who are committed to the major early in their academic career. Plans One B and Two B 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**

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<th>Year</th>
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<tr>
<td>1st</td>
<td>Math 19A</td>
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<tr>
<td>2nd</td>
<td>Math 19A</td>
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**Plan Two A, B.S. Degree**

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<tbody>
<tr>
<td>1st</td>
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<td>Cmps 12B</td>
<td>Cmps 12C/L</td>
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<tr>
<td>2nd</td>
<td>Math 19A</td>
<td>Math 19B</td>
<td>Cmps 12C/L</td>
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**Plan One B, B.A. Degree**

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**Plan Two B, B.S. Degree**

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<td>Math 23A</td>
<td>Eng 27/L</td>
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**Minor Requirements**
Courses required for the computer science minor are Mathematics 19A-B and 23A; Engineering 27/L (formerly Mathematics 27); courses 12A, 12B, and 101; Computer Engineering 12C/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). In selecting the four upper-division courses, students may 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 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 [http://www.soe.ucsc.edu/](http://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;
- 206, 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](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](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 adviser and the graduate director.

**Project**

Completion of a master’s project 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. After accepting the proposal, the faculty member becomes the thesis adviser. In consultation with the adviser, 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;
- 206, 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](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](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 adviser 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. After accepting the proposal, the faculty member becomes the thesis adviser. In consultation with the adviser, 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.

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 exam committee, approved by the graduate committee and 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 adviser and the graduate committee.

Courses from other institutions may not be applied to the M.S. degree course requirements.

**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/cg/graduate/SCCcurrent.html](http://www.soe.ucsc.edu/programs/cg/graduate/SCCcurrent.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. (General Education Code: IN.) P. Franca

**109. Introduction to Computer Science, F,S**

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 without reliance on sophisticated mathematical tools. (General Education Code: IN.) The Staff

**10A. 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 Mathematics 19A (Mathematics 2B or 3 or Mathematics Placement Exam score of 40 or higher) or completion of Mathematics 19A or 11A. (General Education Code: IN.) The Staff

**12A. Introduction to Programming, 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. Enrollment limited to 150. (General Education Code: IN.) W. Mackey, The Staff

**18H. Introduction to Programming and Data Structures (Honors), F,W,S**

Provides an accelerated introduction to programming and data structures. Includes a review of basic programming concepts and computer languages. Impact of computers on society. Designed for students with little or no experience with Unix is assumed. Prerequisite(s): course 12B, Computer Engineering 27 (formerly Mathematics 27). Enrollment restricted to School of Engineering majors. A. Van Gêder, E. M.iller, P. Tantalo

**104B. Fundamentals of Compiler Design II. S**

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 12C and 12L. D. Long, W. Mackey

**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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

**99. Tutorial, F,W,S**

Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

**99F. Tutorial (2 credits), F,W,S**

Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The 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, Computer Engineering 16, Mathematics 19B, and one course from the following: Mathematics 21, 22, 23A, 24, or Engineering 27 (formerly Mathematics 27). Enrollment restricted to School of Engineering majors. A. Van Gêder, E. M.iller, 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. D. H. eimbold, S. Lodha, A. Van Gêder, M. Warms

**206**
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 12C or 12L. Enrollment restricted to School of Engineering majors. S. Brandt. D. Long, E. Miller

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. C. McDowell. I. Polt

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. D. Long. E. Miller

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 (C. McDowell). A. Van Gelder. D. Long. W. M. Adey. M. Abadi

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 104A or 111 or 180. Enrollment limited to 25. Enrollment restricted to senior computer science, computer engineering, and information systems management majors. L. Werner. E. Whitehead

116. Software Design 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): courses 115, either 104A or 111, and Computer Engineering 185. 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 limited to 100. Enrollment restricted to School of Engineering majors. M. Abadi. E. Miller

129. Data Storage Systems. F
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. T. Madhyastha, S. Brandt. D. Long. E. Miller

130. Computational Models. F
Various representations for regular languages, context-free grammars, normal forms, parsing, pushdown automata, pumping 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. P. Kolaitis. M. Warmuth. D. H idnbold

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 non-symbolic methods, local versus global methods, hierarchical organization and control, and brain modeling versus engineering approaches. Lisp or Prolog may be introduced. Involves one major project or regular programming assignments. Prerequisite(s): courses 101 and one of the following: course 130, Computer Engineering 177, or Mathematics 115. R. Levinson. I. Polt

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 drawings, 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 Engineering 27 (formerly Mathematics 27). Enrollment limited to 35. A. Pang. S. Lodha. J. Wilhelms

161. Visualization and Computer Animation. W
Introduction to standard techniques of computer animation and data visualization. Topics include mathematical foundations; creature and behavioral animation; scalar, vector and tensor visualization methods. Involves programming exercises, instruction in available software, and a project. Prerequisite(s): course 160 or equivalent. Enrollment limited to 35. Enrollment restricted to students majoring in computer science, computer engineering, or electrical engineering. A. Pang. S. Lodha. J. Wilhelms

Introduction to the concepts, approaches, tools, and methodology of database design. Covers the entity-relationship model, the relational model, algebraic relational calculus, commercial languages (such as SQL and QBE), functional dependencies, normal forms, design theory, and optimization. Other topics may include concurrency control, distributed systems, security, and knowledge bases. Prerequisite(s): course 101. P. Kolaitis. W. Tan

183. Hypermedia and the Web. W
An introduction to the construction of hypermedia systems and large-scale web applications. Topics covered include pre-web hypertext systems, hypermedia 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. Classic ciphers. Shannon's information-theoretic approach. The DES standard. Finite state machines, linear and nonlinear shift registers. Public key algorithms. PGP: Authentication, key management, and network security. Prerequisite(s): Mathematics 19B or calculus equivalent; Mathematics 21 or Engineering 27 (formerly Mathematics 27) or linear algebra equivalent; and Computer Engineering 16 or discrete mathematics equivalent; consult with instructor regarding a course equivalent. J. Yellin. D. Long

193F. Field Study. F,W,S
Provides for individual programs of study with specific academic objectives carried out under the direction of a member of the Computer Science Department and using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives, usually a term paper or project. Cannot normally be repeated for credit. Prerequisite(s): petition on file with sponsoring agency. 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 Computer Science Department and a willing sponsor at the field site. Uses 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. Cannot normally be repeated for credit. Intended for students majoring in computer science. Prerequisite(s): petition on file with sponsoring agency. The Staff

193G. Group Tutorial. F,W,S
A program of independent study arranged between a group of students and a faculty member. Prerequisite(s): petition on file with 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. Intended for students majoring in computer science. Prerequisite(s): petition on file with sponsoring agency. The Staff

Prerequisite(s): petition on file with sponsoring agency. The Staff

195F. Senior Thesis Research (2 credits). F,W,S
Intended for majors. Prerequisite(s): petition on file with sponsoring agency. The Staff

198. Individual Study or Research. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

198F. Individual Study or Research (2 credits). F,W,S
Intended for majors. Prerequisite(s): petition on file with sponsoring agency. The Staff


**PROGRAMS AND COURSES**

199. Tutorial. F,W,S  
For fourth-year students majoring in computer science. Prerequisite(s): petition on file with sponsoring agency. T he Staff

199F. Tutorial (2 credits). F,W,S  
For fourth-year students majoring in computer science. Prerequisite(s): petition on file with sponsoring agency. T he Staff

**Graduate Courses**

200. Research and Teaching in C  
Basic teaching techniques for teaching assistants, including responsibilities and rights of teaching assistants, resource 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, T he Staff

201. Analysis of Algorithms. F  
Rigorous analysis of the time and space requirements of important algorithms, including worst case, average case, and amortized analysis. Techniques include order-notations, recurrence relations, information-theoretic lower bounds, adversarial arguments. Analysis of the key data structures: trees, hash tables, balanced tree schemes, priority queues, Fibonacci and binomial heaps. Algorithmic paradigms such as divide and conquer, dynamic programming, union-find with path compression, augmenting paths. Selected advanced algorithms. Introduction to NP-completeness. Enrollment restricted to graduate students; undergraduate students may enroll in this course if they have completed either course 202 or Computer Engineering 177 and have the consent of the instructor. A. Van Gelder, D. Helmbold

203. 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 simulation. Enrollment restricted to graduate students; undergraduate students may enroll in this course if they have completed course 112 and have the consent of the instructor. C. McDowell, M. Abadi

*204. Compiler Design.  
A detailed study of the structure and design of a compiler. Topics include compiler structure, pushdown automata, symbol tables, regular expressions and languages, finite state automata, tokens and lexical analyzers, context-free languages, LL(1), recursive descent, LR(1) parsing, attribute grammars as a model of syntax-directed translation, addressing, register allocation, code optimization, and code generation for real machines. Enrollment restricted to graduate students. Offered in alternate academic years, T he Staff

210. Computational Models and Complexity. S  
Finite automata and regular expressions, universal models of computation, computability and unsolvability, relations between complexity classes, hierarchy theorems, reductions, complete problems for the major complexity classes (L, NL, P, NP, PSPACE). Other topics may include complexity of counting and enumeration problems, complexity of approximate optimization problems. Prerequisite(s): course 201. P. Kolaitis, M. Warmuth, D. Helmbold

*211. Combinatorial Algorithms.  
Fundamental combinatorial algorithms, graph algorithms, flow problems, matching problems, linear programming, integer programming, NP-completeness, approximation algorithms for optimization problems. Prerequisite(s): course 201. Offered in alternate academic years. P. Kolaitis, T he Staff

217. Logic in Computer Science. F  
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. P. Kolaitis, A. Van Gelder

221. Advanced Operating Systems. F,S  
A detailed study of the issues involved in operating systems 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. D. Long, S. Brandt, E. Miller

223. 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. Miller, M. Abadi

229. Storage Systems. W  
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. D. Long, E. Miller, S. Brandt

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 database systems. Prerequisite(s): course 221 or permission of instructor. E. 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. R. Levinson, I. Pohl

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

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 theoretical paper. Enrollment limited to 30. Enrollment restricted to graduate students. D. Haussler, D. Helmbold, M. Warmuth

250. Information Theory and Communication. S  
Physical, technological, and mathematical bases for measures of information in digital signaling and their applications. Physical and information entropies. Optimal codes. Entropy of natural languages. Channel capacity. Optimal communication. Shannon's theorem. Network information 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. Main topics include in-depth study of curves and surface modeling, deformations, advanced ray tracing, and radiosity methods. Enrollment limited to 20. Enrollment restricted to graduate students; undergraduates by interview only. A. Pang, S. Lodha, J. Wilhelms

*262. Computer Animation.  
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 limited to 15. Enrollment restricted to graduate students. 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 models, including replicator and best reply dynamics, and applications to economics, computer science, and biology. Upper-division math courses in probability theory are strongly recommended. (Also offered as Economics 272. Students cannot receive credit for both courses.) T he Staff

277. D. Database Systems. F  
Topics include overview of data models (relational, object-oriented, entity-relationship) and database query languages; database design, query processing, and optimization; database systems implementation; distributed, parallel, and heterogeneous databases; information integration; database transactions and security. Prerequisite(s): course 180 or equivalent. (Formerly Computer Engineering 277)
Enrollment restricted to graduate students; undergraduates may enroll in this course if they have completed course 180. Offered in alternate academic years. W. Tan

279. Software Reuse and Component-Based Software Engineering, W

Detailed study of interlocking business, organizational, and technical issues in large-scale software reuse and component-based software engineering. Topics include architecture, design for reuse, domain engineering, model-driven development, domain-specific kits, components, frameworks, software agents, generators, problem-oriented languages, library design, reuse tools, patterns, and aspects. Assumes prior exposure to software engineering topics. Prerequisite(s): computer engineering 276 or consent of instructor. Enrollment limited to 20. Enrollment restricted to graduate students. M. Griss, C. McDowell

280A. Seminar in Computer Science Research (2 credits). F,W,S

Weekly seminar covering topics of current research in computer science. Prerequisite(s): permission of instructor. Enrollment limited to 30. May be repeated for credit. The Staff

*280G. Seminar on Software Engineering (2 credits).

Weekly seminar covering topics of current research in software engineering. Prerequisite(s): permission of instructor. Enrollment limited to 30. Enrollment restricted to graduate students. May be repeated for credit. E. Whitehead III, L. D'Ambra, C. McDowell

280S. Seminar on Computer Systems (2 credits), F,W,S

Weekly seminar series covering topics of current research in computer systems. Prerequisite(s): permission of instructor. Enrollment limited to 30. May 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 analyze the average performance of deterministic algorithms on randomly chosen or "typical" inputs, rather than on worst case inputs. Also look at algorithms that use randomization, such as random walk and simulated annealing techniques. Examples of specific topics include martingales, random graphs, and rapidly mixing Markov Chains. Enrollment limited to 15. Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. D. Hauser

*290B. Advanced Topics in Computer Graphics.

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 areas of interest are likely to be scientific visualization, modeling, rendering, scattered data techniques, wavelets, and color and vision models. Students read technical papers and present classroom lectures. Guest lecturers supplement the student presentations. A research project is required. Prerequisite(s): interview with instructor. Enrollment limited to 15. J. Wilhams, A. Pang, S. Lodha

290C. Advanced Topics in Machine Learning, W

In-depth study of current research topics in machine learning. 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 research papers; theoretical homework in addition to a research project. Prerequisite(s): course 242. M. Warmuth, D. H. Mendel

290D. Neural Computation.

An introduction to the design and analysis of neural network algorithms. Concentrates on large artificial neural networks and their applications in pattern recognition, signal processing, and forecasting and control. Topics include Hopfield and Boltzmann machines, perceptions, multilayer feed forward nets, and multilayer recurrent networks. Enrollment restricted to graduate students. Offered in alternate academic years. D. Hauser, M. Warmuth

290E. Object-Oriented Programming Methodology.

Object-oriented programming methodology is the application of abstract-data types and polymorphism to coding solutions. Topics geared to beginning thesis research in this field. Prerequisite(s): courses 201 and 203. Enrollment limited to 20. Enrollment restricted to graduate students. L. Poli

290F. Topics in Combinatorial Mathematics. W

Combinatorial mathematics, including summation methods, working with 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 mainly to computer science, but also physics. Prerequisite(s): Computer Engineering 16 and Engineering 27 (formerly Mathematics 27). Enrollment restricted to graduate students and upper-division undergraduates. Offered in alternate academic years. May be repeated for credit. J. Yellin

290G. Topics in Software Engineering. F,W

Research seminar on current topics in software engineering. Topics vary from year to year depending on the current 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 recommended. Enrollment limited to 35. Enrollment restricted to graduate students; undergraduates may enroll with permission of instructor. May be repeated for credit. E. Whitehead III, C. McDowell, L. Werner, L. D'Ambra

290H. Internet Technology and Policy.

Graduate seminar that explores the transformation effects of the Internet on the physical access to information, the content of communications, the security of private information, and the availability of investments. Computer engineering and computer science undergraduate students may enroll in this course if they have completed Computer Engineering 152; other graduate and advanced undergraduate students may enroll with consent of the instructor. J. Yellin

290L. Thesis Research. F,W,S

Thesis research conducted under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff


Thesis research conducted under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. 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, mathematic, 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 the fourth and fifth years of the dual-degree program. If admitted, they complete requirements for a degree in a chosen engineering specialty, and they also take any remaining courses for the UCSC major. Students complete one major from each of the following lists:

UCB 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
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 UCB. 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 adviser 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 UCSC should develop a strong background in mathematics and physics. Prospective students who wish to be considered for the dual-degree program should indicate as its 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, 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 optically enroll in a variety of classes while at UCSC due to the need to concurrently fulfill their UCSC major and their required preparation for their UCB major. Following are example classes that dual-degree students may take as preparation for the engineering major while at UCSC.

Chemistry 1B/M and 1C/N, General Chemistry Laboratory
Computer Science 12A, Introduction to Programming; or 60N, Beginning Programming; Natural Sciences Earth Sciences 10, Geologic Principles
Earth Sciences 142, Soil Properties and Mechanics
Electrical Engineering 70/L, Introduction to Electronic Circuits Laboratory
Engineering 27/L, Mathematical Methods for Engineers’ Laboratory (formerly Mathematics 27)
Engineering 50/L, Engineering Mechanics Laboratory

Engineering 131, Introduction to Probability Theory
(formerly Mathematics 131A)
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 or Physics 6A/L, 6B/M, and 6C/N, Introductory Physics series/Laboratories
Physics 160, Practical Electronics

Electrical Engineering

Faculty and Profesional 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 ISAACSON
Nano- and microfabrication technology and applications to biomedical and diagnostic devices, nanocharacterization of materials with an emphasis on the development of microscopy tools, 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
WENTAI LIU
Rational prosthesis, biomimetic systems, integrated nanoelectronics, molecular electronics, CMOS and SOI transceiver design, current mode band limited signaling, microelectronic sensor, 64-megahertz recovery and optimization, noise characterization and modeling, and computer vision/image processing
JOHN F. VESECKY
RF radar design and construction and observation of ocean surface winds, waves and currents with applications to coastal and deep water ocean processes, project mentor
DONALD WIBERG, Emeritus

Associate Professor

PEYMAN MILANARI
Signal and image processing, inverse problems, statistical detection and estimation, scientific computing, and applied mathematics
KENNETH PEDROTTI
Optical communications, high-speed electronics for lightwave systems, devices for all optical networking and imaging
ALL SHAKOURI
Semiconductor device physics, heat generation and cooling in microscale devices, optoelectronics, photonic switching, fiber optics communication systems

Assistant Professor

HAMID SADJADPOUR
Coding theory, equalization techniques, wireless communications, communication theory
HOLGER SCHMIDT
Semiconductor physics, optoelectronic and photonic devices, ultrafast optics, magneto-optics, quantum interference, quantum optics

Professor

ALEXANDRE BRANDWIN (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, multichip modules, field programmable gate arrays
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
GLEN G. LANGDON JR., Emeritus (Computer Engineering)

Assistant Professor

PAK K. CHAN (Computer Engineering)
Placement and routing algorithms, field-programmable gate arrays, spectral-based partitioning, circuit theory, computer arithmetic
TRACY LARRABEE (Computer Engineering)
Test pattern simulation and generation, fault modeling, fault diagnostics, design verification, technical writing, logic simulation

Associate Professor

ROBERTO MANDUCHI (Computer Engineering)
Sensor processing and image understanding with applications to autonomous navigation, sensor networks, and deep-space communications
Program Description

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; a scope of application that provides theory and practical knowledge as well as specialized training in hardware- and information-oriented electrical engineering; a 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 and 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 provide a balance of engineering science and professional preparation. Students gain a solid foundation in calculus, engineering science and engineering courses, plus associated laboratories; communications (including signal and image processing); and VLSI design, microelectronics, and nanotechnology.

The UCSC electrical engineering program, leading to a bachelor of science degree, began in fall 1997 with the admission of first-year students. 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, along with fulfilling some of the campus's general education requirements. After the first two years, electrical engineering students focus on topics within the discipline and specialize in one of three options: electronics, including digital and analog circuits and devices, VLSI packaging and design, and electromagnetics; communications, including optical, wireless, signal processing, and networks; and signals, systems, and control, including signal processing, instrumentation, and control. Students interested in admission to the electrical engineering major should contact the Baskin School of Engineering Undergraduate Advising Office.

Electrical Engineering Policies

Admissions Policy

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 electrical engineering major after a student has entered UCSC is based on performance in the foundation courses: Mathematics 19A-B, Engineering 27L, and 50A-B, 70/L, 135/L, 145/L, and 150A-B. Please refer to the School of Engineering section of the catalog for the full admissions policy.

Course Substitution

It is the intent 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 Engineering Abroad Program, or at a community college, require preapproval to be obtained 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 obtain 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, 10, or 3.

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 70/L, 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.

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 13 lower-division science and engineering courses, plus associated laboratories; seven upper-division engineering courses, plus associated laboratories; five engineering electives; and a comprehensive senior design project course. In order to plan for completion of these requirements within the normative time, students should consult with an adviser at the Baskin School of Engineering Undergraduate Advising Office as early as possible.

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 13 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

70/L, Introduction to Electronics/Laboratory

Computer Engineering

16A, Applied Discrete Mathematics; or 16H, Honors Applied Discrete Mathematics

Computer Science

12A, Introduction to Programming

12B, Introduction to Data Structures

Mathematics

19A-B, Calculus for Science, Engineering, and Mathematics

23A-B, Multivariable Calculus

Engineering

27L, Mathematical Methods for Engineers Laboratory (formerly Mathematics 27)

Physics

5A/L, 5B/M, 5C/N, Introduction to Physical Laboratories; and 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; Biomolecular Engineering 80G/Philosophy 88C, Biotechnology 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

Twelve 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 design project. All students are required to take the following seven upper-division courses, with associated laboratories:

Electrical Engineering

103, Signals and Systems

135/L, Electromagnetic Fields and Wave Laboratory

145/L, Properties of Materials Laboratory

171/L, Analog Electronics Laboratory

Computer Engineering

180/L, Logic Design Laboratory

107, Mathematical Methods of Systems Analysis

185, Technical Writing for Computer Engineers

Required Electives

In addition to completing the above required courses, electrical engineering majors must complete five 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.
Electronics/Optoelectronics Track
Electrical Engineering
130, Introduction to Optoelectronics and Photonics
136, Engineering Electromagnetics
178, Device Electronics

Computer Engineering
121/L, Microprocessor System Design/Laboratory (Note that 121C/L, Computer Organization/Laboratory is not a program requirement but is required for this class.)
172/L, Linear and Nonlinear Circuits/Laboratory
173/L, High Speed Digital Design/Laboratory

Engineering
147, Computational Methods and Applications

Communications Signals and Systems Track
Electrical Engineering
151, Communications Systems
153, Digital Signal Processing

Computer Engineering
150, Introduction to Computer Networks

Engineering
147, Computational Methods and Applications

Signals and Control Systems Track
Electrical Engineering
153, Digital Signal Processing
154, Feedback Control Systems

Engineering
147, Computational Methods and Applications

The senior-year curriculum is designed to enable students to pursue independent study with a faculty member. Electrical engineering students are encouraged to take advantage of the opportunity to work within a faculty member's research group as part of their educational experience. Internship programs with local industry are available.

Comprehensive Requirement
The senior comprehensive requirement for electrical engineering majors is in two parts: a project course and assessment options.

Project Course
Students must complete one project course. Courses 127 and 128 are considered a single project course as are the sequences 125 and 126 and Computer Engineering 123A and 123B. These senior-level courses encompass an in-depth project, including analysis, design, testing, and documentation, requiring students to call upon knowledge acquired throughout their undergraduate studies. Current choices include the following:

Computer Engineering
123A, Computer Engineering Design Project I and
123B, Computer Engineering Design Project II; or
Electrical Engineering
125, Hardware Design I, and
126, Hardware Design II; or
127, Interdisciplinary System Design I, and
128, Interdisciplinary System Design II; or
195, Senior Thesis Project (7 credits over two quarters)

Outcomes Assessment Options
The Electrical Engineering Department requires an outcomes assessment. All students are required to complete an exit survey; 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. Portfolio review;
2. Senior thesis submission;
3. Students must maintain a 2.5 grade point average in all required and elective courses for the major.

Portfolios will be reviewed quarterly during the final year and must include the following:
- a project report(s);
- an exit survey;
- a one- or two-page overview of your contribution to the project(s).

The portfolios must be turned in 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>Eng 27/L</td>
</tr>
<tr>
<td>(fsh)</td>
<td>Phys 5A/L</td>
<td>Phys 5B/M</td>
<td>Phys SC/N</td>
</tr>
<tr>
<td>Csps 12A</td>
<td>EE 80T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Math 23A</td>
<td>Math 23B</td>
<td>Cmps 16 or 16H</td>
</tr>
<tr>
<td>(soph)</td>
<td>EE 70</td>
<td>EE 171/L</td>
<td>EE 103</td>
</tr>
<tr>
<td>Cmps 12B</td>
<td></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>Precalculus</td>
<td>Math 19A</td>
<td>Math 19B</td>
</tr>
<tr>
<td>Csps 10</td>
<td>Csps 12A</td>
<td>Csps 12B</td>
<td>EE 80T</td>
</tr>
<tr>
<td>2nd</td>
<td>Phys 5A/L</td>
<td>Phys 5B/M</td>
<td>Phys SC/N</td>
</tr>
<tr>
<td>(soph)</td>
<td>Math 271/L</td>
<td>Math 23A</td>
<td>Math 23B</td>
</tr>
</tbody>
</table>

Additional information about this program can be found on the department's web site at http://www.eoe.ucsc.edu/programs/undergraduate.

Graduate Programs
The Department of Electrical Engineering at the University of California Santa Cruz offers M.S. and Ph.D. degree programs and conducts research in photonics and electronics, focusing on VLSI, electronic and optoelectronic materials, devices, circuits, and systems for information transmission, storage, processing, and display, especially for optical fiber communications and lower power, high performance systems; communications and signal processing, including wireless and optical communications, coding, digital signal processing, image, and video processing; electromagnetism and remote sensing, including numerical electromagnetics, packaging, wave propagation and scattering radar oceanography, and microwave remote sensing. Future areas include MEMS and nanotechnology.

Electrical Engineering enjoys a close relationship with the Departments of Computer Science, Computer Engineering, Biology, Chemistry, Physics, and Astronomy and Astrophysics, as well as Biomolecular Engineering and the new applied mathematics and statistics graduate program currently in development. Electrical engineering faculty carry out both research and teaching inside and outside their own departments. The department also has ties to nearby industry, employing electrical engineering professionals as visiting faculty and arranging for students to gain practical research experience through work in industrial labs.

Students start the program with both depth and breadth courses 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 going to school.

Requirements for the Master's Degree
Course Requirements
Each student is required to take 45 graduate credits (level 200 or above) from a list of approved courses, which must consist of:
- at least 10 credits from fundamental courses;
- at least 10 credits from the single depth sequence (electronics and photonics, etc.);
- at least 5 credits from breadth courses in the School of Engineering, outside the Department of Electrical Engineering;
- at least 5 credits from breadth courses at UCSC outside the School of Engineering;
- at most, 10 credits of independent study (courses 297 and 298) will be counted toward course requirements.

Total credits required for the M.S. degree: 45.

Note that each graduate course satisfying the above requirements typically covers 5 credits.

* A list of fundamental and depth courses is available on the electrical engineering web site at http://www.eoe.ucsc.edu/programs/eegraduate/approved_courses.html.

** Electrical Engineering/Computer Engineering/Computer Science 200 and 2-credit seminars will not count.

*** Requires adviser approval.

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. Upon completion of the thesis work, 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 on 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 55 graduate credits (level 200 or above) from a list of approved courses, which must consist of:
- at least 5 credits from fundamental courses;
- at least 15 credits from the single depth sequence;
• at least 10 credits from breadth courses in the School of Engineering, outside the Department of Electrical Engineering;**
• at least 5 credits from breadth courses at UCSC outside the School of Engineering;***
• at most, 10 credits of independent study (courses 297 and 299) will be counted toward course requirements.

Total credits required for the Ph.D. degree: 55.

* A list of fundamental and depth courses is available on the Electrical Engineering web site at http://www.ee.ucsc.edu/programs/graduate/approved_courses.html
** Electrical Engineering/Computer Engineering/Computer Science 200 and 2-unit seminars will not count.
*** Requires adviser approval.

For students already holding an MSEE or equivalent degree, 20 credits of transfer credit, at most, 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.

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 examination will cover material from the following technical areas:

• devices and circuits at the level of courses 171, 178, and 145;
• electromagnetics 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 Engineering 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 adviser willing to supervise the student’s thesis research; works with the adviser to prepare for the qualifying examination; and assembles a dissertation reading committee, consisting of the student’s research supervisor (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 adviser) 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;
(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 (only), 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 MSEE 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 MSEE degree, who are studying for the Ph.D. degree, may apply to be granted a M.S. degree when they have fulfilled all the M.S. degree requirements (including an M.S. 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. Part-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 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 student to withdraw. 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 director of graduate studies. Students may appeal their dismissal to the graduate committee.

Materials Fee
Please see the section on fees under School of Engineering heading.

Lower-Division Courses
70. Introduction to Electronic Circuits. F,W,S
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 5C/N or 6C/N, and Mathematics 24 or Engineering 27 (formerly Mathematics 27). Students must enroll concurrently in course 70L. W. Liu, P. Mantey, K. Pedrotti, H. Schmidt, A. Shakouri

70L. Introduction to Electronic Circuits Laboratory (1 credit). F,W,S
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 5C/N or 6C/N, and Mathematics 24 or Engineering 27 (formerly Mathematics 27). Students must enroll concurrently in course 70L. W. Liu, P. Mantey, K. Pedrotti, H. Schmidt, A. Shakouri
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. B. Friedlander, H. Sadadjpour, THe Staff

125. Electrical Engineering Hardware Design I (3 credits). W
First of two-course sequence in engineering design. Alone or in small teams, students concentrate on theoretical research, specification, planning, and procurement for hardware design of engineering hardware projects chosen according to student's elective track background. Technical discussions and ongoing design reviews; engineering design cycle. Class presentation and peer review of each project required at end of quarter. Students are billed a materials fee. Prerequisite(s): course 171. Enrollment limited to 30. Enrollment restricted to juniors, seniors, and graduate students. S. Petersen, A. Shakouri

126. Electrical Engineering Hardware Design II. S
Second of two-course sequence in engineering design; students fully implement and test hardware projects designed during first course. Concentrates on experimental laboratory work. Formal written report and oral presentation of each project is required at end of quarter. Students are billed a materials fee. Prerequisite(s): course 125. Enrollment limited to 30. S. Petersen, A. Shakouri

127. Interdisciplinary System Design Project I (2 credits). F
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. Intended for students majoring in engineering or natural science disciplines. Enrollment restricted to juniors, seniors, and graduate students. J. Veszky

128. Interdisciplinary System Design II. W
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. Intended for students majoring in engineering or natural science disciplines. Prerequisite(s): course 127. Enrollment limited to 30. Enrollment restricted to juniors and seniors. J. Veszky

130. Introduction to Optoelectronics and Photonics, W
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 3B and 3C, or 6B and 6C; concurrent enrollment in course 130L. Enrollment limited to 30. C. Gu

130L. Introduction to Optoelectronics Laboratory (1 credit). W
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. W
Vector analysis. Electrostatic fields. Magnetostatic fields. Time-varying fields and Maxwell's equations. Plane waves. Students must concurrently enroll in course 135L. Prerequisite(s): course 70/L, Mathematics 23B or 26 or Physics 14, and Engineering 27 (formerly Mathematics 27). M. Isaacs

135L. Electromagnetic Fields and Waves Laboratory (1 credit). W
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 70/L, Mathematics 23B or 26 or Physics 14; and Engineering 27 (formerly Mathematics 27). M. Isaacs

Course will cover electromagnetic wave propagation, transmission lines, waveguides, and antennas. Prerequisite(s): course 135. May be repeated for credit. THe Staff

145. Properties of Materials. S
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. Students must also concurrently enroll in course 145L. Prerequisite(s): Physics 5AL, 5B/M, and 5CN or 6AL, 6B/M, and 6CN. H. Schmidt, A. Shakouri

145L. Properties of Materials Laboratory (1 credit). S
Laboratory sequence illustrating topics covered in course 145. One two-hour laboratory per week. Students must also concurrently enroll in course 145. Students are billed for a materials fee. Prerequisite(s): Physics 5AL, 5B/M, and 5CN or 6AL, 6B/M, and 6CN. H. Schmidt, A. Shakouri

151. Communications Systems. W
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): course 103 or 17, 70/L, and Computer Engineering 107 or equivalent background on probability theory and random variables. B. Friedlander, P. M. Antsaklis, THe Staff

153. Digital Signal Processing. S
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 Computer Engineering 153. Students cannot receive credit for both courses.) Prerequisite(s): course 103. P. M. Ilnanfar

154. Feedback Control Systems. S
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 limited to 30. P. M. Ilnanfar, THe Staff

171. Analog Electronics, W,S
Introduction to (semiconductor) electronic devices. Conduction of electrical 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 171. (Formerly Computer Engineering 171.) K. Pedrotti, A. Shakouri

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 for a materials fee. Prerequisite(s): course 70/L; previous or concurrent enrollment in course 171 required. (Formerly Computer Engineering 171L.) K. Pedrotti, A. Shakouri

178. Device Electronics.
This course reviews the fundamental principles, device's 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 pn 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): Electrical Engineering 145 and Computer Engineering 171 or Electrical Engineering 171. May be repeated for credit. C. Gu, K. Pedrotti

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 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. 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. May not normally be repeated for credit. THe Staff
195F. Senior Thesis Research (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to senior majors in electrical engineering. 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition in file with sponsoring agency. The Staff

199. Tutorial. F,W,S
Individual directed study for upper-division undergraduates. Petition must be on file with department office. Enrollment restricted to senior majors in electrical engineering. The Staff

199F. Tutorial (2 credits). F,W,S
Individual directed study for upper-division undergraduates. Petition must be on file with department office. Enrollment restricted to senior majors in electrical engineering. The Staff

Graduate Courses

200. Research and Teaching in Electrical Engineering (3 credits). F
Basic teaching techniques for TAs: responsibilities and rights, resource materials, computer security, leading discussion on 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 limited to 20. Enrollment restricted to graduate students. 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, multiplexers, voltage references, sample-and-holds, and noise. Introduction to more complicated systems using these building blocks, such as phase locked loops and analog-to-digital converters. If time permits, integrated circuit layout issues and device/circuit fabrication. Prerequisite(s): course 171 or equivalent and course 178 or equivalent. Enrollment limited to 20. K. Pedrotti

230. Optical Fiber Communication. S
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, modulation response, source-fiber coupling, photodetectors, receivers, receiver noise and sensitivity, system design, power budget and risetime budget, fiber-optic networks (FDDI, SONET, etc), wavelength division multiplexing (WDM). May be repeated for credit. C. Gu

231. Optiical Electronics. F
Introduction to phenomena, devices, and applications of optoelectronics. Main emphasis is on optical properties of semiconductors and semiconductor lasers. Prerequisite(s): course 145/L, C. Gu, H. Schmidt, A. Shakouri

*232. Quantum Electronics. 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 231 or equivalent. A. Shakouri

233. Fiber Optics and Integrated Optics. W
Topics 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; wavelength-division multiplexing; nonlinear 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): course 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 volume holography; optical data storage systems; optical information processing, interconnecting, and switching systems. Enrollment restricted to graduate students, or undergraduates having completed Physics 5B and 5C and course 103. C. Gu

*250. Digital Signal Processing. 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. B. Friedlander, H. Sadjadpour

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. Wireless cellular, digital mobile, and personal communications systems (PCS); radio propagation, digital modulation, and error control; access methods: spread spectrum, FDMA and TDMA; antenna diversity, multi-input multi-output systems. Prerequisite(s): course 251. B. Friedlander

262. Statistical Signal Processing I. W
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, topics on turbo codes, space-time codes, and LDPC. Prerequisite(s): Computer Engineering 251. Enrollment limited to 10. Enrollment restricted to electrical engineering, computer engineering, and computer science graduate students. H. Sadjadpour

264. Image Processing and Reconstruction. F
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, spatial 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). F
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. Prerequisite(s): petition on file with sponsoring agency. The Staff

Thesis research conducted under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. The Staff
Information Systems Management

Faculty and Professional Interests

Professor

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

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

Jack D. Callon
Information systems management, competitive use of information systems, telecommunications, distributed systems

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)
Microeconometric theory, 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

Nirvika 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), a major administered by the Department of Computer Science and Economics Departments, is the application of information technology to support the major functions and activities of a private sector business or a public sector institution. In the past, organizations recognized the importance of managing resources such as labor, capital, and raw materials. Today, it is widely accepted that managing information resources is very often equally important. Information systems management supports the process of collection, manipulation, storage, distribution, and utilization of an organization’s information resources.

The majority of information systems are developed for and used by people in functional areas (e.g., manufacturing, human resources, accounting, finance, and marketing). To develop information systems that address the needs of the organization, information systems management professionals must possess a solid mix of business and technical knowledge. They must understand organizational structures, objectives, operations (including processes and the flows of data between processes), and the financial implications related to these factors. Moreover, they must be well versed in topics such as systems development tools and techniques, information architecture, network configurations, databases, and systems integration.

The information systems management major at UC Santa Cruz combines the fundamental intellectual content of the computer science and business management economics majors. It is a rigorous, challenging major for those students wanting to pursue a career in solving business problems through the use of information technology. To accomplish this, students must gain the mathematics and science fundamentals of computer science, as well as an understanding of the environment in which information technology (IT) solutions will be applied through economics and business courses. This duality also adds to the challenge of successfully completing the requirements of the major. The essence of the information systems management program is the integration of the two disciplines of computer science and business management economics.

The information systems management program of study at UCSC leads to a B.S. degree. The curriculum is designed to provide a balance of courses in computer programming, systems analysis and design, database systems, and telecommunications with courses in economics and business. Students gain a solid background in mathematics, economics and business, and computer science.

Information Systems Management Policies

Admissions Policy

Admission to majors in the Computer Science Department 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. Please refer to the School of Engineering section of the catalog for the full admissions policies.

Disqualification and Satisfactory Progress in the Major

Students who do not make adequate progress in the information systems management 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.

The department may, at its sole discretion, disqualify the major any student making two unsuccessful attempts in any of the following principle courses commonly used to satisfy degree requirements:
- Computer Science 12A, 12B, 101, 115, and 180;
- Computer Engineering 12C, 16, 16H, and 150;
- Information Systems Management 50, 58, and 158;
- Economics 1, 2, 10A, 11A, 11B, 100A, and 113;
- Engineering 27 and 113;

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 Engineering section contains additional disqualification policies, such as maintaining a 2.0 GPA in the major and the ethics requirement, that apply to information systems management majors.

Students at risk of disqualification must meet with the undergraduate director to discuss their options for continuing in the major.

Letter Grade Policy

Effective fall 2001, the Computer Science Department 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. 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 policies 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 96 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 adviser as early as possible. These 23 courses include the following:

**Mathematics**
- (three 5-credit courses) 19A, B, Calculus for Science, Engineering, and Mathematics or
- Economics 11A and 11B, Mathematical Methods for Economists and
- 21, Linear Algebra

**Economics**
- (five required and two elective 5-credit courses)
  1. Introductory Microeconomics: Resource Allocation and Market Structure
  2. Introductory Macroeconomics: Aggregate Economic Activity
- 10A, Economics of Accounting
- 100A, Intermediate Microeconomics
- 113, Introduction to Economics
- Engineering 113, Managerial Statistics

Any two of the following:
- 100B, Intermediate Microeconomics
- 101, Managerial Economics
- 115, Introduction to Management Sciences
- 133, Security Markets and Financial Institutions
- 135, Corporate Finance
- 136, Business Strategy and Entrepreneurial Studies
- 138, The Economics and Management of Technology and Innovation
- 139A, Economics of Electronic Commerce
- 139B, Electronic Commerce Strategy
- 161, Marketing
- 164, Economics and the Telecommunications Industry

**Computer Engineering**
- (three 5-credit courses and a 1-credit lab)
  1. C/L, Computer Organization/Laboratory
  2. Applied Discrete Mathematics
  3. Honors Applied Discrete Mathematics
  4. Introduction to Computer Networks

**Computer Science**
- (five 5-credit courses)
  1. 12A, Introduction to Programming
  2. 12B, Introduction to Data Structures
  3. 101, Abstract Data Types
  4. 115, Software Methodology
  5. 180, Database Systems

**Information Systems Management**
- (three 5-credit courses)
  1. 50, Business Information Systems
  2. 58, Systems Analysis and Design
  3. 158, Business Strategy and Information Systems

**Elective Courses**
- (two 5-credit courses)

Effective fall 2002, 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.

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

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<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tr>
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<td>Cmps 12C</td>
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Plan One B

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Plan Two

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<td>Math 21</td>
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<td>Econ 10A</td>
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Comprehensive Requirement

Students complete two project-intensive courses that constitute the comprehensive requirement for the information systems management major, based on the dual aspects of the program. One course addresses the technical side of the major, whereas the other deals with the business and economics content.

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. Course 158, 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.

Lower-Division Courses

50, Business Information Systems, F,S
Addresses 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. (Formerly Computer Science 50.) The Staff

58, Systems Analysis and Design, W,S
Provides an understanding of structured computer systems analysis and design methodologies and techniques and their application to business information systems. Intended for information systems management and business management economics majors. Prerequisite(s): Computer Science 50. Enrollment limited to 40. (Formerly Computer Science 58.) The Staff

Upper-Division Courses

158, Business Strategy and Information Systems, W,S
Analysis of 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 are highlighted. Intended for information system management majors. Prerequisite(s): satisfaction of the Subject A and Compositional requirements; course 150 or Computer Engineering 150, Computer Science 101, Economics 10A and 100A, and Engineering 113 or Economics 113. (Formerly Computer Science 158.) (General Education Code: W) The Staff

English Literature

Students wishing to pursue a course of study in English and Other English literature should consult the concentration in national/transnational literatures under Literature, page 279.

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, page 218). 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 Biological Sciences, 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: Biological Sciences, see page 129; Chemistry, see page 145; and Earth Sciences, see page 160).

Environmental Studies

405 Interdisciplinary Sciences Building
(831) 459-2634
http://zzyx.ucsc.edu/ES/es.html

Faculty and Professional Interests

Professor

ROBERT R. CURRY, Emeritus

BRYAN H. FARELL, Emeritus

STEPHEN R. GLEISSMAN
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. NIERBANCK, 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 SHENNAN
Agroecology, ecosystem studies, agriculture-wetland interactions, participatory research, gender, and environmental issues

MICHAEL E. SOULE, Emeritus

Associate Professor

WEIXIN CHENG
Soil ecology, agroecology, biogeochemistry, global change ecology

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

GREGORY S. GILBERT
Disease ecology, conservation biology, tropical forest ecology, microbial ecology

BRENT HADID
Market-based regulation, property rights, economic institutions and the environment, California water institutions, renewable resource electricity, greenhouse gas reduction

KAREN D. HOLL
Restoration ecology, conservation biology, landscape ecology

ROBERTO A. Á. SÁNCHEZ-RODRÍGUEZ
Urban ecology, environment and development in Latin America, urban and regional development, dimensions of global environmental change, border studies

Assistant Professor

DENNIS D. KELSO
Environmental policy, natural resource use, social theory, and emerging technology

JULIE LOCKWOOD
Ornithology, conservation biology, evolutionary ecology

MICHAEL E. LOK
Plant responses to natural and anthropogenic environmental stress, ecohydrology, implications of global environmental change for reproductive success and community composition, biogeography, physiology of ecosystem restoration

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

ERIKA ZAVALETA
Ecology and evolutionary biology, biodiversity and global change, biological invasions, terrestrial plant and ecosystem ecology, ecology economics, human ecology, conservation

Adjunct Associate Professor

SEAN SWEZEY
Integrated pest management and agricultural sustainability

Lecturer

JENNIFER K. ANDERSON
Environmental interpretation/education, experiential learning, multi-cultural environmental education

BRIAN K. FULFROST
Academic Coordinator, Geographic Information Systems Laboratory; data management and analysis for natural and cultural resource management, environmental monitoring, environmental and social impact assessment and environmental policy studies

MARGARET H. FUSARI
Natural Resource Coordinator, vertebrate biology and ecology, conservation, natural resource planning, natural reserve management

SARAH RABKIN
Science, health, and environmental writing journalism; the personal essay; theory and practice of diary and journal keeping the natural history field journal as scientific tool and cultural tradition

ANDREW SCHIFFRIN
Environmental assessment, transportation, watershed management

BRIAN WATSON
Coordinator, Predatory Bird Research Group

SUZANNE P. ANDERSON (Earth Sciences)
Geomorphology, hydrology, weathering, glacial processes

GIACOMO BERNARDI (Biology)
Fish biology, phylogenetics, evolution

MICHAEL K. BROWN (Politics)
American politics and public policy, the political development of welfare states, political economy, African American politics since the New Deal

KENNETH W. BRULAND (Ocean Sciences)
Chemical oceanography, biogeochemistry of trace metals and radionuclides, aquatic chemistry, geochemistry

EDMUND BURKE III (History)
Islamic history, modern Middle East and North African history, French history, European imperialism, world history

MONICA J. CASPER (Sociology)
Medical sociology, science and technology studies, gender/feminist theory, cultural studies, qualitative research, women's health, and environmental health

MARK CROC (History)
German history, modern European history, environmental history

DANIEL P. COSTA (Biology)
Physiological ecology of marine mammals and birds

BEN CROW (Sociology)
Conservation biology, population biology, plant-animal interactions

E. MELANIE DUPUIS (Sociology)
Economic sociology, sociology of consumption, sociology of development, political sociology, sociology of the environment, environmental change, historical sociology, social theory, food and social change

JAMES ESTES (Biology and Ocean Sciences)
Marine sciences, community ecology

ANDREW FISHER (Earth Sciences)
Hydrogeology, crustal studies, heat flow, modeling

JONATHAN FOX (Latin American and Latino Studies)
Latin American and Latino politics, democratization, social movements, transnational civil society coalitions, Mexican, Philippine, and Central America

LUCY R. FOG (Biology)
Terrestrial population and community ecology, plant-plant interactions

DIANE P. GIFFORD-GONZALEZ (Anthropology)
Paleolithic and Neolithic Africa and Eurasia, colonial New Mexico, origins of food production, pastoralism, zooarchaeology, history of archaeology, interpretive theory, visual anthropology

JAMES B. GILL (Earth Sciences)
Ignatius petrology, geochronology of island arcs

LYNDA J. GOL (Biography)
Algal symbiosis, host-parasite relationships, molecular evolution

WALTER L. GOLDENBERG (Sociology)
Social change, historical sociology, world systems, modern Mexico, Chile, social movements and revolution, development, politics and outcomes

GARY B. HIGGINS (Earth Sciences)
Coastal processes, hazards and engineering

ISEBELL V. GRUHN, Emerita (Politics)

DANIEL GUERRA (Philosophy)
Kant, moral philosophy, social and political philosophy, history of modern philosophy

DONNA J. HARWAY (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
Program Description

The Environmental Studies Department offers a major that focuses on the sustainability of human and ecological systems. Students pursue an interdisciplinary curriculum that combines course work in ecology and the social sciences. Special emphasis is placed on the topics of sustainable agriculture, the conservation of biodiversity and natural ecosystems, and the design of policies and institutions to reconcile environmental and social priorities. The faculty work on these issues at local, regional, and global levels. Current faculty research explores these issues in areas such as Costa Rica, Panama, Mexico, Malawi, Florida, Hawaii, Alaska, California, and the Monterey Bay region.

Environmental studies necessarily differs from traditional modes of inquiry. First, the intellectual approach includes a synthesis of information, where the focus is on the integration of knowledge rather than solely on the further refinement of knowledge within a given field. Second, inquiry is grounded in the concepts of whole systems, seeking to identify the connections and interactions of issues that go beyond the boundaries of traditional disciplines. Third, there is an emphasis on problem solving, including the concept as well as the substance of a given issue. Finally, the program is centrally concerned with translating theory into practice in order to move beyond the purely “academic” aspects of human knowledge into the realm of social and ecological applications.

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 careful management of other ecological and environmental systems.

As a complement to classroom 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.

Admission Process

The goal of the Environmental Studies Department is that its students develop the capacity to understand and address environmental issues and to contribute to environmental and social reconciliation. The department seeks committed and creative students who bring to the major a broad range of backgrounds and life experiences. Students may major in environmental studies alone, or as a double or combined major. The courses listed here are examples of the course offerings at UCSC that satisfy the six 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:

**General Ecology**

An introduction to the basic concepts and methods of autecology, population ecology, biotic communities, and ecosystems (course 24).

**Political Economy and the Environment**

Continuing UCSC students are required to complete six prerequisite courses before beginning the major. 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 six 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 autecology, population ecology, biotic communities, and ecosystems (course 24).

**Political Economy and the Environment**

Continuing UCSC students are required to complete six prerequisite courses before beginning the major. 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 six 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:

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**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 autecology, population ecology, biotic communities, and ecosystems (course 24).
math placement exam or College Board AP calculus exam sufficient to be placed into calculus).

**Statistics.** An introductory survey course including descriptive statistics, measures of location, variation, sampling estimation, hypothesis testing including correlation, chi-square techniques, and ANOVA (one course such as Engineering 5 or 7 or Economics 113).

**Transfer Students**

Students transferring to UCSC are expected to fulfill all of 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 100/L and a senior comprehensive course. Students are encouraged to develop depth in another field by pursuing a minor or double major. 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 advisor.

**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 not been admitted to the major and who fail one lower-division core course will be admitted to the major by exception only. Students who have failed the same course (of these four core courses) twice will likewise be barred from enrollment in all upper-division courses, and students who have not yet been admitted to the major will be denied admission should they apply. Students who have failed course 100/L may be admitted to 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 in any upper-division environmental studies courses in which they have advance enrolled. The department also reserves the right to disqualify from the major 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, 20B, and 20L
- Environmental Studies 24 (or Biology 20C or 150)
- Environmental Studies 25
- Anthropology 2 or Philosophy 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)
- Engineering 5 or 7
- Chemistry 1B/M and 1GN/L or 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 pursuance 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 at or above the 50th percentile on the Graduate Record Examination (GRE Biology Subject Test), achieve a score at 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**

In addition to applying and being accepted to the environmental studies 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 1GN/L), organic chemistry (Chemistry 108A/L and 108B/M), and introductory biology with lab (Biology 20A, 20B, and 20L). Biology 20C is not required for this combined major. See the Biological Sciences section of this catalog (page 129) for more information.

**Disqualification Policy for the Environmental Studies/Biology Combined Major**

All environmental studies/biology combined majors are covered by the biology and environmental studies major disqualification policies, which limit the number of times a student may receive a No Pass, D, and/or F in the introductory biology sequence and the environmental studies core courses and still remain a combined major and which also limit the number of times a student may receive a No Pass, D, and/or F in upper-division biology and environmental studies courses. Students should refer to the Biological Sciences section (page 129) and the Major Disqualification Policy section above 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**

- Engineering 5 or 7
- Mathematics 11A-B (or 19A-B)
- Chemistry 1B/M and 1GN/L, or 4A/L and 4B/M
- Physics 6A/L and 6B/M (or 5A/L and 5B/M)
- Earth Sciences 20L (or 5/L or 10/L)
- Environmental Studies 24 and 25
- Anthropology 2 or Philosophy 22, 24, 28, or 80G or Sociology 1 or 15.

**Upper-Division Requirements**

Earth Sciences 110A/L, 110B/M, 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-hydrology, restoration ecology-geochemistry, agroecology-soil physical processes, or environmental 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 183B 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, 11B
Environmental Studies 23, 24, 25
Anthropology 2 or Philosophy 22, 24, 28, or 80G or Sociology 1 or 15.

**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 100B, 120, 134, 140, 150, 152, 153, 160, 169, 170, 175, and 189.
- Environmental Studies 110, 115A, 120, 122, 123, 130A/L, 130B, 140, 141, 149, 151, 152, 153, 155, 156, 158, 160, 164, 165, and 172. One of the three environmental studies electives should be based in the natural sciences.

**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 economics, pass those portions of the economics comprehensive examination administered in Economics 100A and 113.

**Graduate Program**

Human societies rest on an ecological foundation and are sustained by ecosystem processes, biological diversity, and genetic resources. Current threats to this foundation imperil societies’ well-being, challenging us to maintain the integrity, diversity, and resilience of existing ecological and agricultural systems and of the human societies that depend on them. Environmental problems are among the most serious of current issues. As these problems become more acute, the challenge of harmonizing societies’ environmental practices and choices with ecological sustainability, economic necessity, social justice, democratic participation, and human well-being will require increasing numbers of people prepared to respond to both ecological and social problems. This poses a historic challenge to graduate training and requires increasing numbers of skilled professionals able to address complex social and ecological problems from an interdisciplinary viewpoint.

The program at UC Santa Cruz draws from two areas of knowledge: ecology and social science. Our interests in ecology range from conservation biology (the maintenance of biodiversity in wild ecosystems, where we seek strong limits on human impacts on other species) to agroecology (where ecological knowledge is used to inform human management of nature for the production of natural products for human use in ways that are environmentally benign). Our interests in the social sciences bridge the dimension between environmental policy analysis (which looks for the best management strategies within the framework of existing institutions and practices) and political economy of the environment (which examines the deeper social processes through which the institutions that structure our social and ecological agendas have been constructed). Historically, these have been independent fields; UCSC’s program is one of the first to link them.

Graduates of the program are expected to be informed in all of these fields, to have deep intellectual strength in their area of specialty, and to have made substantial contributions toward the understanding of an environmental problem. We expect our doctoral students to be as skilled and intellectually rigorous within their research emphases as are students emerging from more traditional programs, but also to possess the knowledge needed to understand, analyze, and communicate in different but highly relevant fields of study. This expectation of intellectual breadth as well as disciplinary depth is a central tenet of our doctoral program.

**Requirements for the Ph.D. degree**

The interdisciplinary nature of the core curriculum requires rigorous preparation at the undergraduate level. Success in the program depends on well-developed skills in critical reading and mathematical reasoning. Students are expected to have had at least one course in statistical analysis; calculus is useful in many areas of the program and essential to independent work in some. Preparation in these areas is best accomplished by course work. In addition, all students should have a strong understanding of basic ecology and genetics, macro- and microeconomics, politics, and political economy, either from prior course work or independent reading.

For admission to the program, 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 disciplinary course work equivalent to a double major or a master’s degree in an appropriate field. Superior scholarship, capacity to carry out independent research, and commitment to disciplinary integration must be demonstrated in the statement of purpose, course work, GRE General Test score, and letters of recommendation. The GRE Subject Test (in a discipline of the student’s choice) is 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), which the prospective student should also contact faculty directly to inquire about specific course requirements and sponsorship.

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 arenas. 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 prequalifying 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 interdisciplinary research seminar (290/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. Students also have the option of doing advanced work in sociology and receiving a parenthetical notation of this specialization when they receive their degree. The specific requirements are subject to the approval of the student’s advisory committee, which is comprised of faculty members from both departments.

Students are required to serve as teaching assistants in undergraduate courses for two quarters unless they can demonstrate equivalent experience. By the end of their second 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. In 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. 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 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**

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: IN.) M, L & K

24. General Ecology. F Covers principles of ecology including limits to species abundances, evolutionary ecology, population dynamics, community interactions and patterns, and ecosystem patterns and dynamics. Prerequisite(s): course 23 or Chemistry 1A or 1B or a score of 15 or higher on the Chemistry Placement Examination. (General Education Code: IN.) J. Lockwood

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: IS.) B. Haddad

42. Student-Directed Seminar. F, W, S Seminars taught by upper-division students under faculty supervision. (See course 192.) Enrollment limited to 20. The Staff
*80A. The Future of Rain Forests.* 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 preservation. (General Education Code: T7-Natural Sciences or Social Sciences.) D. Letourneau

*80B. The Ecological Forecast for Global Warming.* 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: T7-Natural Sciences or Social Sciences.) M. Loik

*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 enclave approaches to nature, plus current and emerging problems. (General Education Code: T3-Social Sciences.) T he 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 roles of disciplinary abstraction and of the application of that knowledge to context-dependent explanations of environmental problems. Prerequisite(s): course 24 (or Biology 20C); and course 25. Enrollment restricted to environmental studies majors and students in the combined majors with Earth sciences, economics, and biology. Concurrent enrollment in 100L is required. D. Press, E. Zavalata

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. Concurrent enrollment in course 100 required. W credit is only upon successful completion of course 100. Prerequisite(s): courses 24 (or Biology 20C); and course 25; satisfaction of the Subject A and Composition requirements for writing-intensive sections. Enrollment limited to 20. Enrollment restricted to environmental studies majors and environmental studies combined majors. (General Education Code: W.) D. Press, S. Rabkin, E. Zavalata

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 Engineering 5 or 7 (formerly Mathematics 5 or 7). Enrollment limited to 44. (General Education Code: W.) M. Fusari

105. Biology and Ecology of the Vertebrates. F

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, homoeostasis, energy balance, and thermoregulation. Prerequisite to the 106 series. Concurrent enrollment in 105L is required. Basic biology is recommended. (Also offered as Biology 138L. Students cannot receive credit for both courses.) Prerequisite(s): course 24 or Biology 20C. Enrollment limited to 50. Enrollment restricted to biological science majors, environmental studies majors, and students in the combined majors with biology, Earth sciences, and economics. M. Fusari

105L. Biology and Ecology of the Vertebrates Laboratory. F

Provides an overview 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 Biology 138L. Students cannot receive credit for both courses.) Prerequisite(s): course 24 or Biology 20C. Enrollment limited to 50. Enrollment restricted to biological science majors, environmental studies majors, and students in the combined majors with biology, Earth sciences, or economics. M. Fusari

*106A. Natural History of Birds.* The evolution, taxonomy, physiology, behavior, ecology, and management of birds. Lecture, discussion, field format. Birds observed in habitats including bay, marsh, meadow, and forest. Evaluations based on a field journal and examinations. Prerequisite(s): course 105/Biology 138 is recommended. Enrollment limited to 25. Enrollment restricted to junior and senior students. Concurrent enrollment in course 106M is required. Offered in alternate academic years. T he Staff

*106M. Natural History of Birds Laboratory (2 credits).* A field course designed to complement course 106A by providing students with an opportunity to gain hands-on experience in bird study. This includes participation in field exercises and weekend field trips. Concurrent enrollment in course 106A required. Prerequisite(s): course 105. Enrollment limited to 20. J. Lockwood

*107A-B-C. Natural History Field Quarter.* A 15-unit field course that uses California wildlife 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. Prerequisite(s): permission of instructor only during winter quarter. Enrollment limited to 24. Offered in alternate academic years. S. Gliessman

*107X. Natural History of California (15 credits).* A 15-unit field course offered through Sierra Institute 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. Prerequisite(s): permission of instructor only during winter quarter. Enrollment limited to 30. T he Staff

*108. General Entomology.* 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. Prerequisite(s): course 24 or Biology 20C. Offered in alternate academic years. D. Letourneau

*108L. General Entomology Laboratory (2 credits).* Laboratory sections are devoted to the identification of insects. Individual collections representing 15 orders, sight identification of 60 families, and use of taxonomic keys for positive identifications required. Students must be concurrently enrolled in course 108. Enrollment limited to 20. Offered in alternate academic years. D. Letourneau

110. Institutions, the Environment, and Economic Systems. S

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. S

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. A course in computer science, Earth sciences, mathematics, or geography is recommended. Prerequisite(s): course 5 or 7 (formerly Mathematics 5 or 7). Enrollment limited to 40. Enrollment restricted to environmental studies majors and students majoring in the combined majors with biology, Earth sciences, and economics. B. Fullford

115L. Exercises in Geographic Information Systems (2 credits). S

Exercises in Geographic Information Systems and Remote Sensing that demonstrate the development of digital geographic data. Students gain hands-on experience with developing databases, using imagery to create GIS layers, performing spatial analysis, and utilizing GPS technology. Emphasis placed on environmental applications. Concurrent enrollment in course 115A required. Enrollment restricted to environmental studies majors and students majoring in the combined majors with biology, Earth sciences, and economics. B. Fullford

120. Conservation Biology. W

Biological principles and their application to conservation with emphasis on the loss of biodiversity. Calculus recommended as additional preparation. Prerequisite(s): course 24 or Biology 20C; and Engineering 5 or 7 (formerly Mathematics 5 or 7) or Economics 113. Enrollment limited to 70. J. Lockwood

122. Tropical Ecology and Conservation. S

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 150. G. Gilbert


*Offered in 2003–04

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. Swezey

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; 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; and to graduate students. 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 majors and students majoring in the combined majors with Earth sciences, biology, and economics. (General Education Code: W.) D. Press

131. Insect Ecology. F

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 relate theory to application. Prerequisite(s): course 24 or Biology 20C; concurrent enrollment in course 131L. Offered in alternate academic years. D. Letourneau

131L. Insect Ecology Laboratory. F

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; Engineering 5 or 7 (formerly Mathematics 5 or 7); concurrent enrollment in course 131L. Enrollment limited to 20. Enrollment restricted to seniors majoring in environmental studies. 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. UCSC 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 limited to 25. Enrollment restricted to majors in environmental studies and the combined majors with Earth sciences, biology and economics. Admission by interview only. Offered in alternate academic years. C. Shennan

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. Enrollment limited to 40. Enrollment restricted to majors in environmental studies and the combined majors in Earth sciences, biology, and economics. 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 field studies on local plant use and management practices, and investigate in detail home garden agroecosystems and model systems. Prerequisite(s): concurrent enrollment in course 138; interview required; bring class and work schedule to first class meeting. Enrollment limited to 25. Enrollment restricted to majors in environmental studies and the combined majors in Earth sciences, biology, and economics. S. Gliessman

140. National Environmental Policy. W

An overview of all major federal environmental policy domains. Analyzes political, social, economic, and other forces influencing federal (and some state) public policy responses to land use, natural resources, pollution, and conservation dilemmas. Course 25 and/or Politics 20 strongly recommended as preparation. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 75. Enrollment restricted to junior and senior students majoring in environmental studies or the combined majors with Earth sciences, biology, or economics. (General Education Code: W.) D. Press

141. Natural Resource Economics. F

Application of economic analysis to natural resource policy and management. Topics include welfare economics, property rights and externalities, natural resource valuation, exhaustible and renewable resources, and sustainable development. Economics 1 is strongly recommended as preparation. Enrollment restricted to environmental studies majors and biology, Earth sciences, and economics combined majors. A. Richards

*149. Environmental Law and Policy.

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 Legal Studies 149. Students cannot receive credit for both courses.) Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 60. Enrollment restricted to juniors and seniors majoring in environmental studies and environmental studies combined majors. (General Education Code: W.) D. Kilday

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. Enrollment restricted to environmental studies majors and biology, Earth sciences, and economics combined majors. A. Schifferin

152. Science and Land Use Decisions. W Technical and policy dimensions of major land use decisions will be assessed through a detailed case study. Technical review will stress geological constraints; policy review will stress the CEQA process. The initial case study will be the reuse of Ford Owls. One field trip is required. Prerequisite(s): one of courses 140, 149, 151 (recommended), 165 or Earth Sciences 20. J. Gill

*153. Trade and the Environment. Focuses on international and regional institutional arrangements of free trade and their implications for environment and social well-being. Provides better understanding of environmental issues as elements of social processes. Enrollment restricted to all environmental studies majors. R. Sánchez-Rodríguez

*155. Sustainable Development and Environmental Issues at the U.S.-Mexico Border. The primary objective is to enhance an understanding of environmental issues as elements of social processes. Using sustainable development as conceptual framework, identifies linkages between the empirical manifestation of environmental problems at the U.S.-Mexico border and socioeconomic issues associated with them at the local, transnational, and global levels. Enrollment limited to 40. Enrollment restricted to environmental studies majors and biology, Earth sciences, and economics combined majors. R. Sánchez-Rodríguez

156. Environmental Action through Writing. W Guided practice in writing skills useful to environmental activists. Assignments emphasize thinking quickly, revising 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 100 L or concurrent enrollment, satisfaction of the Subject A and Composition requirements. Enrollment limited to 28. (Formerly course 156A.) Enrollment restricted to majors in environmental studies and the combined majors with Earth sciences, biology and economics. (General Education Code: W.) S. Rabinin

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 100 L or concurrent enrollment, satisfaction of the Subject A and Composition requirements. Enrollment limited to 28. (Formerly course 156B, Environmental Action through Writing.) Enrollment restricted to majors in environmental studies and the combined majors with Earth sciences, biology and economics. (General Education Code: W.) S. Rabinin

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 limited to 40. Enrollment restricted to environmental studies, environmental studies/biology, environmental studies/earth sciences, and environmental studies/economics majors. S. Rabinin

160. Restoration Ecology. F A multidisciplinary overview of restoring degraded ecosystems. Among the topics addressed are linkages between ecological principles and restoration, planning and 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 and course 25. Enrollment limited to 40. K. Höll

160L. Restoration Ecology Laboratory (2 credits). F 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 UCSC. Concurrent enrollment in course 160 is required. Prerequisite(s): course 24 or Biology 20C, and courses 23 and 25. Enrollment limited to 15. K. Höll

161A. Soils and Plant Nutrition. S 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): Chemistry 1A or 1B. Enrollment limited to 35. (Formerly The Soil Resource.) W. Cheng

161L. Soil and Plant Nutrition Laboratory (2 credits). S Opportunity to learn and practice basic analytical techniques for the evaluation of physical, chemical, and biological properties of soils. Participants gather their own samples and weekly reports are generated. Data is exchanged to demonstrate the range of properties within the region. Concurrent enrollment in course 161A is required. Prerequisite(s): Chemistry 1A or 1B. Enrollment limited to 18. (Formerly Soil Resource Laboratory.) W. Cheng

162. Plant Physiological Ecology. W 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 and Engineering 5 or 7 (formerly Mathematics 5 or 7). Enrollment limited to 24. M. Lök

162L. Plant Physiological Ecology Laboratory (2 credits). W Introduces techniques for the study of plant interactions with the physical environment. Examines the role of stress on energy budgets, water relations, photosynthesis, and reproduction 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. Lök

163. Plant Disease Ecology. S Introduction to ecological roles of plant diseases, including their importance in regulating plant population dynamics, 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 263. Prerequisite(s): course 24 or Biology 150. G. Gilbert

163L. Plant Disease Ecology Lab (2 credits). S 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 150; concurrent enrollment in course 163 required. Enrollment limited to 24. G. Gilbert

164. Alaska Environments, Peoples, and Policies. S Examines Alaska environments/ecosystems, Native/Euro-American history, and environmental policy. Explores selected materials from natural and social sciences, history of Alaska Native oral traditions, natural resources law, and current policy proposals. Prepares students 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 limited to 16. Enrollment restricted to junior and senior environmental studies, environmental studies/economics, environmental studies/biology, and environmental studies/earth science majors. D. Kędz

165. Freshwater Issues and Policy. F 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. As preparation, it is recommended that students complete the six lower-division prerequisites to the major. Enrollment restricted to environmental studies majors and biology, Earth sciences, and economics combined majors. B. Haddad

167. Freshwater and Wetland Ecology. F 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

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; one of the following: course 108, 110, 120, 124, 138, 140, or 149. Enrollment limited to 20. (General Education Code: W.) S. Rajan

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 philosophies, 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. Enrollment limited to 18.

*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; permission of instructor: see sponsoring agency for paperwork. May be repeated for credit. The Staff

183. Environmental Studies Internship. F,W,S 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; see sponsoring agency for paperwork. May be repeated for credit. The Staff

183B. Senior Internship. F,W,S Open 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. Prerequisite(s): interview only: see course sponsoring agency for paperwork. Enrollment limited to 15. 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. Prerequisite(s): interview; see sponsoring agency for paperwork. 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. The Staff

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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

194. Teaching Environmental Studies. F,W,S This provides an opportunity to participate in the preparation and teaching of introductory environmental studies courses. Students will have significant responsibility in leading discussion sections. Prerequisite(s): petition on file with sponsoring agency. The Staff

195A. Senior Research. F,W,S, This is 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. Prerequisite(s): petition on file with 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 or 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. Prerequisite(s): students must discuss details with faculty sponsor; petition on file with sponsoring agency. The Staff

196. Senior Seminar: Advanced Agroecosystem Analysis. S 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. The Staff

196G. Senior Seminar: Environmental Problems in Developing Countries/Cities. W Using developing countries as an analytical framework, studies problems created by pollution, the use of natural resources, and environmental disasters, as well as the socioeconomic issues associated with them at the local, regional, and global level. Enrollment limited to 20. Enrollment restricted to senior environmental studies majors and the combined majors in Earth sciences, biology and economics; interview to determine level of preparation and appropriateness of background. R. Sánchez-Rodriguez

*196H. Senior Seminar: Advanced Avian Research. Combines directed field research with independent or group research projects that explore avian ecology and conservation topics at a UC reserve. After learning field methods and how to utilize standard sampling equipment, students draft a research topic, formulate a sampling scheme, collect data, and provide written review of results. Individual or group projects may be conducted at the reserve and/or on campus. Prerequisite(s): courses 105 and 106A. Enrollment limited to 10. Enrollment restricted to seniors majoring in environmental studies, and the combined majors in Earth sciences, biology, and economics. Interview with instructor to determine compatibility with field schedule. J. Davis, J. Lockwood

196K. Senior Seminar: Sustainable Development in Developing Countries. W 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: Monterey Bay Agriculture and Local Food Security. S 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. D. Goodman

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): student must present theme-based research ideas in interview with instructor. Enrollment limited to 20. D. Letourneau

196V. Senior Seminar: Organic Agriculture Theory and Practice. W Interdisciplinary research seminar examining scientific theory and practice of organic agriculture in both biological and social contexts. Research emphasis placed on ecology of organically-managed agroecosystems and the growing market and consumption of organic commodities. Prerequisite(s): course 129, or 130A or 133 or 161; interview to determine level of preparation and appropriateness of background. Enrollment limited to 15. Enrollment restricted to senior environmental studies majors and the combined majors with biology, Earth sciences, and economics. S. Swart, S. Ghelman

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 field work and facility and competence in subject matter area; petition on file with sponsoring agency. May be repeated for credit. The Staff

198F. Independent Field Study (2 credits). F,W,S Provides for department-sponsored individual field study off campus for which faculty supervision is not in person but by correspondence. May not be counted toward major requirements. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

199. Tutorial. F,W,S Advanced directed reading, supervised research, and organized projects relating to environmental problems. May be repeated for credit with consent of the chair of environmental studies. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

*Not offered in 2003–04
Graduate Courses

201A-B. Keywords and Concepts (10 credits). F-W
Two-quarter course introduces keywords and concepts that underlie interdisciplinary work in environmental studies through lectures, directed readings, and discussion. Modules include: natural and social systems; society, ecology, and evolution; environment and development; 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, D. Letourneau, G. Gilbert, D. Goodman, B. Haddad, S. Rajan

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, frame and focus research questions, evaluate appropriate methodologies for field, laboratory, and archival research to develop a research proposal. Enrollment restricted to graduate students. M. FitzSimons

201N. Interdisciplinary Research Design (3 credits). S
Provides students with opportunities for experiential learning in the research protocols, practices, and field methods of environmental studies. Students will work directly with doctoral candidates and faculty in the field and laboratory. A weekly meeting will review issues in research practice encountered during each week's efforts. Enrollment restricted to graduate students. W. Cheng

210. Political Ecological Thought and Environment. F
Provides an introduction to social scientific analyses of the relationships between capitalistic development and the environment in the late twentieth century. It has a dual purpose: First, to develop a contemporary historical understanding 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. D. Goodman

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 limited to 20. (Formerly Conservation Biology Core). Enrollment restricted to environmental studies graduate students. K. Hall, 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 is examined in economic, social, and ecological contexts. Enrollment restricted to environmental studies graduate students. S. Gileman

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. May be repeated for credit. S. Gileman

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. Kelso

247. Regional Approaches to Environmental Policy.
A research seminar combining theoretical issues in democratic, 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 limited to 15. Enrollment restricted to environmental studies graduate students. R. Sánchez-Rodríguez

250. Economic Institutions and the Environment.
Focuses on the economy's utilization of natural resources and ecosystems from the perspectives of New Institutional Economics (NIE) and Ecological Economics (EE). Concepts and tools from NIE and EE are introduced and then explored in the context of the extraction, transformation, transfer (sale), end-use, and deposition/recycling of natural resources. Open to advanced undergraduates with instructor permission. (Also offered as Economics 260. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. B. Haddad

Examines the property rights bases of environmental change and resource-based conflict. Early sessions offer a theoretical understanding of property rights. Subsequent sessions apply the theory to local, national, and international environmental issues and conflicts. Companion course to course 260/Economics 275. (Also offered as Economics 262. Students cannot receive credit for both courses.) Enrollment restricted to graduate students; open to undergraduates with permission of instructor. B. Haddad

263. Plant Disease Ecology. S
Introduction to ecological roles of plant diseases, including their importance in regulating plant populations dynamics, community diversity, system function in natural ecosytems, 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

Intensive seminar examining the normative underpinnings of environmental values. Draws on tools from analytical, ethical, and political philosophy to develop normative arguments concerning environmental inequality and justice, environmental preservation, and risk evaluation. Involves team projects in which students develop cases on controversial contemporary issues such as biotechnology. Prerequisite(s): interview only. Enrollment limited to 20. Enrollment restricted to graduate students. May be repeated for credit. S. Rajan, D. Guevara

280. Advanced Topics in Environmental Studies. F,W,S
Intensive research seminar, including reading and critique of primary research literature and research in progress. Topics vary and are announced in advance; students should consult with faculty prior to enrolling. Enrollment restricted to graduate students. May be repeated for credit. The Staff

283. Environmental Studies Internship. F,W,S
Graduate level internship focuses on integrating interdisciplinary academic theory with practical, specialized experience in a professional setting. Prerequisite(s): course intended for environmental studies graduate students; students must complete paperwork and meet with coordinator prior to first day of instruction. May be repeated for credit. The Staff

290. Interdisciplinary Research Seminar (2 credits). F,W,S
Research seminars presented weekly throughout the year by environmental studies and affiliated faculty, by visiting scholars, and by graduate students. Students discuss the content and methodology of research presented following each seminar. Enrollment restricted to graduate students. May be repeated for credit. G. Gilbert

290L. Graduate Research Seminar (2 credits). F,W,S
Graduate student presentations of doctoral research proposals, dissertation work-in-progress, grant applications, and conference papers. This weekly laboratory meeting seeks to develop professional skills, teach constructive criticism, and foster effective discussion among peers. Enrollment restricted to graduate students. E. Zavaleta

291. Advanced Readings in Environmental Studies (3 credits). F,W,S
Focusing on a recently published volume or on a topic of current interest, this seminar requires a rigorous analysis of the principles and methods employed in the four core areas of the program: sustainable agriculture and agroecology; conservation biology; environmental policy analysis; and political economy. Enrollment restricted to graduate students. May be repeated for credit. The Staff

291D. Advanced Readings in Tropical Ecology, Agriculture, and Development (3 credits). S
Analyzes recent publications in ecology, conservation, agroecology, and development in tropical and subtropical regions, particularly Latin America. Discussions place special emphasis on integration across natural and social science disciplines to address issues of sustainability in tropical regions. Enrollment restricted to graduate students. The Staff

291M. Advanced Readings in Biogeochemistry (3 credits), W
Course consists of three parts: fundamental biogeochemistry of the Earth, global cycles of nutrient elements, and societal and scientific issues of global change. Class activities include (1) presentation of summary statements based on reading assignments; (2) discussion of theories, concepts, methodologies, and applications; (3) computer simulation and modeling of elemental cycles using STELLA; and (4) integration of scientific information on global change with societal issues by writing. Enrollment restricted to graduate students. W. Cheng

*Not offered in 2003-04
Environmental Toxicology

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http://www.etox.ucsc.edu

Faculty and Professional Interests

A. RUSSELL FLEGAL, Professor
Anaphogenic perturbations of biogeochemical cycles

KAREN M. OTTEMANN, Assistant Professor
Environmental responses of pathogenic bacteria

DONALD R. SMITH, Associate Professor
Organic algal responses and therapeutic treatment of toxins

FITNAT YILDIZ, Assistant Professor
Microbiology, molecular genetics, genomics; the mechanism of persistence of survival of Vibrio cholerae

ZHIWU ZHU, Assistant Professor
Molecular and systems of molecular mechanisms of metal homeostasis

TOBY WALKER, Assistant Professor
Aquatic microbial ecology, marine plankton, midwater ecology

MARY SILVER (Ocean Sciences)
Biogeochemical cycles

DOUGLAS KELLOG (Molecular, Cell, and Developmental Biology)
Clonal and genetic regulation

RAFAEL GARCIA (Molecular, Cell, and Developmental Biology)
Biochemical and molecular endocrinology, regulation of metabolism and development

DOUGLAS KELLOG (Molecular, Cell, and Developmental Biology)
Cell biology, biochemistry

Raphael K. Mascharak (Chemistry and Biochemistry)
Bioinorganic chemistry, design of antitumor drugs, modeling of active sites 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 Millhauser (Chemistry and Biochemistry)
Electron spin resonance, nuclear magnetic resonance, melanocortin receptor signaling, agouti protein, prions, peptide synthesis

Peter T. Raimondi (Ecology and Evolutionary Biology)
Marine ecology, evolutionary ecology, experimental design, applied ecology

Mary Silver (Ocean Sciences)
Biological oceanography, marine plankton, midwater ecology

Frank J. Talampessi (Molecular, Cell, and Developmental Biology)
Biochemical and molecular endocrinology, regulation of expression of the growth hormone receptor, regulation of expression and function of placental lactogens and hormonal carcinogenesis

Jonathan P. Zehr (Ocean Sciences)
Aquatic microbial ecology, biological oceanography

Martha Zunic (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, 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 careers in research, teaching, industry, and government. The primary criteria for admission to the programs are evidence of superior scholarship in the sciences and a demonstrated ability to conduct innovative research.

Preparation in any of the basic natural sciences, computer science, and/or engineering disciplines equivalent to requirements for a bachelor's degree is required.

Students gain expertise in the broad field of environmental toxicology through in-depth research experiences and challenging courses. Research and training in the department focus on both aquatic and terrestrial systems and toxins that range from inorganic pollutants to bacterial pathogens. In the first year of study, both masters and doctoral students take Environmental Toxicology core courses, as well as other courses selected to strengthen the student's academic training. During this time, the students also commence original thesis research in the laboratory of their major professor.

Students are taught to combine an understanding of the environmental chemistry and exposure routes of toxins with a comprehension of the organismal, cellular, and molecular mechanisms of intoxication. Students gain expertise in environmental toxicology in a dynamic, interactive atmosphere composed of graduate-level lecture and laboratory courses, in-depth seminar classes, and weekly seminar and research presentations. Because the department is diverse and interactive, students become familiar with disciplines ranging from environmental chemistry to molecular genetics to physiology. Collaborations among laboratories within different departments to develop expertise are actively supported in the program. Masters students typically finish in two years and Ph.D. students in four to six years.

More information on the requirements for the graduate programs may be obtained from the Division of Graduate Studies or the Environmental Toxicology Department Office.

Undergraduate Program

While the Environmental Toxicology Department only awards graduate degrees, it does offer a select number of undergraduate courses to prepare and attract promising undergraduates for advanced studies 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; biochemistry; chemistry; Earth 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 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, ground water, fresh water rivers and lakes, estuaries, and the ocean. Emphasis is on the properties of toxic chemicals that influence their biogeochemical cycles and factors that influence their toxicity to aquatic organisms and humans. (Formerly Earth Sciences 80.E.) (General Education Codes: T2-Natural Sciences, Q.) A. Flegal

**Upper-Division Courses**

**102. Cellular and Organismic Toxicology. W**
Emphasizes the physiologic and biochemical basis of toxicity across organ systems and animal species, including the types of cellular response to toxic compounds and the role of organ system structure/function in susceptibility to toxicity. Students cannot receive credit for this course and course 234, Ocean Sciences 238, and Biology 134 and 234. (Also offered as Biology 134. Students cannot receive credit for both courses.) Prerequisite(s): Biology 20A-B; Biology 100 and 131 or 132 recommended. The Staff

**144. Groundwater Contamination. S**
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. (Formerly Earth Sciences 144.) A. Flegal

**150. Introduction to Research and Experimental Design. F**
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. K. Ottmann, Z. Zhu

**151. Scientific Writing and Presentation. W**
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 formats; and further development of critical thinking. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (Formerly course 150C. Undergraduate Research in Environmental Toxicology.) (General Education Code: W) The Staff

**195. Senior Thesis. F.W.S**
An individually supervised course, with emphasis on independent research culminating in a senior thesis. Prerequisite(s): senior standing and petition on file with sponsoring agency. May be repeated for credit. T. Staff

**198. Independent 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, the two or three courses may be taken concurrently, or the course repeated for credit. Prerequisite(s): petition on file with sponsoring agency. T. Staff

**199. Tutorial. F.W.S**
Reading, discussion, written reports, and laboratory research on selected topics. Prerequisite(s): petition on file with course sponsoring agency. May be repeated for credit. T. Staff

**Graduate Courses**

**201. Sources and Fates of Pollutants. F**
Presents 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 Organismal Toxicology. W**
Emphasizes biochemical, cellular, and organ system basis of intoxication, including dose-response relationships, biotransformation of toxicants, biochemical mechanisms underlying toxicity, factors influencing toxicity, and biomarkers of exposure. Effects of various classes of toxins emphasized, including heavy metals and persistent synthetic organics, with a focus on susceptible biogeochemical/cellular processes of the central nervous system, immune, hepatic, and renal target organ systems. Students cannot receive credit for this course and course 102. 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 toxicity at both cellular and molecular levels, and the skills to approach emerging challenges in the field. (Formerly course 202.) Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor’s permission. Z. Zhu

**204. Interdisciplinary Training in Environmental Toxicology. S**
A laboratory course for advanced undergraduates and graduate students. Emphasizes training in broad and interdisciplinary analytical and technological approaches to problems in toxicology, direct intensive participation, and critical thinking skills. (Formerly course 203.) Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor’s permission. D. Smith, 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. (Formerly course 205B.) Enrollment restricted to graduate students. D. Smith, K. Ottmann, Z. Zhu

**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. F. Yildiz

**234. Comparative Toxicology. S**
Emphasizes the physiologic and biochemical basis of toxicity across organ systems and animal species, including the types of cellular response to toxic compounds and the role of organ system structure/function in susceptibility to toxicity. Students cannot receive credit for this course and course 134, Ocean Sciences 238, and Biology 134 and 234. (Also offered as Biology 234. Students cannot receive credit for both courses.) Enrollment limited to 12. Enrollment restricted to graduate students; qualified seniors may enroll with instructor’s permission. T. Staff

**281A. Topics in Environmental Toxicology. F.W.S**
Selected topics in environmental toxicology. Topics vary from year to year. Enrollment restricted to graduate

*Not offered in 2003-04
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
Analyses of 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 undergraduate students may enroll with instructor's permission. May be repeated for credit. A. Flegal

2810. Topics in Bacterial Pathogenesis. 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 280O. Students cannot receive credit for both courses.) Enrollment limited to 20. Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's permission. May be repeated for credit. K. Ottmann

2815S. 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 281S. Students cannot receive credit for both courses.) (Formerly Topics in Toxicology.) Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's permission. May be repeated for credit. D. Smith

Intensive seminar series focusing on the most current work on genes and the processes that regulate biofilm development dynamics as well as on the recent developments on visualization of biofilms. Presentation and discussion based; qualified undergraduate students may enroll with instructor's permission. Enrollment restricted to graduate students. May be repeated for credit. F. Yildiz

2817. Genetic Responses to Metal Ions. 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 280V. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to graduate students. Z. Zhu

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 basic concepts of virulence and virulence factors, virulence factor regulation, toxins, and interactions of pathogens with mammalian cells and organs. Discussions focus on several key pathogens, including Helicobacter pylori, Vibrio cholerae, Salmonella typhimurium, and Listeria monocytogenes. (Formerly Bacterial Pathogenesis) 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. (Formerly course 205.) Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor's permission. 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. Prerequisite(s): petition on file with the sponsoring agency. May be repeated for credit. The Staff

Prerequisite(s): petition on file with the 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 curricula and library holdings; the extent of the involvement of our students in field study, community work, and study abroad; and the community-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, Asian American, African American, or Chicano/Latino experience. Many 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 several ethnic studies courses as part of any one of several majors. For example, a student majoring in sociology can take such courses as Ethnic and Status Groups, Twenty-First Century African American Social Structure, and Social History of Asian Americans. A student majoring in literature can pursue courses in African American, Asian American, Jewish American, or Chicano/Latino literature as well as courses in Latin American, African, Chinese, or Japanese literature;

• by choosing a major that offers a formal or informal concentration in ethnic studies. American studies offers a formal pathway in ethnic studies, and within that pathway, students can focus primarily on a specific ethnic group. Women's studies offers two formal concentrations: race, class, and ethnicity (within the U.S.); and nations and cultures (outside the U.S. or comparative with the U.S.). Community studies and Latin American and Latino studies enable students to undertake extended periods of fieldwork in U.S. ethnic communities or in Latin American communities as an integral part of their academic study;

• by taking such 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 36);

• 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

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(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, text 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

SHELLEY STAMP
Film history, theory and criticism; silent cinema; women's filmmaking; film censorship; histories of moving image feminist approaches to cinema
Assistant Professor

DAVID CRANE
Film and media theory, discourse on technology, digital culture, experimental media, critical and psychoanalytic theory

SHELTON D. ROY
Community-based art in information and communications environments, net art, social and political aspects of computer networks and databases, human-computer interface design

IRENE GUSTAFSON
Film and video production, hybridized approaches to genre, production design, issues of gender and sexuality/queer studies

AMELIE HASTIE
Film theory and history, feminist film and television studies, Chinese cinemas, issues of authorship, interdisciplinary approaches

L. S. KIM
Television theory and history, racial discourse, feminist criticism and postfeminism, transnationalism in relation to Asian media genres, such as martial arts films and anime

PETER LIMBRICK
International cinemas, interactions of race, gender, and sexuality; theories of globalization, transnationalism, and postcoloniality; queer theory

WARREN SACK
Software design and media theory

GUSTAVO VAZQUEZ
Film and video production, directing drama, documentary and experimental cross-cultural experiences in film, film curator

Professor

JULIANNE BURTON-CARVAJAL, Professor, Literature
Twentieth- and 21st-century Latin(o) American visual media, particularly film; melodrama as a transnational form; gender and authorship; history, cultures, and representations of California, particularly the Central Coast

TERESA DE LAURENTI, Professor, History of Consciousness
Semiotics, psychoanalysis, feminism, film theory, literary theory, and queer studies

ROSA LINDA FREGOSO, Professor, Latin American and Latino Studies
Cultural studies, transnational feminist theories, Chicano/a and Latino/a cinema

HERMAN S. GRAY, Professor, Sociology
Cultural studies, media studies

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 theoretical and practical aspects of digital media, film- and video-making, and critical studies. Students are given the critical skills, the theoretical concepts, and the 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 artistic 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. They are also encouraged to demonstrate technical proficiency and creative vision in film and digital media production. Students in the highly selective production concentration devote much of their time to producing films, videos, and digital art, while also studying the histories and theories of these media.

Students in both facets of the major acquire skills in media analysis and production while maintaining a broadly liberal arts perspective. The UCSC program is interdisciplinary, combining specific 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 into digital computer-based moving images and interactive media, and as time-based arts continue to expand into everyday experience, students in the major are uniquely positioned to assume leadership roles 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 to 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 film, audio, and digital video production and postproduction equipment; audio recording studio, sound stage with green screen; digital nonlinear editing rooms; telecine, film sound, and 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 a film study center for projection and close film analysis and 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 major requirements, as well as other courses in critical studies in film and video and related media. 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 170) and other production workshops.

Declaring the Film and Digital Media Major

Prior to declaring the film and digital media major, students must have successfully completed two of the required lower-division courses (see the list of specific courses below).

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.

Program of Study

The general film and digital media major requires three lower-division and ten upper-division courses in residence and satisfaction of the senior comprehensive requirement. Students must include among these 13 courses at least one lower- or upper-division 5-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 production concentration within the major (see Production Concentration below).

Lower-Division Requirements

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
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

Five elective courses are to be chosen from the following:

• up to five upper-division history/critical studies courses in film and digital media;
• up to two upper-division courses in film and video production (170A, 170B, 171, 172, 173, 175, 176, 177, 178A, 178B);
• course 150;
• up to two upper-division courses offered by other departments must be preapproved 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.

[The plan details are not fully transcribed due to the length and complexity of the text.PAGE 230: 230]
Students who are interested in the production concentration should seriously consider Plan One in order to be better prepared for application to production studios.

## Plan One

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### Film and digital media

- Introduction to Film Theory and Criticism
- Experimental Film and Video
- History of Television
- Visual Culture and Technology

### Plan Two

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### 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 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):

- **Course 120**, Introduction to Film Theory and Criticism
- **Course 170B**, Fundamentals of Film and Video Production
- **Course 150**, Screenwriting
- **Course 170A**, Fundamentals of Digital Media Production
- **Course 171**, Special Topics Workshop
- **Course 172**, Film and Video Studio
- **Course 173**, Narrative Workshop
- **Course 175**, Documentary Video Workshop
- **Course 176**, Experimental Video Workshop
- **Course 177**, Digital Media Workshop: Computer as Medium
- **Course 178A**, Personal Computers in Film and Video
- **Course 178B**, Advanced Personal Computers in Film and Video
- **Course 130**, Silent Cinema
- **Course 132A**, International Cinema to 1960
- **Course 132B**, International Cinema, 1960 to Present
- **Course 134A**, American Film, 1930–60

Three lower-division and 10 upper-division courses are required for completion of the major. 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) 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. 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.

### 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. 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.

### 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 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:

- **Course 20A**, The Film Experience
- **Course 20B**, Introduction to Television Culture and Society

### 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:

- **Course 130**, Silent Cinema
- **Course 132A**, International Cinema to 1960
- **Course 132B**, International Cinema, 1960 to Present
- **Course 134A**, American Film, 1930–60
- **Course 134B**, American Film, 1960–Present
- **Course 136A**, Experimental Film and Video
- **Course 136B**, History of Television
- **Course 136C**, Visual Culture and Technology:

### Two electives

Any two 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

- **Course 20A**, The Film Experience, Fall, S
- **Course 20B**, Introduction to Television Culture and Society, W
- **Course 20C**, Introduction to Digital Media, F
- **Course 20P**, Introduction to Production Technique, P
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 Codes: IH, A) J. Gustafson. The Staff

20P. Introduction to Production Technique. W, S
Introduction to production process 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 scripting, but without hands-on editing. Open to students of varied backgrounds and goals. Students are billed for a course fee. (General Education Code: A) J. Lustig. The Staff

42. Student-Directed Seminar. F, W, S
Seminars on selected topics taught by upper-division students under faculty supervision (see course 192). Prerequisite(s): petition on file with 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 Codes: TS-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 Codes: T4-Humanities and Arts, A) T. Limbrick

*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 ways that films themselves set styles. (General Education Codes: T4-Humanities and Arts, A) T. Limbrick

*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 Codes: T4-Humanities and Arts, A) T. Limbrick

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 illuminated the media: formalism, realism, structuralism, semiotics, psychoanalysis, Marxism, feminism, and issues of identity and difference. Students are billed for a course fee. Prerequisite(s): course 20A or 20B. Satisfaction of the Subject A and Composition requirements. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code: W) A. Hadley

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. S. Stamp

132A. International Cinema to 1960. F
A survey of significant developments in narrative film outside Hollywood from the advent of sound technology to the late ’50s. Differing inter/national contexts, theoretical transformations, technological innovations, and major directors 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: A) J. Gustafson. The Staff

132B. International Cinema, 1960 to Present. 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: A) P. Limbrick

132C. Gender and Global Cinema. S
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 industries. Students cannot receive credit for this course and Latin American and Latino Studies 80I. Prerequisite(s): course 20A or 20B. Enrollment limited to 120. (General Education Code: E) A. Hadley, R. Fregoli

134A. American Film, 1930–1960. W
A survey of American narrative cinema from 1930 to 1960. Examines developments in film 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. S. Stamp

134B. American Film, 1960–Present. S
A survey of American narrative cinema from 1960 to the present. Examines developments in film 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. P. Limbrick

136A. Experimental Film and Video. F
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 as well as 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: A) D. 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: A) J. Gustafson. The Staff

136C. Visual Culture and Technology: History of New Media. S
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

142. Beyond Cybernetics: Advanced Topics in New Media Technologies.
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 limited to 20. Enrollment restricted to film and digital media majors and pre-majors. The Staff

150. Screenwriting. F
Problems in writing for film and television are explored through the writing of original material and analysis of existing genres. 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: W) E. Halander

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 blocking, and working with actors and crew. 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: A) G. Vazquez

160. Film Genres.
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: A) J. Gustafson. The Staff

*Not offered in 2003-04
161. Documentary Film and Video. F
Explores the category of nonfiction through a historical and theoretical study of documentary in film and video. Addresses ethnographic film, Soviet and Griersonian documentary, cinéma vérité 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. M. Morse

162. Film Authors. W,S
Intensive critical study of the work of one film auteur (director, screenwriter, actor, cinematographer). Themes, style, and structure are explored using various critical modes of analysis. Students are billed for a course fee. Prerequisite(s): course 120. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. May be repeated for credit. A. Haefliger

162A. Cinema and History: Film Author Satyajit Ray. S
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 History 155. Students cannot receive credit for both courses.) (General Education Code: E.) D. Basu

*163. Movies on the Border.
Surveys a range of cinematic representations of the US-Mexico border region from the 1950s to the present-Hollywood, independent, Chicano/Latino, Mexican. Examines “border” as concrete physical (trans)location, site of metaphor and projection, and trope for new ways of knowing and being. Enrollment restricted to film and digital media majors: Latin American and Latino studies majors. (General Education Code: E.) J. Burton-Carvalj

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 themes. Students are billed for a course fee. Usually offered in alternate academic years. Prerequisite(s): course 20A or 20B. (General Education Code: E.) I. Gustafson

165B. Race on Screen. W
Review of historical and critical tools to interpret representations of race on cinematic, television, and computer screens. Class 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. (General Education Code: E.) The Staff

165C. Lesbian, Gay, and Queer Film and Video. F
An overview of homosexuality in American film. Explores Vito Russo’s The Celluloid Closet as main 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. Usually offered in alternate catalog years. I. Gustafson

165D. Asian Americans and Media. S
Examines media representations about, 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 limited to 60. Enrollment restricted to juniors and seniors. (General Education Code: 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 collectivity or other unifying cultural entity. Not a survey, this course selects one focus or offers a comparative of cross-cultural framework. Students are billed for a course fee. Prerequisite(s): course 130, 132A or 132B. May be repeated for credit. S. Stamp, The Staff

170A. Introduction to Digital Media Production. F,W,S
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 introduce production techniques and methods. Students are billed for a materials fee. Prerequisite(s): courses 20A and 20C; permission of instructor. Enrollment limited to 20. Enrollment restricted to film and digital media majors. (General Education Code: A.) W. Sadowski, S. Daniel

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 course 20A or 20B and one other film/video critical studies or history course are required. Completion of additional upper division film and digital media critical studies or history courses improves students’ ability to be admitted to this course. Enrollment limited to 25. (Formerly course 170.) (General Education Code: A.) J. Gustafson, E. Holland, C. Lord, L. Andrews, The Staff

171. Special Topics Workshops.
Study of selected aspects of film, video, and/or digital media production.

A. 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. 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. Daniel

175. Documentary Video Workshop. W
Workshop in documentary video production, development of critical standards, ethical issues, and technical methods. Each student is responsible for the completion of short documentaries from assignments. 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. G. Vazquez

176. Experimental Video Workshop. F
Introductory workshop in video production (non-narrative, experimental). Topics include a survey of non-narrative experimental video from a historical/theoretical perspective and an introduction to videography, fundamentals of video editing, and sound. Students complete several short projects and are billed for a materials fee. Students must bear the cost of all materials. 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 170B 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: A.) C. Lord

177. Digital Media Workshop: Computer as Medium. W
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. (General Education Code: A.) L. Andrews

178A. Personal Computers in Film and Video. W
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. Enrollment restricted to majors. T. He 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 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. 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 cells 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. Prerequisite(s): application to be completed at first class meeting. Enrollment limited to 16. E. Hollander

185. Special Topics in Film and Video.
Study of selected aspect of film and/or video history, theory, or criticism. Students are billed for a course fee.

*8. 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 the issues of race and representation. (General Education Code: E.) T. He Staff

*C. 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. Prerequisite(s): courses 120 or 136A. M. Morse

*D. 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 scores). Prerequisite(s): courses 20A and 120. Enrollment limited to 40. Enrollment restricted to film and digital media majors during priority enrollment; may be opened if space allows. (General Education Code: A.) M. Morse. T. He Staff

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. (Formerly Special Topics in Television Culture) 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. L. Kim

189. Advanced Topics in Digital and Electronic Media Studies.
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. (Formerly Special Topics in Electronic and Digital Media.) 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, S. Daniel

192. Directed Student Teaching, F.W.S
Teaching a lower-division course under faculty supervision (see course 42). Prerequisite(s): Proposal supported by a faculty sponsor and department. T. He Staff

194A. Film Theory Seminar, F
Advanced senior seminar examining classical and contemporary film theory and those theoretical paradigms and methods that have illuminated the medium: formalism, 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 limited to 20. Enrollment restricted to senior film and digital media majors. A. Haskell

194B. Electronic Media Theory Seminar. W
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, postmodernist, and other critical traditions. Students are billed for a course fee. Prerequisite(s): course 20B; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. Enrollment restricted to senior film and digital media majors. (General Education Code: W.) D. Crane

194C. New Media Theory Seminar. F
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, telematics, 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 limited to 20. Enrollment restricted to senior film and digital media majors. (General Education Code: W.) M. Morse

194D. Film History Seminar. W
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 limited to 20. Enrollment restricted to senior film and digital media majors. (General Education Code: W.) S. Stamper

194E. International Cinemas. S
In-depth study of the history and theory of international cinemas with changing topics such as globalism and resistance, postcolonial theory, international productions and questioning race, the “national,” and cinema. Students are billed for a course fee. Enrollment limited to 16. Enrollment restricted to senior film and digital media majors. P. Limbrick

194F. Film and the Other Arts: Music and Dance. S
Examines the use of artistic media within films and of films that thematically are about other media. What do other art forms allow, in terms of the story, the film’s meaning, the gaze, and the spectator? Students are billed for a course fee. Enrollment limited to 16. Enrollment restricted to senior film and digital media majors. L. Kim

194G. New(s) Media. W
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 limited to 16. Enrollment restricted to senior film and digital media majors. W. Sack

195. Senior Thesis Project, F.W.S
An individually supervised course, with emphasis on independent research, to culminate in a senior thesis/projection. Proposals should be submitted to adviser

*Not offered in 2003–04
one quarter in advance. Prerequisite(s): petition required, approved by instructor and department; thesis petitions available in the department office. 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. Prerequisite(s): admission by application during winter quarter. See department office for more information. Enrollment limited to 18. (Formerly course 196.) E. Hollander

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 limited to 16. Enrollment restricted to senior film and digital media majors. (General Education Code: W. C. Lord

197. Senior Digital Media Workshop. S

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. Prerequisite(s): admission by application during winter quarter. See department office for more information. Enrollment limited to 20. S. D'Andrea

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 requirements. Prerequisite(s): petition required, approved by instructor and department; petitions available in the department office. May be repeated for credit. The Staff

199A. 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. Prerequisite(s): petition required, approved by instructor and department; petitions available in the department office. May be repeated for credit. The Staff

199B. Independent Field Study (2 credits). F,W,S

Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Prerequisite(s): petition required, approved by instructor and department; petitions available in the department office. May be repeated for credit. The Staff

Graduate Courses

*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, embedded robots, artificial life and other topics. Students are billed for a course fee. Enrollment limited to 15. Enrollment restricted to graduate students. M. M. Morse

*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 film's emerging visual and narrative grammar, its changing cultural status, and its engagement with shifting registers of class, ethnicity, gender, and sexuality. Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit. M. M. Morse, C. Lord, L. Andrews, S. Stamp

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, M éxico and the M óvies

Latin American and Latino Studies 129, Women Filmmakers Latin American and Latino Literature 80T, Introduction to the Horror Film

Modern Literary Studies 121, The Gothic Imagination in Fiction, Film, and Theory

Sociology 116, Communication and M e dia

Sociology 129, Popular Culture

Pascale Gaitet (Literature)

Nineteenth- and 20th-century French literature, socio-linguistics, political history, Céline, Genet

Richard Tersman (Literature)

Nineteenth- and 20th-century French and European literature and culture, literary and cultural theory, contemporary French literature and cultural globalization

Associate Professor

Sharon Kinoshita (Literature)

Intercultural relations in 12th- and 13th-century literature, M é dia, and intercultural study of literature, postcolonial theory, world literature and cultural studies

Lecturer

Miriam Ellis

French theater history and performance, 17th-century literature and culture, Latin America and Caribbean women poets, opera translation and production, theater as pedagogic instrument, computer-assisted French

Angela Elsey

Francophonie, especially North American (Louisiana, Québec, the Caribbean); French diatopology and sociolinguistics

Patricia Fitchen

Poetry from Baudelaire to the present, modern French theater, French women and the arts, surrealism, history and theory of French cinema, intercultural communications

Gildas Hamel

French history and culture, Celtic languages and literatures, history of Judaism and early Christianity

Hervey 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 beginning to advanced levels. In addition, students may select from among the following programs: a major in language studies (262), a minor in literature with an emphasis in French literature (page 279), or a minor in global economic relations (page 173). 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 262, 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 adviser, some French courses taken abroad may be applied to major requirements. For
Lower-Division Courses

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). 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. The Staff

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 262), a major in German studies (page 237), a major in literature with an emphasis in German literature (page 279), or a major in global economics (page 173).

127. Louis XIV and His Court.
Complements History of Art and Visual Culture 161, The Sun King at Versailles, through readings of authentic texts that deal with court life, values, entertainment, and hierarchy. Adjuunctive material includes music, films, and videos. Taught in French. Students interested in this course who have not taken the prerequisite should meet with the instructor preferably prior to the first class meeting. Prerequisite(s): course 6 or placement by examination. Enrollment limited to 25. M. Ellis

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. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Graduate Courses

297F. Independent Study (2 credits), F,W,S
Enrollment restricted to graduate students, or undergraduates with permission of instructor. May be repeated for credit. T. The Staff

The Staff

90. French Cinema. W
Investigation of a variety of topics (historical, cultural, and linguistic) in France and the French-speaking world. Topics are explored through film. Conducted in English. Formerly Topical in French Studies. May be repeated for credit. (General Education Code: T4-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. Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Geology and Geophysics

See Earth Sciences, page 160.

German

Language Program
239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Associate Professor
LOISA NIVAGAARD (Literature)
Eighteenth- and 19th-century German literature, German romantics, European and American romantic fiction, Goethe

Lecturer
WALTER CAMPBELL
Language teaching, 18th- and 19th-century German literature, history of German

WALTER CAMPBELL

American Council on the Teaching of Foreign Languages.

Placement Exams

Information on these topics can be found on page 262, 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 adviser, be applied to major requirements.

For more information on these programs, see UC Education Abroad Program (page 42). For information on credit applied to a major, contact the appropriate department.

*Not offered in 2003-04
Lower-Division Courses

1-2-3. Instruction in the German Language. F-W-S
Teaches beginning-level competence in speaking, reading, writing, and listening comprehension. Sequence starts in fall quarter only. (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 interested in a course who have not taken the prerequisites should meet with the instructor prior to the first class meeting. Students who have completed course 1 and course 2, may take 1B for credit. Prerequisite(s): 2: course 1 or 1A; 3: course 2; or placement by examination. 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

4-5-6. Intermediate Studies in German Language. F-W-S
Intermediate composition and conversation based on the reading of selected prose and related cultural material. Speaking, reading, writing, and listening comprehension skills are developed by extensive use of media materials. Conducted entirely in German. Not all levels are available each quarter. Check the quarterly Schedule of Classes for the exact quarter(s) of offering. Students interested in a course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): 4: course 1B or 3; 5: course 4; 6: course 5; or placement by examination. (General Education Code: 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial. F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits). F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

119. German Media. F
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. 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial. F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

German Studies

Department of History
32 Merrill College
(831) 459-2982
http://humanities.ucsc.edu (open History)

Program Faculty
WALTER CAMPBELL, Lecturer in German Language
MARK CIIOC, Professor of History
DAVID HOY, Professor of Philosophy
DONNA HUNTER, Associate Professor of History of Art and Visual Culture
VIRGINIA JANSEN, Professor of History of Art and Visual Culture
GARY LEASE, Professor of History of Consciousness
LOISA NYGAARD, Associate Professor of Literature

Program Faculty Advisers
MARK CIIOC, Professor of History
GARY LEASE, Professor of History of Consciousness
LOISA NYGAARD, Associate Professor of Literature

Program Description
German studies is conceived of as a transnational major that deals with the various German-speaking regions of central Europe. Whether one thinks of philosophy, music, art, education, religion, or political and social history, German culture has exercised a profound and often decisive influence on Europe. Some of the most important ideological debates in Western culture have arisen in the German-speaking area, and changes in German culture and society have occasionally had devastating effects on world history. Events and political developments of recent years—such as the unification of East and West Germany and the emergence of the German-speaking region of Europe as a major player in world affairs—have had important impacts.

A German studies major provides students with an interdisciplinary program—covering history, history of art and visual culture, literature, and philosophy—in which students and faculty come together in exciting, intellectually demanding pursuits.

Major Requirements
All students are required to take a total of 10 courses, including a minimum of three courses in German literature and two courses in German history. No more than two of the 10 required courses may be lower-division courses, and no more than two may come from the Germany in a European or World Context list. A minimum of five of the 10 required courses must be taught in German or principally through German-language texts. Language competency to level five is required for the completion of the German studies major.

All students must complete a senior oral examination (given by two faculty members) as part of the requirements for the major. German 5 is a prerequisite for upper-division courses taught in German. Students are encouraged to take German 1–5 as early as possible in their academic program.

Regular consultation with a program faculty adviser is required. It is strongly recommended that students spend a period of time in residence in Germany through the University of California Education Abroad Program to further enrich the program of study and ensure a command of the language. Students are allowed to transfer up to five courses taken at German universities toward the requirements for the major. However, the five core courses in German literature and history must be taken at UCSC.

Core Courses
German
119 German Media

German Literature
102 Introduction to German Literature
120 Fear of the Foreign: Xenophobia in German Literature and Culture
150 German Romanticism
157 German Identity

History
133 German History
136 German Film, 1919–1945
136 German Art, 1905–1945
150 History of Art and Visual Culture
150 History of Consciousness
800 Hitler, National Socialism, and Religion
101 Bizarrism
125 Culture in Crisis Weimar Germany

Politics
147 Germany and the New Europe

Context Courses
History
30A Modern European History, 1500–1789
30B Modern European History, 1789–1914
30C Modern European History, 1914–Present
33 Medieval Europe, 300–1200
80W The Holocaust: The Destruction of European Jewry
122 Reformation Europe
127 Fascism and Resistance in Italy

History of Art and Visual Culture
80A Introduction to Architecture
164 Early Medieval and Romanesque Architecture
165B Gothic Beyond
190Q Portraiture Europe and America, 1400–1900

Notes:
- *Courses marked with an asterisk (*) are part of the major.
- All courses must be taken with a letter grade of C- or better.
- Students must complete a senior oral examination (given by two faculty members) as part of the requirements for the major.
- German 5 is a prerequisite for upper-division courses taught in German. Students are encouraged to take German 1–5 as early as possible in their academic program.
- Regular consultation with a program faculty adviser is required. It is strongly recommended that students spend a period of time in residence in Germany through the University of California Education Abroad Program to further enrich the program of study and ensure a command of the language. Students are allowed to transfer up to five courses taken at German universities toward the requirements for the major. However, the five core courses in German literature and history must be taken at UCSC.
Greek

Language Program
239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Professor
MARY-KAY GAMEL, PROFESSOR (Literature)
Performance studies and, and 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. LYNCH (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 poetics, feminist interpretation, literary and cultural theory, pre- and early modern studies

DANIEL SELDEN (Literature)
Afroasiatic languages and literatures, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

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 286. Those interested in classical studies should see the program description on page 152.

Lower-Division Courses
1-2. Elementary Ancient Greek, F-W
Instruction in the grammar of Attic Greek, together with readings, mostly in Plato, designed to prepare for the study of classical literature. The sequence will be started in the fall quarter only. (Formerly Greek Literature 1-2.) The Staff

99. Tutorial, F-W-S
Prerequisite(s): petition on file with 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 279.

Health Sciences

See Biological Sciences, page 136.

Hebrew

Language Program
239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests
Lecturer
TAMMI ROSSMAN-BENJAMIN
Hebrew language and culture, biblical Hebrew syntax and semantics, the Hebrew Bible, Jewish thought, psychology of 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 259). Lower-division courses are aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, 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 until 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 262, under Language Program.

Lower-Division Courses
1-2-3. Introduction in the Hebrew Language, F-W-S
Speaking, listening comprehension, reading, and writing fundamentals. The use of Modern Hebrew is encouraged through classroom practice supplemented by language laboratory work. Sequence begins in 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): 2. course 1; 3. course 2. The Staff

4-5-6. Intermediate Hebrew, F-W-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. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): 4. course 3; 5. course 4; 6. course 5. (General Education Code: IH.) 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: T4-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. Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial, F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits), F-W-S
Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F-W-S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Additional Courses of Interest
Check the Schedule of Classes for 2003–04 course offerings. Literature 80A, Biblical Narratives
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) 459-2054
http://lang.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 1–6 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 262 under Language Program.

**Lower-Division Courses**


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 equivalent; knowledge of Devanagari script. Enrollment limited to 20. The Staff

**3A. Urdu Script (2 credits). S**

Introduction to writing and reading Urdu script (a modified Persio-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 noticeably in their writing systems. Prerequisite(s): Hindi 2 or equivalent; knowledge of Devanagari script. Enrollment limited to 25. (General Education Code: IH.) 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: IH.) The Staff

**5-6. Intermediate Hindi. W-S**

Readings in Devanagari of Hindi and Urdu prose and poetry. Introduction to variety of literary forms and styles aimed at developing cultural competence along with language skills. Oral and written composition, coupled with video and web-based material, to develop communicative proficiency. Prerequisite(s): course 4; course 5. Enrollment limited to 25. (General Education Code: IH.) The Staff

**99. Tutorial.**

Prerequisite(s): petition on file with sponsoring agency. The Staff

**99F. Tutorial (2 credits). F,W,S**

Prerequisite(s): petition on file with sponsoring agency. The Staff

**Upper-Division Courses**

**199. Tutorial. F,W,S**

Prerequisite(s): petition on file with sponsoring agency. The Staff

**199F. Tutorial (2 credits). F,W,S**

Prerequisite(s): petition on file with 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 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.

**Infomation**

32 Merrill College
(831) 459-2982
http://humanities.ucsc.edu/

**Faculty and Professional Interests**

**Professor**

**Jonathan E. Beecher**

French history, European intellectual history, Russian intellectual history, utopian socialism

**Robert F. Berezowetz Jr., Emeritus**

**Edmund Burke III**

Islamic history, modern Middle East and North African history, French history, European imperialism, world history

**Mark Cioc**

German history, modern European history, environmental history

**Dana Frank**

U.S. social and economic history, women, labor, and working class history, contemporary political economy

**Charles W. Hedrick Jr.**

Greek social, cultural, and intellectual history, Greek religion, Greek historiography, Greek archaeology

**Gay B. Hershatter**

Modern Chinese social and cultural history, labor history, women's history, history of sexuality, feminist theory, history, memory, and nostalgia

**Peter Kenez**

Russian history, Eastern Europe, 20th-century Europe

**Noel Q. King, Emeritus**

**Bruce Levine**

Civil War era, 19th-century U.S., economic, social, and political history, comparative slavery and serfdom, labor history

**Richard Maier, Emeritus**

**Gary B. Miles, Emeritus**

**Buchanan Sharp**

English history

**Tyler E. Stovall**

France, European history, world history, African American history, labor and colonialism

**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; Islamic civilization; African diaspora studies; world history

**Dilip K. Basu**

Asian history, modern China, modern India; colonialism, nationalism, cities, cinema and visual culture

**Pedro G. Castillo**

Chicana and Chicano 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, ethnohistory, slavery, race, gender

**M. Libeth Haas**

U.S. social and cultural history, the Southwest, the colonial Americas, California; ethnic and women's history; history and theory

**Cynthia Polecritti**

Medieval, Renaissance, and modern Italy; urban and cultural history; ritual and popular devotion

**Alice Y. Murray**

Historical memory, Asian American history, gender history, race and ethnicity, 20th-century U.S., oral history

**Assistant Professor**

**Brian 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 Aptheker (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


**Program Description**

The history program 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. Program main emphases are in social and cultural history, with additional strengths in intellectual and political history.

**Program Description**

The history program 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 emphases are in social and cultural history, with additional strengths in intellectual and political history.

**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 handbook, available at the history department office, for a more detailed description of these courses.

**Requirements for the Minor**

A minimum of nine history courses is required for the minor. Students transferring from other UC campuses may 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 studies 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 (pcastle@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. Students may also petition the graduate committee to prepare a secondary teaching field in African or Latin American history.

Courses

Until they pass the qualifying exam and are formally accepted to candidacy (25–30 page) research paper; 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, and 290C) is required for advancement to candidacy. Courses taken are graduate seminars, independent study courses, and upper-division undergraduate courses.

During the first year, students take course 201, Methods and Theories of History: a two-quarter series, during their first two 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 Proseminar 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, competency will be demonstrated by passing a reading exam administered by a member of the history faculty.

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.

*Not offered in 2003–04

Lower-Division Courses

8. U.S. and Japanese World War II Films (2 credits), W

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. Christy, A. Yang Murray

10. Theories of History/Theories of Society, W

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: IH.) M. Traugott

20A. Classical World: Greece

An overview of Greek history from the beginnings through the Hellenistic period, with emphasis on the Archaic and Classical periods (600 B.C. through 323 B.C.). (General Education Code: IH.) The Staff

20B. Classical World: Rome, F

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. Offered in alternate academic years. (General Education Code: IH.) C. Hadrick Jr.

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 061M. Students cannot receive credit for both courses.) (General Education Code: IH.) M. Gamel

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: IH.) M. Wettorkamp

25B. United States History 1877 to Present, S

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: IH.) M. Loar

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 Codes: IH, E.) D. Basso

30A-B-C. Modern European History, F, W, S

A survey of economic, social, and political history of Europe since the late fifteenth century. A: 1500–1789; B: 1789–1914; C: 1914–present. A is not prerequisite to B, nor B to C. (General Education Code: IH.) (F) B. Sharp, (W) B. Thompson, (S) B. Thompson

32. Spain: 632–1500, W

History of Iberia from the decline of the Visigoths through the Muslim period to the era of the “Catholic Monarchs.” Emphasis will be placed on issues of ethnicity and acculturation of Christians, Muslims, and Jews. (General Education Code: IH.) B. Catlos
33. Medieval Europe 300-1000. F
A survey of Europe from the fourth through tenth centuries. Emphasizes cultural conflict and assimilation (Romans and Germanic, pagan and Christian, East and West). Topics include the rise of Christianity, barbarian migrations, Byzantium and Islam, feudal society, the cult of saints and relics, Vikings, and gender roles. (Formerly Medieval Europe 300-1200.) (General Education Code: IH.) Polner'ti

34A. Introduction to the History of the Americas: Colonial Period. S
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, Maya, 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. (Formerly course 34.) (General Education Code: IH.) L. Segal

*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. (Formerly course 35.) (General Education Codes: 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: E.) N. A. K

38. Film and the Holocaust. F
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. 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. (Formerly course 80D.) (General Education Code: IH, E.) A. Christy

42. Student-Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

55. Introduction to the Modern World, 1500 to Present. S
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, provides a time frame for understanding events within a global framework. (General Education Code: IH.) M. Cohn

80K. Spies: History and Culture of Espionage. S
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: T4-Humanities and Arts.) B. Thompson

80M. Autobiographies and Social Life. S
Readings from life stories of "ordinary workers" reveal the changes shaping European societies in age of industrialization. (General Education Code: T5-Humanities and Arts or Social Sciences.) M. Traugott

*80W. The Holocaust: The Destruction of European Jews.
Focus is on the destruction of the Jews of Nazi Germany. Issues are historically grounded, and include works of literature, social sciences, philosophy, and film, as well as a visit by a survivor/witness as part of a two-day conference during the term. Students cannot receive credit for this course and Literature 80L. Offered in alternate academic years. (General Education Codes: T4-Humanities and Arts, E.) P. Kenez, M. Baumgarten

80Y. World War II Memories in the U.S. and Japan. W
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. (Formerly course 26.) (General Education Codes: T4-Humanities and Arts, E.) A. Christy, A. Yang, murray

99. Tutorial, F,W,S
The Staff

Upper-Division Courses

100. Historical Skills and Methods. W
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. S
Athenian democracy from foundation to the fourth century B.C., with emphasis on its practices and ideologies. Readings from ancient sources and modern theory. Topics include foundations and development; Athenian concepts of freedom, equality, law, citizenship, lectures and discussion. C. Haddock Jr.

*104. Canaan, Israel, and Palestine from Polytheism to Monotheism.
This social and cultural history of Israel begins with the rise of the Israelite monarchy and ends in the early Roman period. Economy, political organization, and religious practices and beliefs such as polytheism and monotheism are compared with those of neighboring peoples. Priority given to history majors. G. Half

104A. U.S. Labor and the Working-Class History, Colonial Period to 1919. F
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 American Studies 104A. Students cannot receive credit for both courses.) Satisfies American History and Institutions Requirement. D. Frank

*104B. U.S. Labor and the Working-Class History, 1919 to the Present.
Explores the history of work, working-class people, and the labor movement in 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, Satisfies American History and Institutions Requirement. D. Frank

110. Twentieth-Century Genocides. S
Examines themes linking major twentieth-century genocides (Armenia, Holocaust, Cambodia, Rwanda, and Balkans) and analyzes geopolitical, social, and ideological specificities that characterize each event. Students present and discuss political, moral, and legal aspects and international responses to contemporary genocides. Enrollment limited to 30. (General Education Code: E.) T. Hogan, M. Thaler

*116. History of Soviet Film.
Does not stress questions of aesthetics or technical aspects of film making, but the changing ideology inherent in Soviet films. The goal of examining cinema is to enrich our understanding of Soviet history. Readings include works of famous directors and theorists—Eisenstein, Vertov, Pudovkin, and Kuleshov—in addition to secondary works by Denise Youngblood, Richard Taylor, Josephine Wolf, and Anna Lawton. P. Kenez

117A. Crossroads for American Capitalism: The United States, 1914-1945. W
Between the First and Second World Wars, American society accepted the need for a regulatory state to save capitalism from itself. Takes an in-depth look at many aspects of U.S. politics and culture during these years. M. Labor

*120A. Late-Medieval Italy, c. 1200-1400. Italy from the birth of the commune to the early Renaissance in Florence. Topics include urban life and social conflicts, gender roles, St. Francis, the Black Death, Dante, Boccaccio, humanism, artistic developments from Giotto through Donatello. Offered in alternate academic years. C. Pecoratti

*120B. Renaissance Italy, c. 1400-1600. Italy from the Florentine Renaissance through the counter-reformations. Topics include social change and political consolidation, the rise of the papacy, court life, Machiavelli, artistic developments from Donatello through late Venetian Renaissance. Course 120A is recommended as preparation. Offered in alternate academic years. C. Pecoratti

*121A. The Making of the Modern World, 1400-1750.
Focuses on the transformation of many different societies of Asia, Africa, and the Americas from 1400 to 1750 through case histories and the comparative study of European colonial hegemony, labor systems, global economic exchange, missions, and warfare. (General Education Code: E.) The Staff

The history of the world from 1750. Focuses on the liberal project (the industrial and democratic revolutions) and its impact on the world—slavery and abolition, self-strengthening movements, race and class, imperialism, colonialism, and nationalism. (General Education Code: E.) E. Burkel
122. Reformation Europe. 
Religious crisis and social change in the sixteenth century. Topics include Protestant revolts, Catholic responses, heresy and persecution, French wars of religion, the Inquisition and the Jews, and witch hunting. Offered in alternate academic years. C. Polizzi

123. Russian Intellectual History. S 
Focus on the emergence in nineteenth-century Russia of a westernized intelligentsia: its effort both to assimilate western ideas and to define the destinies of Russia: the shaping of the Russian revolutionary movement. Readings in Dostoevsky, Turgenev, Herzen, and representative Russian Slavophils, Populists, and nihilists. J. Beecher

125A-B. European Intellectual History. S
Study of European thought, literature, and art, 1460-1914. Focus on relation of ideas to social and cultural context. A: Age of Enlightenment from Swift and Montesquieu to Rousseau and Goya. B: nineteenth century; emphasis on romanticism and development of socialist and aesthetic critiques of industrial civilization. Offered in alternate academic years. J. Beecher

127. Fascism and Resistance in Italy. F 
Examines Italian politics, society, and culture during the fascist regime and World War II; interdisciplinary focus, emphasizing history, literature, and film. C. Polizzi

*131A-B. English History. S
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. A: The period from 1485 to 1689; B: The period from 1689 to 1700. B. Sharp

133. German History. W 
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. F 
French history from the Middle Ages through the Revolution. Focus on the rise and fall of “absolute” monarch, the nature of Old Regime society, the causes and significance of the French Revolution. Attention to those who endured as well as to those who made events. Offered in alternate academic years. J. Beecher

134B. French History: The Nineteenth Century. W 
Social, political, and cultural history of France from the Revolution to WWI. 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. Offered in alternate academic years. J. Beecher

135A-B-C. Russian History. W-S
From its beginnings to the present. A: Kievan and Muscovite Russia. B: Imperial Russia. C: twentieth-century Russia. Offered in alternate academic years. P. Kenz

*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

140A-B. Colonial and Revolutionary America. W-S
Explores the political, social, economic, and cultural development of British North America from the first European/Amerindian contacts in the late sixteenth century through to the establishment of the U.S. A: Founding to 1750; B: 1740-1815. A is not prerequisite to B. Satisfies American History and Institutions Requirement. Offered in alternate academic years. M. Waterkamp

141. African Cinema. W 
Historical study of modern African cinematography 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: E) D. Anthony III

141A. Africa to 1800. W 
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 other consequences. Some background knowledge of Africa helpful. Offered in alternate academic years. (General Education Code: E) D. Anthony III

141B. Africa from 1800 to the Present. S 
How Africa lost its continental, regional, and local autonomy in the era of European imperialism. Includes the components of European hegemony, Christian proselytization, comparative colonial strategies and structures, nationalism, decolonization and independence and the disengagement from neocolonial patterns and the colonial legacy. Case studies from northern and sub-Saharan Africa. Some background knowledge of Africa helpful. Offered in alternate academic years. (General Education Code: E) D. Anthony III

*144. Race and the American City. S
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: E) P. Castillo

145. Chicana/Chicano History. W 
A survey course on the social history of the Mexican (Chicana/o) 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: E) P. Castillo

*146A. Religion in Early America. F 
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 colonization, revolution, and expansion, both geographic and economic. The Staff

*146B. Modern American Religion. W 
Explores the growth and transformation of American religious culture from 1870 to the present. While investigating individual church institutions, leaders, and theologians, focuses upon religion as part of the larger, pluralistic American culture. The Staff

147. California History. S 
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. Offered in alternate academic years. L. Habs

150B. History of China, 1644-1911. F 
Explores the evolution of the late imperial Chinese state: the society, the economy, major intellectual trends, the encounter with the expansive West, rebellions and revolutionary movements, and the end of the imperial system. D. Basu

150C. Twentieth-Century China. W 
China, 1900 to present. Traces the course of revolution in the twentieth century, political and social transformation since 1949, and emerging social tensions in the economic reform period. (Formerly History of China: 1911 to Present.) (General Education Code: E) G. Hershatter

151. Classical Chinese Culture and Literature, Tenth Century B.C.E. through Sixth Century C.E. F 
A 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, eremitism, and courtly society. Also offered as World Literature and Cultural Studies 135. Students cannot receive credit for both courses. Offered in alternate academic years. (General Education Code: E) C. Conroy

152. Classical Chinese Culture and Literature, Sixth Century C.E. through Sixteenth Century. W 
A 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. Also offered as World Literature and Cultural Studies 136. Students cannot receive credit for both courses. (General Education Code: E) C. Conroy

*153. Mediterranean Empire, 1100-1500. W 
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. Castillo

*154. The Mediterranean in the Modern Era, 1730-1930. W 
The cultural transformation of the Mediterranean region in comparative historical perspective from the rise of the Hapsburg and Ottoman empires to modern times. Topics include orientalism, political and economic transformations, social movements, cultural change, gender, colonialism, and imperialism. E. Burke III

155. Cinema and History: Film Author Satyajit Ray. S 
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, nationalistic, 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: E) D. Basu

*Not offered in 2003-04
*156A. History of Premodern India. A study of religions (Vaishnavism, Tantrism, Islam, Sikhism), art, literature, and social movements in their historical contexts from 1000 A.D. to 1800. Offered in alternate academic years. (General Education Code: E.) D. Basu

*156B. Political and Social History of Modern India. Indian social, political, and religious movements in the colonial and postcolonial contexts of the nineteenth and twentieth centuries. (Formerly Intellectual and Social History of Modern India.) Offered in alternate academic years. (General Education Code: E.) D. Basu

*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: E.) B. Califós

159A. Ancient Japan. F Surveys the history of the peoples of the Japanese islands from prehistorical migrations to the middle of the fifteenth century. Emphasis includes examination of social structures, political formations, cultural production, and religion. (Formerly History of Japan, Premodern.) N. Asho

*159B. Tokugawa Japan. 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. A. Chirizu

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. (Formerly 199B, History of Japan, Modern and Contemporary.) (General Education Code: E.) N. Asho

*163. The Crusades, 1000–1300. Examines history of Middle East from 1000–1300, in particular, Latin Crusade and colonization and Muslim response. Focus on key topics such as acculturation, Holy War, and ethnicity examined through lectures and slide presentations. B. Califós

170. Women in Latin America. F 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 focus on the colonial period. The last three weeks covers the nineteenth and twentieth centuries. (General Education Code: E.) M. Diaz

171A. History of the Caribbean: Colonial Period. W A study of the Caribbean from the conquest to the abolition of slavery in the nineteenth century. Focus is on the Greater Antilles, particularly the Spanish Caribbean. Emphasis on economic and social issues such as colonialism and the role of sugar production, slavery, and race/ethnicity in these multicultural societies. Offered in alternate academic years. (General Education Code: E.) M. Diaz

175B. History of Mexico, 1850 to Present. S Social, cultural, economic, and political history from the triumph of Liberalism to the present day, 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” (1920–1940), and the developmentalist counter-revolution since 1940. Provides background for understanding the Mexican diaspora to the U.S. (General Education Code: E.) L. Segi

*177. History of Modern Cuba. 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: E.) M. Diaz

*180. Origins of the U.S. Civil War. Examines economic, social, cultural, and political changes that ultimately produced civil war. Particular focus 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—influenced and were affected by these changes. Prerequisite(s): course 25A. B. Levine

*182. The Second American Revolution: The Civil War and Reconstruction. 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. Offered in alternate academic years. B. Levine

186. Asian American History, 1941–Present. W Analyzes immigration, race relations, war, gender ideology, family life, acclimation, 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: E.) A. Yang Murray

190. Bioscience, Nazi “Racial Hygiene,” and the Holocaust. F Traces the Nazi “Superstate” project from its origins at the conjunction of biotechnological theory and racial ideology to its conclusion in the Holocaust, providing a historical perspective for social and political dilemmas raised by contemporary biomedical advances. (General Education Code: E.) M. Tsalifer

192. Directed Student Teaching, F.W.S Teaching of a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): petition on file with sponsoring agency. The Staff

193. Field Study, F.W.S To allow promising, well-qualified 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 or two courses concurrently. Prerequisite(s): petition on file with sponsoring agency. 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. C. 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, memories and diaries, visual material and film. Prerequisite(s): two upper-division history courses, satisfaction of the Subject A and Composition requirements. Enrollment limited to 15. (General Education Code: W.) L. Haeus

E. 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 in student’s area of concentration. Enrollment limited to 20. Offered in alternate academic years. (General Education Code: W.) E. Hafdrík Jr.

J. Comparative Studies in Modern Asian History. F 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, and visual cultures. Prerequisite(s): two upper-division history courses in area of concentration; satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. (Formerly Comparative Studies in Modern Chinese, Japanese, and Indian History.) Offered in alternate academic years. (General Education Code: W.E.) D. Basu

M. Topics in Chicana/Hispanic Studies. S A seminar on the history of Chicanos/Mexicans in the United States, 1848 to the present. Topics include Chican 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 from the student’s area of concentration. Enrollment limited to 20. (General Education Code: W.E.) P. Casillo

O. Slavery and Race in Latin America. W Covers comparative history of slavery in Latin America with questions of race in the colonial and national periods and key moments and debates in the historiography of slavery and its relation to ideologies of the past and the nations. Prerequisite(s): satisfaction of the Subject A and Composition requirements, two upper-division history courses, permission of instructor. Enrollment limited to 20. (General Education Code: W.E.) M. Diaz

R. Modern Italian Culture. W 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 separatistic movements. Prerequisite(s): course 120A, 120B, 122, 127, or permission of instructor; enrollment limited to 20. (General Education Code: W.E.) M. Diaz

V. Topics in African History. S 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: W.E.) D. Anthony

W. Gender, Family, and State in China: 1600–Present. F Explores gender, family, and state power in China from 1600 to present, examining gendered norms, education, political movements, revolutionary practice, sexuality and sex work, and state interventions in contemporary families. Responses to reading and a research paper required. Prerequisite(s): satisfaction of the Subject A and Composition requirements; two upper-division history

*Not offered in 2003–04
courses—one in Asian history, or permission of instructor. Enrollment limited to 20. (General Education Code: W. E.) G. Hershatter  

**X. Saints and Holiness in Medieval Europe.** 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. Offered in alternate academic years. (General Education Code: W.) C. Politi

Y. Studies in European Intellectual History, W  
Topics in European intellectual history from the French Revolution to World War I. Readings exemplifying approaches from history of ideas and intellectual biography to recent studies of rhetoric and political culture. Preparation and presentation of research paper. Prerequisite(s): two upper-division history courses, preferably in their area of concentration. T he Staff

195A. Thesis Research. F,W,S  
Prerequisite(s): petition on file with sponsoring agency (students should have completed two upper-division courses, preferably in their area of concentration). T he Staff

195B. Thesis Writing. F,W,S  
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). (General Education Code: W.) T he Staff

196. Senior Readings Seminar. F,W,S  
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 history courses in student’s area of concentration, satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. Offered in alternate academic years. (General Education Code: W.) J. Becker

**F. Modern Germany and Europe.**  
A senior research and reading seminar that explores the major historiographic debates in German history during the nineteenth and twentieth centuries. Prerequisite(s): two upper-division history courses in student’s area of concentration, satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. Enrollment restricted to history majors. (General Education Code: W.) M. Cioc

G. Problems of the Civil War Era. S  
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 arise and controversies proliferate steadily 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. Enrollment limited to 15. B. Levine

K. 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: W.) B. Catto

**M. End of Slavery and Serfdom.**  
Examines economic, social, cultural, and political changes that ultimately produced civil war. Particular focus 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 were affected by these changes. 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: W.) N. Ado

**Y. Memories of WWII in the U.S. and Japan.**  
Research seminar comparing U.S. and Japanese memories of World War II. Topics include war origins, total war, the atomic bomb, war responsibility, reparations, memorial museums, and monuments. Primary work devoted to research in original texts and documents. Prerequisite(s): course 25A or permission of instructor. Satisfaction of the Subject A and Composition requirements. Enrollment limited to 15. (General Education Code: W.) N. Ado

Z. Women and Social Movements in the U.S. F  
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): satisfaction of Subject A and Composition requirements. Enrollment limited to 15. (General Education Code: W.) D. Frantz

198. Independent Field Study. F,W,S  
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. Prerequisite(s): suitable preparation for field work and faculty and student competence in subject-matter area. May be repeated for credit. T he Staff

199. Tutorial. F,W,S  
May be repeated for credit. T he Staff

199F. Tutorial (2 credits). F,W,S  
May be repeated for credit. T he Staff

**Graduate Courses**

201. Methods and Theories of History. F  
An overview of contemporary theory and philosophy about the nature and production of history. Topics vary with instructor. Enrollment limited to 20. (Formerly History 200.) Enrollment restricted to graduate history majors. M. Traugott

202. Readings in Late Imperial China.  
A survey of the major works and historiographical controversies in Qing dynasty (1644–1911) China. Enrollment limited to 20. (Formerly Late Imperial China.) Enrollment restricted to graduate students. D. Bai

203. Readings in Twentieth-Century China.  
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 limited to 20. (Formerly 20th Century China.) Enrollment restricted to graduate students. G. Hershatter

204. Engendering China. W  
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 limited to 20. Enrollment restricted to graduate students. G. Hershatter

205A. Readings in European Social and Cultural History. F  
A readings seminar that introduces beginning graduate students to some of the most influential and methodological approaches to modern European social and cultural history, 1400–1789. Enrollment limited to 20. Enrollment restricted to graduate students. Offered in alternate academic years. B. Sharp

205B. Readings in European Social and Cultural History. F  
A readings seminar that introduces beginning graduate students to some of the most influential and methodological approaches to modern European social and cultural history, 1789–the present. Enrollment limited to 20. Enrollment restricted to graduate students. Offered in alternate academic years. M. Traugott

208A-B-C. Readings in U.S. History. F-S  
Introduction to major themes and controversies in the interpretation of U.S. history. Readings cover both chronological and topical aspects, often in a comparative context. A: Colonial; B: nineteenth century; C: twentieth century. Enrollment limited to 15. Enrollment restricted to graduate history majors. M. Wiestekamp, B. Levine

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 limited to 15. Enrollment restricted to graduate students. A. Christy


*222. History of Gender Research Seminar. Introduces 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/postcolonialism; class, race, and ethnicity; and constructed space. Enrollment limited to 15. Enrollment restricted to graduate history majors. A. Yang Murray

*224. Society and Culture Research Seminar. 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 limited to 15. Enrollment restricted to graduate students. B. Sharp

226. Colonialism, Nationalism, and Race Research Seminar. W Research seminar introducing theories and methods of the comparative histories of race, ethnicity, and nationalism. Enrollment limited to 15. Enrollment restricted to graduate history majors. 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 eighteenth-century materials. Students complete a series of bibliographical exercises and prepare a research prospectus. Enrollment limited to 20. Enrollment restricted to graduate students. 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 as appropriate in English, Chinese, and/or Japanese. Enrollment limited to 20. Enrollment restricted to graduate students. 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 limited to 15. Enrollment restricted to graduate history majors. B. Sharp

243A. Nationalism, Anti-Semitism, and Jewish Resistance in World War II. W Jewish resistance to Nazism during World War II, in Eastern 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 consequences for wartime resistance. (Also offered as History of Consciousness 243A. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to seniors and graduate students. B. Epstein

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. This course is required for first- and second-year students; however, it is open to all other history graduate students as needed. Topics include TAships, designing course syllabi, pedagogy, teaching technologies, and teaching in different venues. Enrollment restricted to graduate history majors. May be repeated for credit. D. Fratrik

290B. History Graduate Proseminar: Research Presentations and Grant Writing (2 credits), W Seminar devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. This course is required for first- and second-year students; however, it is open to all other history graduate students as needed. Topics include discussion of a research presentation, conference proposals and paper preparation, and developing a research prospectus: grant applications and publishing journal articles and the dissertation. Enrollment restricted to graduate history majors. May be repeated for credit. M. Cioc

290C. History Graduate Proseminar: Job Market (2 credits), S Seminar devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. This course is required for first- and second-year students; however, it is open to all other history graduate students as needed. Topics include research positions, preparing a C.V. and the job application letter, preparing for an interview, practice interview, preparing a job talk and/or teaching presentation, and practice job talk. Enrollment restricted to graduate history majors. May be repeated for credit. M. Cioc

291. Foreign Language Preparation (2 credits), F,W,S Independent study course in which history graduate student reads selected texts to fulfill foreign language requirement. Student meets with instructor to discuss readings, deepening his knowledge of the foreign language. Prerequisite(s): petition on file. Enrollment restricted to graduate students. May be repeated for credit. M. Cioc

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. Prerequisite(s): petition on file. Enrollment restricted to graduate students. May be repeated for credit. M. Cioc

293. Readings in Research Field (2 credits), F,W,S Independent study focusing on selected texts 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. Prerequisite(s): petition on file. Enrollment restricted to graduate students. May be repeated for credit. M. Cioc

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. Prerequisite(s): petition on file. Enrollment restricted to graduate students. May be repeated for credit. M. Cioc

296. History Colloquium (2 credits), F,W,S Independent study designed to foster departmental and cross-disciplinary participation in campus talks, colloquia, conferences, and events. Prerequisite(s): petition on file. Enrollment restricted to graduate students. May be repeated for credit. M. Cioc

297. Independent Study. F,W,S The Staff

299. Thesis Research. F,W,S The Staff

### History of Art and Visual Culture

D-201 Porter College
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#### Faculty and Professional Interests

**Professor**

**HARRY BERGER JR., Emeritus**

**RAOUL BIRNBAUM, Patricia and Rowland Rebele Chair in History of Art and Visual Culture**

**DON'T MODERN ART**

**JOHN HAY**

**VIRGINIA JANSEN**

**CATHERINE M. SOUSLOFF**

**ASSOCIATE PROFESSOR**

**CAROLYN S. DEAN**

**DONNA M. HUNTER**

**ELISABETH CAMERON**

**JENNIFER A. GONZÁLEZ**

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*Not offered in 2003–04*
Lower-Division Requirements

Five courses, as follows:
- courses 10D, 10E, and either 10F or 10G
- two courses selected from the following:
  - additional 10-series courses
  - 80-series courses
- visual practice courses: Art 20–30, 70; Theater Arts 14, 18; Science Communication 104A, 104B, 106A, 107, 109, 110
(transfer courses—a total of 9 or 10 quarter credits)

(Upt 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: four courses recommended
  - courses 150–189: two courses required
  - courses 190–191: two courses required, one of which must satisfy the senior comprehensive requirement (see below)
- 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. Ordinarily, students complete two 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 art history courses toward the major, only two of which may be upper division. Upper-division transfer credit must be approved by the student's 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 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 adviser as early as possible in their undergraduate career.

Lower-Division Courses

10. Introduction to Visual Culture. An introduction to the history of art and visual culture. Need not be taken in sequence. (Formerly Art History 10.)

D. 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. (Formerly Art History 10D.) (General Education Codes: IH, A.) K. Thangavelu

E. Africa, Oceania, and the Americas. W
A comparative study of the arts of selected cultures which developed outside the sphere 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. (Formerly Art History 10E.) (General Education Codes: IH, A, E.) C. Dean, E. Cameron, S. Kamihito

*F. The Nude in the Western Tradition.
The human body without clothing in European and European-American art and visual culture from ancient Greece to the present day. Among the themes to be addressed: gender, youth and age, sexuality and sexual preference, fecundity and potency, erotic art and pornography, primitivism and the naked body of the non-European. (Formerly Art History 10F.) (General Education Codes: IH, A, E.) D. Hutter

G. Europe. F
An introduction to the European tradition in visual culture, from antiquity to the present, but not in chronological order. All media, including the fine arts, architecture, film, video, and installation and performance work are incorporated. Presents the major visual regimes of representation while it probes the meanings and limits of Europe and the European tradition in the context of the visual. (Formerly Art History 10G.) (General Education Codes: A, IH.) T he Staff

80A. Introduction to Architecture. S
Introduction to elements, technology, concepts, and semiotics of architecture in its buildings, functions, environments, societies, and history. (Formerly Art History 80A.) (General Education Codes: A, T5-Humanities and Arts or Social Sciences.) V. Jansen

*80B. Tourist Art.
How indigenous people from Africa, Oceania, and the Americas respond to the demand for souvenirs by tourists in their homelands. (Formerly Art History 80B.) (General Education Codes: E, T5-Humanities and Arts or Social Sciences.) T he Staff

80D. Museum Cultures: The Politics of Display. S
Explores the history of collecting and displaying art (museums, galleries, fairs) since the mid-nineteenth century and the effect of institutional changes on aesthetic conventions. Follows the history from the origins of museums and collections to contemporary critiques of institutional exclusion and misrepresentation. (Formerly Art History 80D.) (General Education Codes: T5-Humanities and Arts or Social Sciences. A.) J. Darling

*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 Mesopotamia, Egypt, Greece, and Rome, including the sociology of ancient cultures, mythology, religious studies, gender studies and history. (Formerly Art History 80E.) (General Education Codes: A, T5-Humanities and Arts or Social Sciences.) J. Gonzalez

*80F. Form and Feeling in Indian Art.
Rasa is the juice of something, its essence or flavor. In the arts of India, the theory of rasa unites all media. Using rasa theory to examine Indian visual culture, this course looks at painting, sculpture, film, performance, and literature. (Formerly Art History 80F.) (General Education Codes: A, E, T5-Humanities and Arts or Social Sciences.) K. Thangavelu

*80G. Religion and Visual Culture in China.
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. (Formerly Art History 80G.) (General Education Codes: T5-Humanities and Arts or Social Sciences, A, E.) R. Birnbaum

*80I. 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. Visual arts are used both illustratively and to study how institutions fashioned their images through art and architecture. (Formerly Art History 80I.) (General Education Codes: T5-Humanities and Arts or Social Sciences, A.) T he Staff

80K. Constructing Home, 1900–1960. F
Examines in ways in which architects in Europe and U.S. created not only modern houses but also blueprints for modern living. Focuses on issues of gender, domesticity, public versus private sphere, and mass housing versus single-family home. (General Education Codes: T5-Humanities and Arts or Social Sciences. A.) T he Staff

*80L. Saints and Sites in Medieval Visual Culture.
What makes a body holy? How were the saints of Christianity created? What prompted travel across hundreds of miles to venerated sites throughout Europe and the Mediterranean? How did the commercial trade in relics develop, and why was it sanctioned? (Formerly Art History 80L.) (General Education Codes: T5-Humanities and Arts or Social Sciences, A.) T he Staff

80M. Indigenous American Visual Culture. F
Selected aspects of art and architecture of the first peoples of the Americas, north, central, and south, from ca. 2000 B.C.E. to present. Societies to be considered may include Anasazi, Aztec, Inca, Northwest Coast, Maya, Navajo, Plains, and others. (General Education Codes: T5-Humanities and Arts or Social Sciences, A, E.) C. D. Braun

80N. Indian Art: Image and Ideology. F
Examination of the ways social, religious, and political patronage have affected the production and reception of art in the Indian subcontinent. The course is designed as a series of case studies from different periods of Indian history. (Formerly Art History 80N.) (General Education Codes: A, T5-Humanities and Arts or Social Sciences.) T he Staff

*80P. Visual Culture of Contemporary Japan.
An interdisciplinary survey of Japanese popular culture examining the ways in which popular cultural artifacts participate in the making and breaking of such social categories as class, gender, and ethnicity. (Formerly Japanese Pop Culture 1345–Present) (Art History 80P) (General Education Codes: T5-Humanities and Arts or Social Sciences, A, E.) T he Staff

*80Q. Digital Technologies and Visual Culture.
Introduction to digital media from a theoretical and historical perspective. From early computation to innovations in contemporary Internet art, focuses on the relation of digital technologies to vision, visual culture, and concepts of representation. (Formerly Art History 80Q.) (General Education Codes: A, T5-Humanities and Arts or Social Sciences.) T he Staff

*80T. Art of the Body in the Pacific Islands.
Examines reversible and irreversible, permanent and ephemeral forms of body art practiced in Oceania. Forms of body art include tattoo, scarification, body constructions, textiles, and ornamentation. Examines why and how people adorn themselves and/or alter their bodies. Social meanings, religious functions, and world views examined. (General Education Codes: T5-Humanities and Arts or Social Sciences. A, E.) S. Kamihito

80V. Modern Art: An Introduction. W
Examination of major artists and artistic movements in Europe and North America from 1900–1960. Works from the domain of fine arts considered in conjunction with social, political, and philosophical events, which mediate and inform this work. Also looks beyond the limited scope of the fine arts canon to the larger visual culture(s) that inform and disrupt its boundaries. (General Education Codes: T5-Humanities and Arts or Social Sciences, A.) T he Staff

99. Tutorial, F,W,S
Supervised study for undergraduates. (Formerly Art History 99.) T he Staff

Upper-Division Courses

100A. Readings in Visual Culture, W
Introduction to current issues in study of visual culture, understanding them as products of historical evolution in scholarly enquiry, and evaluating them critically. Course emphasizes intensive reading, discussion, and writing. Prerequisite(s): satisfaction of Subject A and Composition requirements. (Formerly Art History 100A.) Enrollment

*Not offered in 2003–04
restricted to sophomore, junior, and senior history of art and visual culture majors. (General Education Codes: W, A) J. Hay

100E. Introduction to Visual Culture: 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 on the function of the arts in these disparate geographic regions. Students cannot receive credit for this course and course 10E. Designed for selected students who need upper-division credit to complete certain majors; contact the History of Art and Visual Culture Office for information. Prerequisite(s): permission of instructor. (Formerly Art History 100E.) (General Education Codes: A, E) C. Dean, E. Cameron, S. Kamihiro

105. Topics in Art History.

(Formerly Art History 105.)

E. Ritual in Asian Religious Art. W

Examination of interaction between image and ritual in Asian 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. (Formerly Art History 105E.) (General Education Codes: A, E) The Staff

H. Paris: “Capital of the Nineteenth Century”. Examines 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. (Formerly Art History 105H.) (General Education Code: A) The Staff

P. Visual Cultures of the Pacific Islands. F

Interdisciplinary course examines visual cultures of Australia, Melanesia, Micronesia, and Polynesia from the archaeological past through contemporary periods. (Formerly Art History 105P) (General Education Codes: A, E) S. Kamihiro

U. 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. (Formerly Art History 105U) (General Education Code: A) The Staff

106. Topics in Visual Culture.

(Formerly Art History 106.)

A. Religious Traditions in Indian Art.

Examines ways in which religious traditions are embedded 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 limited to 80. (Formerly Art History 106A) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, E) The Staff

B. Building the California Dream. W

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 Code: A) The Staff


(Formerly Art History 107.)

A. Central Africa.

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 limited to 90. (Formerly Visual Culture of Central Africa: Art History 107A) Enrollment restricted to sophomores, juniors and seniors (recommended). (General Education Codes: A, E) E. Cameron

B. 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. (Formerly Art History 107B) (General Education Codes: A, E) E. Cameron

110. Topics in Pre-Hispanic Visual Culture.

(Formerly Art History 110.)

A. 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, Mexico (Aztec), and others. (Also offered as Latin American and Latino Studies 110A) Students cannot receive credit for both courses. (Formerly Art History 110A) Offered in alternate academic years. (General Education Code: A) C. Dean

B. The Andes. W

The art of selected pre-Hispanic cultures of Colombia, Ecuador, Peru, and Bolivia including the Nasca, Moche, Chimu, and Inca. (Also offered as Latin American and Latino Studies 110B) Students cannot receive credit for both courses. (Formerly Art History 110B) (General Education Code: A) C. Dean


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. (Formerly Art History 114.) Enrollment restricted to sophomores, junior, and senior students. (General Education Code: A) R. Birnbaum

120. The Arts in Japanese History.

(Formerly Art History 120.)

A. Early Japanese Temples. F

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. (Formerly Art History 120A) (General Education Code: A) J. Hay

B. The Arts in Chinese History.

(Formerly Art History 121.)

A. Early Chinese History.

Neo-Confucian 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. (Formerly Art History 121A) (General Education Code: A) J. Hay

C. Later Chinese History.

The arts of China, from the second century A.D. to the twentieth century. Architecture, sculpture, ceramics, calligraphy, and painting, setting these in contexts of social structure, political, and cultural values. Enrollment limited to 45. (Formerly Art History 121C) (General Education Codes: A, E) J. Hay

D. 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. (Formerly Art History 121D) (General Education Codes: A, E) The Staff


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. (Formerly Art History 124.) (General Education Code: A) The Staff

*125. The Languages of Medieval Visual Culture, c. 300–1500.

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. Prerequisite(s): satisfaction of the Subject A and Composition requirements for writing-intensive sections. Enrollment limited to 4. (Formerly Art History 125) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, W) V. Janan

*127. Campus Planning and Architecture.

Campus planning and architecture from earliest beginnings in the Middle Ages at Oxford, Cambridge, and Winchester to the most recent university campuses, with particular emphasis on UCSC and other 1960s plans. First-year students should contact instructor if interested in enrolling. Enrollment limited to 90. (Formerly Art History 127) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A) V. Janan

*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. (Formerly Art History 129) (General Education Code: A) V. Janan

*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 from Film and Digital Media: 20A, 20B, 20C or 120. (Formerly Art History 131.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A) C. Souther


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. (Formerly Art History 136.) (General Education Code: 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 either apolitical refuge or site of disruption and critique. Third in a sequence of three courses on French art and its historical context: see courses 176 and 177. (Formerly Art History 137.) (General Education Code: A.) The Staff

Developments in nineteenth- and twentieth-century architecture, focusing on issues of modernity, technology, and industrialization, new building types, competitions, and urban growth as well as on major movements, buildings, and architects. Enrollment limited to 100. (Formerly Modern Architecture. Art History 138.) (General Education Code: A.) The Staff

139. The Art and Architecture of Islam. F
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. (Formerly Art History 139.) (General Education Codes: 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. (Formerly Art History 140.) (General Education Code: A.) J. González

*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. (Formerly Art History 141.) (General Education Code: A.) J. González

An interdisciplinary study of the histories and critiques of technology as they relate to visual culture. Ideas about modernist architecture, suburbia, television, alternative video, scientific pop, minimalism, conceptual art, and performance art in connection with computer culture. (Formerly Art History 147.) (General Education Code: A.) The Staff

149A. Histories of Photography. F
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. (Formerly Art History 149A.) (General Education Code: A.) J. González

(Formerly Art History 150.)

*151. Topics in Colonial/Postcolonial Visual Culture.
(Formerly Art History 151.)

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 Collections, McHenry. Exhibition as class project. Enrollment limited to 25. (Formerly Art History 153.) (General Education Code: A.) E. Remak-Horn

(Formerly Art History 154.)

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. (Formerly Art History 157B.) (General Education Code: A.) J. Hey

160. Storytelling in Asian Art. F
Combination of theoretical perspectives on narrative from literary criticism, rhetoric, folklore, and film theory with art 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. (Formerly Art History 160.) (General Education Codes: A, E.) The Staff

Examines premorden 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 limited to 35. (Formerly Art History 161.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, E.) The Staff

163. Early Medieval Visual Culture.
(Formerly Art History 163.)

*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 limited to 35. (Formerly Art History 164.) Enrollment restricted to sophomores, juniors, and seniors; other interested students should contact the instructor. (General Education Codes: W, A.) The Staff

165. Gothic Architecture.
(Formerly Art History 165.)
A. Cathedral Gothic. W
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 course 10-series or a course in medieval studies is recommended as preparation. Enrollment limited to 35. (Formerly Art History 165A.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A.) V. Jansen

*166. *B. Gothic Beyond.
Parish, friar, and special-purpose churches, chapels, synagogues, and colleges within episcopal, royal, noble, burgher, merchant, and artisan societies 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 limited to 35. (Formerly Art History 165B.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A.) V. Jansen

166C. Visual Culture in the New Middle Ages.
Scholarship since the 1970s has reframed issues and even the very character of the Middle Ages in exciting ways. By

*Not offered in 2003–04
studying representative works from both recent and traditional perspectives, we shall probe what constitutes "medieval" and deconstruct earlier interpretations. Enrollment limited to 35. (Formerly Art History 166C.) Enrollment restricted to sophomores, juniors, and seniors. May be repeated for credit. (General Education Code: A.) The Staff

*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. (Formerly Art History 167.) (General Education Code: A.) The Staff

168. High Renaissance. F

An investigation of the High Renaissance as a period and stylistic concept, using the major artists and monuments of the period 1480–1525 to discuss issues of theory, history, and art. Artists considered include Leonardo da Vinci, Michelangelo, and Raphael. Enrollment limited to 35. (Formerly Art History 168.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A.) C. Soussloff

*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. Prerequisite(s): one of the following courses: 10F, 10G, History 120A or 120B, Italian Literature 102, 130D, 132, or 162; other students should see instructor. Enrollment limited to 35. (Formerly Art History 169.) May be repeated for credit. (General Education Code: 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 limited to 35. (Formerly Art History 170.) Enrollment restricted to juniors and seniors; other students should contact instructor. (General Education Code: A.) C. Soussloff

171. Methods and Historiography: Aesthetics and Historicism. 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. (Formerly Art History 171.) (General Education Code: A.) C. Soussloff

173. Culture and Society in Early Modern Europe. W

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. (Formerly Art History 173.) May be repeated for credit. (General Education Code: A.) C. Soussloff

*1748. 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. (Formerly Art History 174B.) (General Education Code: 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 feminist/feminine voice in cultural institutions and discourse. Enrollment limited to 35. (Formerly Art History 175.) (General Education Code: A.) C. Soussloff

*176. Spectacular Power: Versailles, 1660–1899. 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 "classic" French style are explored. First in a sequence of three courses on French art and its historical context; see courses 177 and 178. Enrollment limited to 35. (Formerly Art History 176.) (General Education Code: A.) D. Hunter

177. French Painting, 1780–1855. The art of David, Gros, Ingres, Gericaud, Delacroix, the Barbizon School, and Courbet studied in relation to the changing status of the art and the political events from 1789 to 1848. Second in a series of three courses on French art and its historical context. See courses 176 and 177. Enrollment limited to 35. (Formerly Art History 177.) (General Education Code: A.) The Staff

180. The Camera and the Body, W

Through the study of historical and contemporary visual texts (from ethnography and portraiture to advertising and erotica), this course explores how photographic images of the body, while masquerading as "natural," "self-evident," or "scientific," participate in highly coded sign systems that influence who looks at whom, how, when, and why. Enrollment limited to 35. (Formerly Art History 180.) (General Education Code: A.) J. González

*181. Environments, Installations, and Sites. A study of conceptual and formal issues that have informed the production of temporary, site-specific art works since 1960. Works that seek to transform the role of the audience, to escape or remake museum and gallery spaces, to introduce environmental concerns, or to situate art in "the land" or in "the street" serve as a focus. Enrollment limited to 35. (Formerly Art History 181.) (General Education Code: A.) J. González

*182. Chicano/Chicana Art: 1970–Present. Taking the terms "Chicano" and "Chicana" as a critical framework, addresses cultural and conceptual themes in visual art production since 1970. Questions concerning aesthetics, identity, gender, and activism in painting, photography, murals, and installation art explored. Enrollment limited to 35. (Formerly Art History 182.) (General Education Code: A; E; J.) J. González

185. Topics in African Art. (Formerly Art History 185.)

*A. Royal Arts in West Africa. Examination of the visual culture of selected West African kingdoms, historical and contemporary. Enrollment limited to 35. (Formerly Art History 185A.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A; E; The Staff

*B. Gender. In Africa, relationships exist between gender and visual culture. Course examines where categories come from, differences in men's and women's visual cultures, and how visual cultures teach, reinforce, and negotiate gender definitions. When are male/female boundaries crossed, and why? Enrollment limited to 35. (Formerly Art History 185B.) (General Education Codes: A; E; E. Cameron

189. Special Topics in Art History.

(AFormerly Art History 189.)

A. European Graphic Arts and Print Media. F

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 digitalized 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. (Formerly Art History 189A. Graphic Media.) (General Education Code: A.) The Staff

N. Impressionism. W

Focusing on work of artists Monet, Degas, Morisot, Cassatt, Caillebotte, 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. (Formerly Art History 1890; Art History 189N.) (General Education Code: A.) The Staff

*R. Paleolithic Art. Overview of Paleolithic art, focusing on the earliest visual representations in Europe, Africa, Asia, and Australia and emphasizing regional styles and theories of the emergence of visual culture in anatomically modern humans. (Formerly Art History 189P) C. Delage

Q. Eighteenth-Century European Aesthetics. W

Organized thematically 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. Enrollment restricted to juniors and seniors. (General Education Code: A.) The Staff

*U. 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 a crisis in representation itself. Enrollment limited to 35. (Formerly Art History 189U.) (General Education Codes: A; E; The Staff

V. 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
190. Seminars in Visual Culture. (Formerly Art History 190.)

B. The Virgin of Guadalupe Images and Symbolism in Spain, Mexico, and the U.S. S
Focus on the histories of miraculous images of La Virgen de Guadalupe in Spain and La Virgen de Guadalupe de Tepexico (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. Enrollment limited to 18. (Formerly Art History 190B.) Enrollment restricted to juniors and seniors. (General Education Codes: A, E.) C. D. Črček

C. Subalternatives: Representing Others.
Explores how visual representation in fine art, popular art, film, and television encodes difference in selected cultural and historical contexts. Considers postcolonial image-making both as a strategy of domination as well as resistance. Enrollment limited to 22. (Formerly Art History 190C.) Enrollment restricted to juniors and seniors. This course can be taken for senior exit credit only by permission of the instructor. (Tier 4). (General Education Codes: A, E.) C. D. Črček

D. The World of the Lotus Sutras. S
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 18. (Formerly Art History 190D.) (General Education Code: A) R. Birnbaum

*G. 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 artifactual and theoretical form. 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 language is not necessary. Enrollment limited to 18. (Formerly Art History 190G.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A) J. Hay

H. Representing Cultural Narratives: Japanese Handscrolls. F
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-represent 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. Enrollment limited to 18. (Formerly Art History 190H.) Enrollment restricted to juniors and seniors. (General Education Code: A, J.) H. Barge Jr.

*J. Built Environments of Medieval Cities.
Roads, bridges, walls, market squares, civic buildings, hospitals, houses, churches, and districts in the economic, social, and political environments of the medieval urban fabric. Recommended for students with background in medieval, urban, or architectural studies. Course can be taken for senior exit credit only by permission of the instructor. Enrollment limited to 100. (Formerly Art History 190J.) Enrollment restricted to juniors and seniors. (General Education Code: A) V. Jansen

K. Representations and Society in the Middle Ages: The Genealogy of the Modern. S
Physical images and monuments from the twelfth through the fourteenth centuries treated in their sociopolitical contexts examined from the perspective of issues important to late twentieth-century American society through critical readings of texts. Students topics may focus on other places and times than the European Middle Ages. This course can be taken for senior exit credit only by permission of the instructor. Enrollment limited to 18. (Formerly Art History 190K.) Enrollment restricted to juniors and seniors. (General Education Code: A) V. Jansen

L. Jewish Identity in Visual Representation.
An exploration of the theoretical and practical or experiential applications of Jewish identity in European visual representation. Brief background on pre-emancipation textual and cultural issues followed by study of the Jewish subject and Jewish subjectivities in modernity. Prerequisite(s): if enrollment exceeds 18, professor will interview. Enrollment limited to 18. (Formerly Art History 190L.) Enrollment restricted to juniors and seniors. (General Education Codes: A, C) S. Sosaboff

M. History and Visual Culture. S
The literature on art and visual culture in the European tradition and the critiques that have emerged in post-modern theory, particularly as they pertain to the term and concept “history.” Enrollment limited to 18. (Formerly Art History 190M.) Enrollment restricted to juniors and seniors. (General Education Code: A) C. Sosaboff

*N. The Philosophy of Art.
This course will examine the ways in which the work of art appears in philosophical writings in the European tradition from Greek times to the present. The readings will be chosen for the ways in which the ideological and theoretical aspects of art are addressed by philosophy. Enrollment limited to 18. (Formerly Art History 190N.) Enrollment restricted to history of art and visual culture, art, literature, history, philosophy, history of consciousness, and politics majors; juniors and seniors only. This course can be taken for senior exit credit only by permission of the instructor. Other majors by permission of the instructor only. (General Education Code: A) C. Sosaboff

O. Art and Culture Contact in Oceania. F
Examines impact of culture contact on Oceanic and Euro-American visual cultures in context of “discovery,” colonialism, and “postcolonialism.” Topics include eighteenth-century visual culture, colonial identities, primitivism, syncretism, impact of Christianity, contemporary art/market, media, tourism, transnationalism, and globalization. Prerequisite(s): prior course work related to Oceania recommended. Enrollment limited to 17. Enrollment restricted to juniors and seniors. (General Education Codes: E, A) S. Kamihira

*P. Death and Patriotism: The Case of the French Revolution.
What are the relations between the mortal body and politics in times of crisis? What purposes can death, or the threat of death, serve? Examines representations of executions, assassinations, and funerals during the French Revolution, with an emphasis on the Terror. Enrollment limited to 18. (Formerly Art History 190P) (General Education Code: A) D. Hunter

Q. Portraiture: Europe and America, 1400-1900.
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. (Formerly Art History 190Q) (General Education Code: A) The Staff

*R. Voudou Art.
The arts of Dahomean vodun and Haitian voudou examined from a series of perspectives: as African beliefs and diasporic retentions, as manifestations of contemporaneous convictions and practices, as subversion of/for resistance to colonial authorities, as Hollywood commodifications. Enrollment limited to 18. (Formerly Art History 190R) Enrollment restricted to sophomores, juniors, and seniors. This course can be taken for senior exit credit only by permission of the instructor. Enrollment limited to 18. (Formerly Art History 190S) Enrollment restricted to junior and senior students. (General Education Code: A, E) The Staff

*S. Semiotics and Visual Culture.
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 limited to 18. (Formerly Art History 190S) Enrollment restricted to junior and senior students. (General Education Code: A) J. González

T. Feminist Theory and Art Production. S
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. (Formerly Art History 190T) (General Education Code: A) J. González

U. Representations of Women in Indian Art. W
Deals with representations of the female divinity 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 limited to 17. (Formerly Art History 190U) (General Education Code: A) J. González

*W. The Social History of Art.
The history, aims, and limitations of the more radical social history of art: art historians of the 1930s; the war and post-war period; radical art history of the 1970s and 1980s in Britain and the U.S.; the problems of ideology and its various permutations; the myriad problems of relating meanings of visual art to the society in which it was
191. Seminars in Art History.
(Formerly Art History 191.)
*A. Ingres (1780–1867): Artist and Icon.
Examination of French artist Jean-Auguste Dominique Ingres throughout path of his seventy-year career and in recent scholarly writings. Considers both Ingres's artistic production and multiple incarnations of "Ingres" as icon in art history. Enrollment limited to 17. (Formerly Art History 191A.) (General Education Code: A.) T The Staff
*B. Chan Texts and Images.
What happens when, to control an object, it is destroyed? Examines destruction of art in Africa as a way of ending an object's life cycle, as device of social tension/change, and as colonial and post-colonial mechanism of religious/political control. Prerequisite(s): one of the following: course 10E, 10SA, 10SC, 189F, 189EH, 189I, 189L, 190R, 190V, or permission of instructor. Enrollment limited to 18. (Formerly Art History 191C.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, E.) E. Cameron
*C. Iconoclasm in Africa.
*E. 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 17. (Formerly Art History 191E.) (General Education Code: A.) T The Staff
*D. 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 literature on tourism. Enrollment limited to 17. (Formerly Art History 191D.) (General Education Code: A.) T The Staff
*F. Play and Ritual in African Visual Cultures.
Examines differences in how play and ritual constitute 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 limited to 17. (Formerly Art History 191E) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: E, A.) E. Cameron
*G. New Texts for Old Greek Pots.
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. (Formerly Art History 191H.) (General Education Code: A.) R. Birnbaum
*H. 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. (Formerly Art History 191H.) (General Education Code: A.) R. Birnbaum

192. Medieval Pilgrimage and Contemporary Tourism.
Examines some of the most significant medieval pilgrimage sites (Rome, Jerusalem, Santiago de Compostela) through contemporary literature on tourism. Enrollment limited to 17. (Formerly Art History 191C.) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, E.) E. Cameron

*I. The Individual and Tradition in Chinese Painting of the Seventeenth Century.
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 limited to 17. (Formerly Art History 191L) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A.) J. Hay

*J. 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 limited to 17. (Formerly Art History 191J) Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: A.) T The Staff

K. Theories of Postmodernism and the Visual Arts. W
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—poststructuralist, neo-Marxist, and art critical. Enrollment limited to 17. Enrollment restricted to juniors and seniors. (General Education Code: A.) T 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. Through specific case studies, will explore how art, architecture, and museums actively contribute to define and challenge ethnic and national identities. Enrollment limited to 17. (Formerly Art History 191P) Enrollment restricted to sophomores, juniors, and seniors. (General Education Codes: A, E.) S. Kamihiro

Prerequisite(s): petition on file with sponsoring agency. (Formerly Art History 195.) May be repeated for credit. T The Staff

198. Independent Field Study. F, W, S
Independent field study away from the campus. Prerequisite(s): petition on file with sponsoring agency. (Formerly Art History 198.) T The Staff

198. Independent Field Study (2 credits). F, W, S
Independent field study away from the campus. Prerequisite(s): petition on file with sponsoring agency. (Formerly Art History 198E) T The Staff

199. Tutorial. F, W, S
Individual study in areas approved by sponsoring instructor. Prerequisite(s): petition on file with sponsoring agency. (Formerly Art History 199.) T The Staff

294. Teaching-Related Independent Study. F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. Prerequisite(s): petition on file with sponsoring agency. (Formerly Art History 294.) May be repeated for credit. T The Staff

297. Independent Study. F, W, S
Independent study or research for graduate students. Prerequisite(s): petition on file with sponsoring agency. (Formerly Art History 297.) May be repeated for credit. T The Staff

Faculty and Professional Interests

JAMES T. CLIFFORD, 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
Feminism, African American studies, critical theory, popular music culture and social consciousness, philosophy of punishment (women's jails and prisons)
Teresa de Lauretis, Professor of History of Consciousness
Semiotics, psychoanalytic feminism, film theory, literary theory, queer studies
BARBARA L. EPSTEIN, Professor of History of Consciousness
Social movements and theories of social movements, 20th-century U.S. politics and culture, Marx and related theories of social change
DONNA J. HARAWAY, Professor of History of Consciousness
Feminist theory, cultural and historical studies of science and technology, relation of life and human sciences, and human-animal relations
GARY L. LEASE, Professor of History of Consciousness
Theory 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, Acting Associate Professor of History of Consciousness
Literary theory, psychoanalysis, black cultural theory and philosophy of race, literary and visual culture of modernism
NEFERTI TADIAR, Assistant Professor of History of Consciousness
Third World feminism, postcolonial theory, critical theories of race and subjectivity, social theory, cultural studies of the Asia-Pacific region
VICTOR BURGIN, Emeritus Professor of History of Consciousness
HAYDEN WHITE, University Professor Emeritus; Professor Emeritus, History of Consciousness

Graduate Courses

http://humwww.ucsc.edu/histcon/HisCon.html

conferences@humwww.ucsc.edu
Extended Department Faculty

John Brown Childs, Professor of Sociology
Sociology of knowledge, religion and social action, elitist and populist social movements

Michael H. Cowan, Professor of American Studies and Literature
Nineteenth- and 20th-century American literature, urban studies, American cultural theory and history, multicultural analysis, autobiography

Gina Dent, Assistant Professor of Women's Studies
African studies, popular culture and social problems, feminist legal theory, postcolonial and critical area studies

Shelly E. Errington, Professor of Anthropology
Culture and politics, art and nationalism, the art market, visual and social semiotics, photography, film and new media, Southeast Asia and Latin America

Carla Freccero, Professor of Literature
Renaissance studies, French and Italian language and literature, early modern European history and literature, postcolonial theories and literature, contemporary feminist theories and political theory, queer theory, pre- and early modern studies, contemporary fiction by women of color in the U.S., identity politics as political formations

Herman S. Gray, Professor of Sociology
Cultural studies, media studies

Susan Harding, Professor of Anthropology
Ethnographic writing, fundamentalism, Christianity, state-making, aging, America, and Spain

David C. Hoy, Professor of Philosophy
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, Marxian theory, institutional analysis, antidiscrimination law

Helene Moglen, Professor of Literature and Women's Studies
The English novel, feminism, cultural, and psychoanalytic theory

Triloki Nath Pandey, Professor of Anthropology
Native peoples of North America, cultures of India, political anthropology, anthropological theories and comparisons

Andrew Szasz, Associate Professor of Sociology
Environmental sociology, political sociology, theory

Richard Terdiman, Professor of Literature
Nineteenth- and 20th-century French and European literature and culture, literary and cultural theory, contemporary critical theory, cultural globalization

Anna Tsing, Professor of Anthropology
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.

Judy Yung, Professor of American Studies
Asian American history, culture, women, and contemporary issues; 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/a workers and U.S. capital

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 flexibility 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 interdisciplinarity scholarship. Program graduates 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 studies, ethnic studies, 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 integration 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 formal tracks, it does emphasize a variety of topics and approaches in its seminars and research pursuits. Reflecting a serious concern for social, historical, and cultural theories, these areas of research can be most succinctly 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 histories of religion; and social movements. Seminars are regularly offered in these and other areas of ongoing faculty research.

History of consciousness has strong cooperative relations with associated faculty from other campus programs, 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 advising, qualifying exams, and thesis committees for the department or successfully applying a language course approved by the department; success in the qualifying exam; and proposal of an acceptable thesis topic. The qualifying exam, normally taken during the third year of enrollment, is centered on 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.

After advancement to candidacy, required by the end of the fourth year, students concentrate on the writing of the dissertation. The current normative time to degree limit of seven years means that a student usually has at least three years after advancement to candidacy for completion of the dissertation.

Students also have the option of doing advanced work in a traditional discipline and receiving a parenthetical degree notation of this specialization. In such cases, students must satisfy the appropriate department's criteria.

Currently such degree notations may be negotiated with American studies, anthropology, literature, sociology, and women's studies. Students are expected to complete at least one year of supervised teaching as part of the degree requirements.

Applications

Requests for application forms should be directed to

UC Santa Cruz
Division of Graduate Studies
1156 High Street
Santa Cruz, CA 95064

phone: (831) 459-2301
email: gradadm@ucsc.edu

Admissions information and the links to complete an online application or download an application form are available at http://www.graddiv.ucsc.edu.

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 backgrounds and interests in the humanities and social sciences and are especially encouraged from individuals with a clear idea of the project they wish to undertake. Strength preference is 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. Application is for fall quarter only.

It is important to note that, in light of California's elimination of affirmative action as an admissions criterion, the history of consciousness department reaffirms its
commitment to the principles of affirmative action. These principles mean a commitment to diversity, equal opportunity, and outreach to underrepresented communities. Further, this commitment underlines our understanding that the very fabric and quality of our scholarship depends on the representation and interplay of diverse experience and perspectives. So defined, affirmative action is reflected in every aspect of the history of consciousness program, including scholarship, teaching, admissions, hiring, and the process of departmental governance.

Lower-Division Courses

80A. Culture and Ideology in the Twentieth Century. V
A survey of the principle ideological issues of the twentieth century—attitudes toward sex, race, class, work, violence, and knowledge—viewed from the perspective of structuralist and semiotic theories of culture. (General Education Code: T4-Humanities and Arts.) A. Davis

*80B. Constructions of the Exotic.
Analyzes ethnographic and auto-ethnographic representations of non-Western peoples. Films, video, ethnographies, novels, and journalism are considered, paying attention to specific histories of colonial and postcolonial contact which influence images of "culture" and "identity." (General Education Code: T4-Humanities and Arts.) J. Clifford

80C. Science and Politics: Historical Perspectives.
Drawing from nineteenth- and twentieth-century controversies, exploration of the relations of knowledge and power in science with special attention to complexities of race, sex, and class. Major topics: science and war, industrial biology, scientific constructions and human nature, and the history of radical science movements. (General Education Code: T5-Humanities and Arts or Social Sciences.) D. Haraway

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 sacrifice and ritual, and its role in selected religions and cultures throughout the world. Enrollment limited to 120. Offered in alternate academic years. (General Education Code: T4-Humanities and Arts.) G. Leese

*80F. Women of Color: Gender and Sexualities.
Introduction to critical thinking about race, class, gender, and sexuality. Exploring questions of identity and belonging in relation to topics such as politics of butch-femme in communities of color, this interdisciplinary course focuses on class, male and female experiences are contrasted. (General Education Code: T5-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 Jesusites, or among the Jesus-types of Late Antiquity? Or only contradictory choices? (General Education Code: T4-Humanities and Arts.) G. Leese

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: T5-Humanities and Arts or Social Sciences.) D. Haraway

80Y. Asia-Pacific Cultural Studies. V
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. Enrollment limited to 120. (General Education Code: T5-Humanities and Arts or Social Sciences.) N. Tadiar

Upper-Division Courses

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, Engelsberg, and Pflanze. Knowledge of German is not required but would prove beneficial. Enrollment limited to 25. Enrollment restricted to juniors and seniors. G. Leese

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 Hikhalah, tensions between socialism and Zionism, between religiosity and secularism, the mutual influences among these tendencies. Enrollment limited to 20. Enrollment restricted to juniors and seniors. (General Education Code: E.) B. Epstein

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 limited to 20. Enrollment restricted to juniors and seniors. (General Education Code: 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 limited to 80. Enrollment restricted to juniors and seniors. T. de Lautré

Study of African American modernist literary history, including canon formation, period formation, and the practice of literary genres. Enrollment limited to 25. Enrollment restricted to juniors and seniors. (General Education Code: E.) D. M. Arrington

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 limited to 25. Enrollment restricted to juniors and seniors. N. Tadiar

199. Tutorial. F,W,S
A program of individual study arranged between an undergraduate student and a faculty member. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. 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 drawn from cultural and political analysis are discussed in their application to specific problems in the history of consciousness. Prerequisite(s): first-year standing in the program. See the department office for more information. T. Staff

*204A-B. Introduction to Cultural Studies.
Classic texts from the British cultural studies tradition. Traces later developments in North America, Latin America, Australia, and elsewhere. Asses how class analysis has been complicated by work on race, ethnicity, gender, sexuality, and postcoloniality. Prerequisite(s): course 204A is prerequisite to 204B. Enrollment limited to 20. Enrollment restricted to graduate students. May be repeated for credit. 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, monumets, rituals, games, and codes, to poems, novels, and political tracts. Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit. T. de Lautré

208A-B. Radical Critiques of Penalit.
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 serve as principal analytical categories. Course 208B is writing-intensive. Prerequisite(s): course 208A is prerequisite to 208B. Enrollment limited to 15. Enrollment restricted to graduate students. A. Davis

*Not offered in 2003–04
209A-B. Women of Color: Feminist Theories and Practices. \(W\)  
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. Prerequisite(s): 209B; course 209A. Enrollment limited to 15. Enrollment restricted to graduate students. A. Dávila  

210A-B. Cultural and Historical Studies of Race and Ethnicity. \(S\)  
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 UCSC 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. Prerequisite(s): course 210A is prerequisite to 210B. Enrollment limited to 15. Enrollment restricted to graduate students. T. de Lauretis  

*213A-B. 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. Prerequisite(s): course 213A is prerequisite to 213B. Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit. T. de Lauretis  

*214A-B. Studies in History, Religion, and Myth. \(S\)  
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. Prerequisite(s): course 214A is prerequisite to 214B. Enrollment restricted to graduate standing. May be repeated for credit. G. Lease  

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 practice, aesthetics and politics, and identifying issues relevant to contemporary debates around race, class, and gender. Prerequisite(s): course 215A is prerequisite to 215B; course 215B is prerequisite to 215C. Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit. A. Dávila  

217A-B-C. Seminar: Topics in Feminist Theory. \(F\)  
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 condition; examination of relations of class, race, and gender in feminist theory and practice. Prerequisite(s): course 217A is prerequisite to 217B; course 217B is prerequisite to 217C. Enrollment restricted to graduate students. May be repeated for credit. T. de Lauretis  

218A-B. Postcolonial Theory. \(F-W\)  
Study of selected topics in postcolonial theory; including decolonizing critiques of Western knowledge and epistemologies, nationalism, gender and sexuality, cultural representations of neo-colonialism and imperialism, subalternity, history and historical transformation, and global relations of domination. Prerequisite(s): course 218A is prerequisite to 218B. Enrollment limited to 15. Enrollment restricted to graduate students. N. Tadiar  

*219A-B-C. Psychoanalysis and Cultural Criticism. \(F\)  
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. Prerequisite(s): course 219A is prerequisite to 219B; course 219B is prerequisite to 219C. Enrollment restricted to graduate students. T. de Lauretis  

220A-B. Globalization and Cultural Process. \(F-W\)  
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? Historical and ethnographic focus on tourist encounters, museums, nativisms, film/media performances, etc. Prerequisite(s): course 220A is prerequisite to 220B. Enrollment limited to 20. May be repeated for credit. J. Clifford  

222A-B. Theories of Late Capitalism, Nationalism, and the Politics of Identity. \(W-S\)  
Looks at the theoretical literature on what is variously called late capitalism/postindustrial/postfordism, and in that context considers the rise of nationalism and identity politics in the latter part of the twentieth century. The primary focus is on the U.S. and Western Europe, but questions of the globalization of capital and the transformation of relations between "the West" and "the Third World" are also considered. Written work for the course consists of weekly short papers. Prerequisite(s): course 222A is prerequisite to 222B. Enrollment limited to 15. Enrollment restricted to graduate students. B. Epstein  

223. Recent European Philosophy. \(F\)  
Seminar on recent developments in European philosophy, with particular attention to German theorists such as Nietzsche, Heidegger, Gadamer, Horkheimer, Adorno, or Habermas. Theorists such as Sartre, Merleau-Ponty, Derrida, Foucault, Bourdieu, Levinas, Laclau, or Vattimo may be read as well. (Also offered as Philosophy 223. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. D. Hoy  

*230A-B. Racism and Imperialism. \(S\)  
Study of the role of "race" and racism in theories and practices of modern imperialism. Investigates intersections among discourses of "race," nativism, gender, and economic exploitation on a world scale; relations between culture, ideology, and political economy in the context of global capitalism. Course 230B continues with further readings on selected topics from 230A, with some intensive writing. Enrollment limited to 15. (Formerly course 230B.) Enrollment restricted to graduate students. May be repeated for credit. N. Tadiar  

*231A-B. Children of Modernity. \(F-W\)  
Study of theories and conceptions 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. Prerequisite(s): course 231A is prerequisite to 231B. Enrollment limited to 15. Enrollment restricted to graduate students. N. Tadiar  

*232A. Third World Feminisms and Globalization. \(F\)  
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 feminisms respond and contribute to political, economic, social, and cultural transformations. Enrollment limited to 15. Enrollment restricted to graduate students. N. Tadiar  

*233A-B. 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; texts from a variety of disciplines (literature, sociology, philosophy). Prerequisite(s): course 233A is prerequisite to 233B. Enrollment limited to 15. Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. B. Epstein  

235A-B. Theory of Religion. \(W\)  
The difficulty of defining religion (universal essence vs. local/individual experience), of specifying its categorical boundaries, and of generating a theory based on more traditional disciplines (anthropomorphism, societal, psychic, transcendental, cognitive/ritual, historical/cultural/political). Prerequisite(s): course 235A is prerequisite to 235B; course 235B is writing intensive, based on the readings studied in 235A. Enrollment limited to 15. Enrollment restricted to graduate students. 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 department chair, coordinated by a graduate student with substantive experience as a teaching assistant. Enrollment restricted to graduate students. May be repeated for credit. G. Lease  

*241A-B. Twentieth-Century Marxism.  
The development of Marxist social theory in the twentieth century, including western European, United States, Latin American and other Third World theorists; feminist and anarchist challenges to Marxism. Prerequisite(s): course 241A is prerequisite to 241B. Enrollment limited to 15. Enrollment restricted to graduate students. B. Epstein  

242A-B. Studies in Fanonism. \(F-W\)  
Study of the work and influence of Frantz Fanon from a range of viewpoints: existential, phenomenological, psychoanalytic, and political; a variety of genres: film, literature, case history, and critique; and a set of institutional histories: clinical, cultural, and intellectual. Enrollment limited to 15. Enrollment restricted to graduate students. D. Marris
243A. Nationalism, Anti-Semitism, and Jewish Resistance in World War II. W
Jewish resistance to Nazism during World War II, in Eastern 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 consequences for wartime resistance. (Also offered as History 243A. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to seniors and graduate students. B. Epstein

250A*-B. Foundations in Science Studies. W
Critical inquiry into topics in the history, sociology, anthropology, 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 networks, and the science question in feminism and antiracism. Prerequisite(s): course 250A is prerequisite to 250B. Enrollment limited to 15. Enrollment restricted to graduate students. D. Haraway

251. Readings in Science Studies.
Focus is on recent literature in social, cultural, and historical studies of science, medicine, and technology. This seminar familiarizes students with current scholarly debates, research networks, national traditions, international exchanges, conference proceedings, interdisciplinary projects, and publication sites. Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit. D. Haraway

252. Poststructuralism, S
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 Philosophy 252. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to graduate students. May be repeated for credit.

253A. Topics in Cultural Analysis. S
Advanced graduate seminar in which students do research on focused topics. Each quarter centered on single thematic area. Students read works of culture-theory and exemplars studies illustrating methodologies, problems, and current controversies. Prerequisite(s): minimum of second-year status in the history of consciousness program; instructor evaluates student's ability to participate. Enrollment limited to 15. Enrollment restricted to graduate students. J. Huyghe

*260A-B-C. Film and the Visible.
Study of selected topics in film theory, including the construction of vision and spectatorship; the relations of look, image, and narrative; the formative effects of classic, experimental, and independent cinema in contemporary visual culture; the feminist critique of representation; the role of cinema in the production of public and private fantasies, cultural memory, and identity. Prerequisite(s): course 260A is prerequisite to 260B; course 260B or 260B prerequisite to 260C. Enrollment restricted to graduate students. T. de Lauretis

264. The Idea of Africa, S
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 offered as Women's Studies 264. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to graduate students. G. Dent

291. 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 in preparation for the qualifying examination. Enrollment restricted to graduate history of consciousness majors. The Staff

292. Practicum in Composition. W
A practicum in the genres of scholarly writing, for graduate students working on the composition of their qualifying essay or doctoral dissertation. Enrollment limited to 15. Enrollment restricted to graduate students. T. de Lauretis, J. Clifford, D. Haraway

293. Field Study, F, W, S
Research carried out in field settings, based on a project approved by the responsible faculty. The student must file a prospectus with the department office before undertaking the research and a final report of activities upon return. May be repeated for credit. The Staff

294. Teaching-Related Independent Study. F, W, S
Directed graduate research and writing coordinated with the teaching of undergraduates. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

295. Directed Reading. F, W, S
Systematic working through a prearranged bibliography which is filed as a final report at the end of the quarter with the signature of the instructor. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

296. Special Student Seminar. F, W, S
A seminar study group for graduate students focusing each quarter on various problems in the history of consciousness. 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 that quarter, and reviewed by the responsible faculty. May be repeated for credit. The Staff

297. Independent Study, F, W, S
Independent study and research under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

298. Doctoral Colloquium.
Under the supervision of a History of Consciousness faculty member, students finishing their dissertation meet weekly or bi-weekly to read and discuss selected draft chapters, design difficulties and composition problems. May be repeated for credit. The Staff

Prerequisite(s): advancement to candidacy. May be repeated for credit. The Staff

Humanities

15 Cowell College Commons
(831) 459-2696
http://humwww.ucsc.edu

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 216.

Italian

Language Program
239 Cowell College
(831) 459-2054
http://lang.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 CENTINEO
Italian culture and civilization; history of Italian language, Italian linguistics, syntax, and semantics; language pedagogy

MARGARET BROSE (Literature)
Associate Professor

ITALIAN 257
Study Abroad

The UC Education Abroad Program (EAP) sponsors programs of study for one year in Bologna, Padua, and Trento and semester programs in Milano 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 Siena, 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 42). For information on credit applied to a major, contact the appropriate department.

Lower-Division Courses

1-2-3. Instruction in the Italian Language. F-W-S

Aural comprehension, speaking, reading, writing, and laboratory. Check the quarterly Schedule of Classes for exact quarter(s) of offering. Sequence begins in fall quarter. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): 2 course 1; 3: course 2; or placement by examination. 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 only 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. Open to students who have successfully completed either 1A or Italian 2; for students completing course 2, course 3 is preferable. The Staff

4. Intermediate Italian. F

Short stories, articles, films, and newscasts 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. (General Education Code: IH.) 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. (General Education Code: IH.) The Staff

6. Intermediate-Advanced Italian. S

Reading of first novel in the language and weekly viewing of Italian films serves 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. (General Education Code: 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial. F-W-S

Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits). F-W-S

Prerequisite(s): petition on file with 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 perspectives 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. G. Contino

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. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial. F-W-S

Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F-W-S

Prerequisite(s): petition on file with sponsoring agency. The Staff

Additional Courses of Interest

Not all courses listed are offered in 2003–04. Check the quarterly Schedule of Classes for this year’s offerings. For complete descriptions see listings under History, page 241. 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

Italian Studies

Department of Literature

Kresge College

(831) 459-4778

http://humwww.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 SHEMEK, Associate Professor of Literature (Cowell)

CATHERINE SOUSSLOFF, 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 MILES, Emeritus

TYRUS MILLER, Associate Professor of Literature (Cowell)

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 major or minor 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 special topics or seminars.
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.

Japanese

Language Program
239 Cowell College
(831) 459-2064
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Associate Professor

Lecturer
SAKAE FUJITA Foreign language methodology, drama/theater/improvisation use in language learning, language and identity, foreign language literacy, literacy through literature

CHIOKO 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 major or minor in language studies (page 262), an East Asian studies minor (page 169), or a major in global economics (page 173). 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 262, under Language Program.

Study Abroad
The UC Education Abroad Program (EAP) has information on study in Japan. There are EAP centers in Yokohama, Tsu, 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 42). For information on credit applied to a major, contact the appropriate department.

Lower-Division Courses

1-2-3. Elementary Japanese, F-W-S Goal is to learn all the basic grammar, hiragana, katakana, and 100 kanji, and to attain elementary proficiency in speaking. This sequence begins in fall quarter. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): 2: course 1; 3: course 2; or placement by examination. The Staff

4-5-6. Intermediate Japanese, F-W-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. Sequence begins in fall quarter. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): 4: course 3; 5: course 4; 6: course 5; or placement by examination. (General Education Code: IH.) The Staff

*12F. Japanese Culture and Society Through Film (2 credits)
Primary focus on the study and understanding of the dramatic changes which occurred in Japanese culture and society in the wake of defeat in WW II, as revealed in post WWII Japanese film. Taught in English. Enrollment limited to 50. C. Ishibashi

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. Students interested in this course who have not taken the prerequisite should meet with the instructor, preferably prior to the first class meeting. Prerequisite(s): course 6. Enrollment limited to 20. (General Education Code: 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial, F,W,S Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

*103. Advanced Japanese
Readings in contemporary Japanese. Assignments include short stories, writing essays, classroom presentation and translation of a short story. May be repeated for credit with consent of instructor. 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 50. The Staff

104. Advanced Japanese, S Readings on cultural/historical issues in contemporary Japanese short stories, essays, and poems. Focus on developing skills to write coherent essays and discuss them in a group situation. May be repeated for credit with consent of instructor. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting. Prerequisite(s): courses 6 and 103 or 104. 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F,W,S Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S Prerequisite(s): petition on file with sponsoring agency. The Staff

Additional Courses of Interest
Check the Schedule of Classes for 2003–04 courses.

History 159A, Ancient Japan
History 159B, Tokugawa Japan
History 159C, Modern Japan
Music 80A, Music Cultures of Asia
See also East Asian Studies, page 169.

Jewish Studies

Department of Literature
Literature Department Building
Kroege College
(831) 459-1225
http://humwww.ucsc.edu/jewishstudies/index.html

Program Faculty

BETTINA APTHEKER, Professor of Women’s Studies
MURRAY BAUMGARTEN, 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 FLATTE, Professor of Physics

*Not offered in 2003–04
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 towards the minor. Petition forms are available in the Literature Department Office.

### Fall 2003
- Hebrew 1, Instruction in the Hebrew Language
- Hebrew 4, Intermediate Hebrew
- Hebrew 80, Introduction to Biblical Hebrew
- History 39, Film and Holocaust
- History 190, Biocience, Nazi “Radical Hygiene,” and the Holocaust
- Modern Literary Studies 144G, Global Jewish Writing: Diasporas Compared

### Winter 2004
- Hebrew 2, Instruction in the Hebrew Language
- Hebrew 5, Intermediate Hebrew
- History 32, Spain: 632-1500
- History of Consciousness 243A, Nationalism, Anti-Semitism, and Jewish Resistance in World War II
- Modern Literary Studies 144A, Jewish Diaspora, Ethnicity, and Urban Life
- Modern Literary Studies 144D, Jewish Writers and the American City

### Spring 2004
- Hebrew 3, Instruction in the Hebrew Language
- Hebrew 6, Intermediate Hebrew
- History 158, Ethnicity and Community in the Middle Ages
- History 196A, Hitler and Stalin

### Sample Student Program
- Year 1: Biblical Narratives
- Year 2: Hebrew 4-5-6; the Holocaust
- Year 3: two Modern Literary Studies 144 courses or EAP courses; if EAP, take LITMO 144 courses in second year.
- Year 4: upper-division courses in literature and history

### Journalism

The Writing Program accepts students each quarter into the minor in journalism. The minor consists of a series of courses and internships that emphasize not just craft but critical analysis. The program immerses the student in the practice of writing for newspaper and magazine publication. A full description of the minor, an explanation of application procedures, and a petition for admission into the program may be obtained at the Writing Program Office (Krege 166). Petitions are reviewed during the second week of each quarter; selection is based on course work and writing samples. Interested students are encouraged to get more details about the minor from the faculty: Tim Fitzmaurice (Crown), Conn Hallinan (Krege), Leslie Lopez (Krege), Paul Skewzny (Krege), and Rex Spafford (Krege). Admission to the minor is suspended at present.

### Course Requirements

- Writing 64, News 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 283).
- 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 media criticism), 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/krege

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 limited to 15. Enrollment restricted to college members. 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 reflection on the experience. Enrollment limited to 15. Enrollment restricted to college members. May be repeated for credit. R. Bunch

**20. Learning in the Disciplines.**

Courses designed to help students develop their capacities in the methods and traditions of the academic disciplines.

**1C. 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. Useful for strengthening independent learning strategies as well as academic study skills. Prerequisite(s): Writing 1 or fulfillment of the C requirement. Enrollment limited to 15. Enrollment restricted to college members. The Staff

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1 Quarter to be determined
30. Writers and Ideas.
Courses introducing key works by significant writers, artists, and thinkers from a range of fields who have helped shape our present cultural community. Also covers controversial issues that have become centers for the conflict of different theoretical systems.

C. The Writing Life (3 credits). F
Studies challenges and rewards of a writing career students might pursue professionally (from technology to travel, screenwriting to grant writing, journalism and literary careers). The course will center around a Kresge College Lecture Series featuring UCSC alumni addressing their wide range of experiences in their writing lives. Enrollment limited to 18. Enrollment restricted to college members. F. Fatani

D. The Writing Life (2 credits). W
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). The course will center around a Kresge College Lecture Series by UCSC alumni, who will address their wide range of experience with their writing lives. Enrollment limited to 18. Enrollment restricted to college members. F. Fatani

42. Student-Directed Seminar. F,W,S
Seminar taught by upper-division Kresge students under Kresge faculty supervision. (See course 192.) Prerequisite(s): petition on file with sponsoring agency. T he Staff

80. Cultural Intersections (Kresge Core Course). F
Issues of individual responsibility within American communities are approached through two main questions: How do individuals construct their lives within the bounds of society and culture? How can society be changed by the acts of individuals? Race, class, gender, and sexuality as major building blocks of the person, society, and culture are studied through novels, films, and workshops. Enrollment limited to 21. (General Education Code: T4-Humanities and Arts or Social Sciences.) T he Staff

80B. Teatro Chicano/a. S
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. Taught in winter quarter as Theater Arts 80M; students cannot receive credit for both classes. Enrollment limited to 25. Enrollment restricted to college members. (General Education Codes: T4-Humanities and Arts, E, A.) R. A podaca

80T. Cultural Intersections (Kresge Core Course). F
Designed primarily for incoming transfer students. Issues of individual responsibility within American communities are approached through two main questions: How do individuals construct their lives within the bounds of society and culture? How can society be changed by the acts of individuals? Race, class, gender, and sexuality as major building blocks of the person, society, and culture are studied through novels, films, and workshops. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 21. (General Education Codes: T5-Humanities and Arts or Social Sciences, W.) T he Staff

A program of directed study arranged between a fresmen or sophomore student and a Kresge faculty member. Prerequisite(s): petition on file with sponsoring agency. T he Staff

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. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to lower-division standing. T he 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. T he 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. T he Staff

A program of independent study arranged between a group of students and a Kresge faculty member. Prerequisite(s): petition on file with sponsoring agency. T he 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. T he Staff

198. Independent Field Study. F,W,S
Provides for college-sponsored independent study programs off campus, for which 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. T he Staff

199. Tutorial. F,W,S
A program of individual study arranged between an upperdivision student and a Kresge faculty member. Prerequisite(s): petition on file with sponsoring agency. T he Staff

Language Program

239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Chinese
DAVID KEENEAN
Chinese language, fiction, and history

JACQUELINE KU
Chinese language pedagogy, modern Chinese drama, drama as pedagogical tool

French
MIRIAM ELLIS
French theater history and performance, 17th-century literature and culture, Latin and Caribbean women poets, opera translation and production, theater as pedagogical instrument, computer-assisted French

ANGELA ELSEY
Francophonie, especially North American (Louisiana, Quebec, the Caribbean); French diatextology and sociolinguistics

PATRICIA FITCHEN
Poetry from Baudelaire to the present, modern French theater, French women and the arts, surrealism, history and theory of French cinema, intercultural communications

GILDS HAMEL
French history and culture, Celtic languages and literatures, history of Judaism and early Christianity

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 Epoque, and interwar periods

German
WALTER CAMPBELL
Language teaching, 18th- and 19th-century German literature, history of German

JUDITH HARRIS-FRESK
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

Greek
KAREN BASSI (Literature)
Greek and Latin literature, Greek drama, Hellenistic poets, 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

CHARLES W. HEEDRICK 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; Lucretius, Virgil, and Patroclus in ancient education

DANIEL SELDEN (Literature)
Afroasiatic languages and literatures, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

Hebrew
TAMMI ROSSMAN-BENJAMIN
Hebrew language and culture, biblical Hebrew syntax and semantics, the Hebrew Bible, Jewish thought, psycholinguistics, second-language acquisition and bilingualism

Italian
GIULIA CENTINEO
Italian culture and civilization; history of Italian language; Italian linguistics, syntax, and semantics; language pedagogy

MARIA (TONIA) PRECICHE
Business Italian, translation, Italian culture and civilization

Japanese
SAKAE FUJITA
Foreign language methodology, drama/theater/improvisation using in language learning, language and identity, foreign language literacy, literacy through literature
**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) a 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 requirement has 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.

**Requirements for the Major**

**Early Declaration**

It is important that prospective students declare the major as early as possible so that they can complete the advanced language, linguistics, and context requirements within an allowable period of enrollment. Alternatively, students can opt for the general linguistics major with a particular language focus (see Linguistics, page 274).

Students who wish to include an EAP experience in their course of study will have to coordinate their choice of year abroad with the scheduling of UCSC courses. Transfer students who have not made significant progress with the language requirements before entering UCSC may find it difficult to include an EAP year before completion of graduation requirements.

**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, and Spanish must achieve a level equivalent to six quarters in the language of concentration and take the equivalent of courses 1, 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:

- Linguistics
  - 51. Phonetics
  - 101. Phonology I
  - 52. Syntax I; or 55, Syntactic Structures
  - 53. Semantics I
  - 140, Language Change (history)
- a course in language structure from the Linguistics 180-series which is relevant to the major language.
- The following are two recommended academic plans for language studies majors. Plan One is a guideline 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.

**Plan One**

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<td>1st</td>
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<td>Lang (6th qrtr)</td>
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**Plan Two**

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**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 context courses, and five courses in linguistics: (51, 55 or 52, 101, 140, and an appropriate course from the 180 language structure series).
Latin American and Latino Studies

Faculty and Professional Interests

Core Faculty

GABRIELA ARRE DONDO, Assistant Professor in Latin American and Latino Studies
Comparative Latina/o histories; Chicanx/o and M e x i c a n /a histories; critical race and ethnicity theories; immigration; social history of Chicanx feminism; "boundaries" studies; particularly intersections 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, M e x i c o and the Southwest

GUILLERMO DELGADO, Lecturer in Latin American and Latino Studies
Latin America; comparative indigenous; indigenous property rights; religion, magic, and ritual; ecological and ecologies; Quechua/Andean linguistics; mining alternativ/ e c o n o m ic; anthropology in the developing world; interethnicity; urbanization; social movements; culture theory

JONATHAN FOX, Professor of Latin American and Latino Studies
Comparative Latin American politics, contemporary Central America, urban U.S., macroeconomic stabilization in Latin America; macroeconomics, political constraint, the auto industry, the state and transnational corporations

SUSANNE JONAS, Lecturer in Latin American and Latino Studies
Social change, historical sociology, world systems, modern cultural studies, transnational feminist theories, Chicana/o and public interest groups

JOHN M. SCHECHTER, 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
Political economy, Latin American economic history and development (with an emphasis on Brazil), industrial policy, the auto industry, the state and transnational corporations

CARTER WILSON, Emeritus

Affiliated Faculty

JORGE ALADRO FONT, Associate Professor of Spanish Literature
Spanish myth, Iberian history and cultural histories; indigenous and European, baroque and Iberian literature, Italian ideas in the Spanish Renaissance, Cervantes

GREGORY GILBERT, Associate Professor of Environmental Studies
Disease ecology, conservation biology, tropical forest ecology, microbial ecology

STEPHEN R. GLEISSMAN, Professor of Environmental Studies
Agroecology, sustainable agriculture, natural history, tropical land use and development, ecology and management of California vegetation

MARÍA VICTORIA GONZÁLEZ-PAGANI, Lecturer in Spanish Language
Language teaching methodology; Spanish syntax; computer-assisted foreign language learning; Latin American cultural studies, especially women's contributions

DAVID GOODMAN, Professor of Environmental Studies
Political economy of international environmental issues, global agro-food systems, technology, North-South relations and sustainable development, Brazilian economy and society

KIRSTEN GRIESE, Associate Professor of Literature
Comparative Latin American and Caribbean Studies; M e x i c a n /a literature and cultures, 19th-century U.S. literature, poetry and translation, genre theory

M. LISBETH HAAS, Associate Professor of History
U.S. social and cultural history, the Southwest, the colonial Americas, California; ethnic and women's history; history and theory

AIDA HURTADO, Professor of Psychology
Social identity, feminist theory, social psychology of education, political consciousness, survey methodology

KENNETH KLETZER, Professor of Economics
International economics, economic theory, economic development

DANIEL T. LINGER, Professor of Anthropology
Self and identity, political culture, theory, cities, violence, transnational experiences, Brazil, Japan

PAUL M. LUBBECK, Professor of Sociology
Political sociology, political economy of development, globalization, labor and work, logic of methodology, religious and social movements, Islamic society and identities, information and networks

LUCCINDA PEASE-ALTIVA, Associate Professor of Education
Language and literacy development, language minority education, bilingualism, informal learning

MICHAEL ROTTIN, Lecturer in Community Studies
M e x i c a n /a and capitalist system, community organizing, electoral politics, media, government programs, community power structure, institutional analysis, and affirmative action

Programs and Courses

http://www.lals.ucsc.edu

Casa Latina, lower level, Merrill College
(831) 459-4284

http://www.lals.ucsc.edu
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 Chicano 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, racial, 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 internship 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.

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, communications, ecology, economics, geography, history, law, literature, public health, and sociology—no 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
- at least one must center on Chicano/a-Latino/a issues
- at least one must concentrate on pre-twentieth-century topics
- at least one must center on Chicanos/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 Spanish 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 42 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 your 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 Latino communities in California’s Central Coast are numerous. Credit for up to three upper-division courses may be applied towards 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 Madrid, Cadiz, Córdoba, 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 Querétaro. 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 a 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;
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: Entering Freshmen

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<th>Year</th>
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<td>Span 3, Lals 80-series</td>
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Plan Two: Junior Transfers

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<th>Year</th>
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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 adviser 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 one to two (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 advisers 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 other lower-division courses (one Latin American and Latino studies elective, one course from Politics 1–79) with appropriate course work 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 sequences (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) senior 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, two each from the sociology and 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 adviser 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 Latin American and Latino studies.

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 and/or Portuguese is highly recommended, but not required for the minor.

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 for studying the Latin American culture, society, economy, polity, 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 Codes: E, F, S) 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. W

Anthropological in approach, concentrates on how Latin America’s image is constructed and studied today. Topics include geographies, nationalities, social classes, ethnicities, gender, ecologies, regions, cultural areas, folklore, revolutions, rural and urban societies. (General Education Codes: T3-Social Sciences, E.) G. Delgado

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 urban and rural uprisings, native nations and their descendants, women, African descendants, labor, environmental and grassroots movements. Enrollment limited to 25. (General Education Codes: T3-Social Sciences, E.) The Staff

80C. Power and Resistance in the Americas: Cross-Border Social Movements. S

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 Codes: T3-Social Sciences, E.) J. Fonseca

80D. Political Change in Mexico. W

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, environmental challenges, guerrilla movements, the media, and the politics of immigration and North American integration. (General Education Codes: T3-Social Sciences, E.) J. Fox
80F. Latinos in the U.S.: A Comparative Perspective. S
Analyzes the Latino experience in the U.S. with a special focus on strategies for economic and social empowerment. Stresses the multiplicity of the U.S. Latino community, drawing comparative lessons from Cuban-American, Puerto Rican, Chicano/Mexican, and Central American patterns of economic participation and political mobilization. (General Education Codes: T3-Social Sciences, E.) The Staff

*80G. Barrio Popular Culture.
Introduces students to a broad sampling of verbal and nonverbal forms of Mexican folklore. Concentrates on experiencing these forms through texts, film, and, if possible, performances. Attention to how these forms have been used by scholars to comment on Mexican culture is an underlying theme. Knowledge of Spanish is useful but not required. Will be offered in the 2004–05 academic year. (Also offered as Anthropology 080G. Students cannot receive credit for both courses.) (General Education Codes: E, T3-Social Sciences.) 0. Nájera-Ramírez

80H. Comparative Latina/o Histories. S
Designed to survey recent works in the field of Latina and Latino histories, with particular emphasis on historio- graphical approaches and topics in the field. Readings are chosen to expose a selection of the varied histories and cultures of Latina/o in the U.S., and focus primarily on Mexicanos, Puerto Ricans, and Cubans. (General Education Codes: T3-Social Sciences, E.) G. Arredondo

80I. Gender and Global Cinema. S
Examines relationship between globalization, gender, and cultural representation in cinema. Academic topics include aesthetics of world cinema, gender and work, exploitation, gender in family systems/relationships, gender and violence, gender colonization, and gender and migration. Students cannot receive credit for this course and Film and Digital Media 132C. (General Education Codes: T3-Social Sciences, E.) R. Fregoso

80M. Introduction to Mayan History and Literature. W
An introductory lecture and discussion course on literature and history of Mayan peoples of Mexico and Guatemala in the last 500 years; concentration also on representation of the Maya by westerners since the invasion of 1492. (General Education Codes: T3-Social Sciences, E.) C. Wilson

80N. Drug Wars in the Americas. F
Discusses impact of illegal drugs in societies and cultures of the Americas. Covers recent debates concerning legalization of drugs, illegal trafficking, state policy calling for eradication, military intervention, and stands of civil society on this issue. Studies origins and history of illegal drugs, causes of their persistence, and evaluates recent reactions to proposals that affect human communities in Latin America and the U.S. (Formerly Introduction to Drugs in the Americas) (General Education Codes: E, T3-Social Sciences.) G. delgado

80Q. Musica Latina. F
Surveys various musical forms and styles that have developed in Mexico and their influence on music today. Mexico and the U.S. Discusses concept of hybridity and grapple with it as a central issue in the evolution of Mexican music. Addresses migration of music, which not only contributes to its distribution but also the evolution of the musical practices of Mexican forms, styles and genres. (Formerly Music in Mexico and the U.S.) (General Education Codes: T3-Social Sciences, E.) The Staff

*80X. Central American Peoples and Cultures.
Introduces histories and cultures of Central American societies. Focus is on the region’s rich human mosaic—analyzing literature, poetry, music, and art in a broad historical context. (General Education Codes: E, T3-Humanities and Arts or Social Sciences.) The Staff

Upper-Division Courses

100A. Politics and Society: Concepts and Methods. W
Focuses on social science issues through the interdisciplinary analysis of power relations. Compares diverse analytical strategies, assesses competing explanations, and builds practical research skills in the field of Latin American and Latino Studies. Topics include environmental justice, access to education, political participation, gender, and migration. Prerequisite(s): course 1 is recommended. (General Education Code: E.) J. Fox

100B. Culture and Society: Transculturation. S
Examines the phenomenon of transculturation using examples from music, film, other visual arts, popular culture, literary expression, historical and anthropological writing. Broad participation of Latin American and Latino studies faculty. Prerequisite(s): course 1 or History 34, satisfaction of the Subject A and Composition requirements. Enrollment restricted to Latin American and Latino studies majors and combined majors with global economics and politics; minors may enroll subject to a permission code. (General Education Codes: W, E.) R. Fregoso

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. Prerequisite(s): current enrollment in course 101L. (General Education Code: E.) J. Burton-Carvalhal

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. (General Education Code: E.) J. Burton-Carvalhal

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, Mexico (Aztec), and others. Course 10E or equivalent is recommended as preparation. (Tier 2) (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: A.) C. Dean

110B. The Andes, W.
The art of selected pre-Hispanic cultures of Colombia, Ecuador, Peru, and Bolivia including the Nazca, Moche, Chimú, and Inca. Course 10E or equivalent is recommended as preparation. (Also offered as History of Art and Visual Culture 110B. Students cannot receive credit for both courses.) (General Education Code: A.) C. Dean

*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: 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: 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 as 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 reciprocity). (General Education Code: E.) G. delgado

*121. Early California Cultures.
Examines the cultural practices and expressions of four early California populations—indigenous, Spanish, Mexican/California, and immigrant Anglo-Americans—from 1770-1850. Focuses on surviving cultural artifacts in the Greater Monterey Bay region (primarily art and architecture) exploring how these have been (re)interpreted over time. J. Burton-Carvalhal

*123A. Cinema and Social Change: Feature Films.
Intensive weekly sessions contextualize, view and analyze a dozen classical fictional films from Latin America (1960s–1990s). (Formerly Spanish Literature 134K.) (General Education Code: E.) J. Burton-Carvalhal

*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 sociological and political filmmaking. (General Education Code: E.) J. Burton-Carvalhal

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.) (General Education Code: E.) A. Hurtado

126A. Global Capitalism and Community Restructuring. W
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 limited to 25. (Formerly Community Studies 100D.) Enrollment restricted to sophomores and juniors. (General Education Codes: IS, E.) J. Borrego

126B. Voices From the Watsonville Community. W
Weekly Wednesday evening seminar in Watsonville allows students to interact with local workers, organizers,
immigration and citizenship NGO’s, affordable housing non-profits, 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 limited to 25. (Formerly Community Studies 100X.) Enrollment restricted to sophomores and juniors. (General Education Codes: IS, 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: E.) J. Burton-Carvaljal

128. Journalism and the Latino Community. F
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. (Also offered as Writing 128. Students cannot receive credit for both courses.) T he Staff

*129. Women Filmmakers: Latin American and Latina.
Focuses on the work of a dozen major Latin American and Latina filmmakers from Argentina, Brazil, Venezuela, Mexico, and the U.S., including María Luisa Berber, María Navarro, Matilde Landeta, Lourdes Portillo, concentrating on films of the last two decades. (General Education Code: E.) J. Burton-Carvaljal

129F. Mexican Folkloric Dance (2 credits). F,W,S
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. T he 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: E.) J. Fox

142A. Central America: Revolution, Intervention, and Social Change. S
Historical and contemporary overview of the region. More detailed focus on conditions generating popular and revolutionary movements in Nicaragua, El Salvador, and Guatemala during the 1980s; U.S. policy responses; and peace negotiation processes. Examines prospects for Central America in the twenty-first century including migration to the U.S. (General Education Code: E,) S. Jonas

Focuses on the political economy and recent/contemporary processes of social transformation in Cuba, Haiti, Dominican Republic, Puerto Rico, and English-speaking Caribbean countries; U.S. role in the region; Caribbean migrant communities in the U.S. (General Education Code: E.) S. Jonas

143. Race and Ethnicity. S
Race and ethnicity have been—and continue to be—powerful forces shaping the American experience. This course examines a range of conceptual approaches and monographic 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: E,) G. Arratidondo

143J. Global Political Economy. F
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. Chicanoa/Mexican American Women in the U.S.
Explores current historical and theoretical writings on the lived experiences of Chicanas and Mexican American women in American history. Themes include domination/resistance politics, (re)presentations, contestation, social reproduction, identity and difference. (General Education Code: E,) G. Arratidondo

*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: E.) T he Staff

*146. Urban Crisis in Latin America.
Multidisciplinary course on the cities of Latin America. Examines how cities have been constituted spatially, economically, and culturally from the pre-Columbian era to the present. (General Education Code: E.) G. Díaz

*147. Land and Peasants in Latin American.
Explores current trends of peasant movements in Latin America. Compares them with past mobilizations and emphasizes the human experience of the peasantry. Concentrates on specific 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 academic years. (General Education Code: E,) G. Díaz

*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 academic years. (General Education Code: E,) G. Díaz

*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: E,) T he Staff

*151A. The Native in Colonial Spanish America.
Indigenous contributions to colonial Spanish American visual culture including architecture, manuscripts, sculpture, painting, textiles, featherwork, and metallurgy. Focus on colonial Mexico, the Andes, and California. (Also offered as History of Art and Visual Culture 151A. Students cannot receive credit for both courses.) (General Education Codes: E, A, C, D) Dan

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. (Formerly Community Studies 80N.) (General Education Code: 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 topics as democratization and economic performance in the region, trade liberalization and political sustainability in Mexico, and the transformation of socialist Cuba. An intense and interactive seminar; students are expected to participate actively in discussions and produce policy-relevant analyses and “solutions” to current problems. (General Education Code: E,) M. Pastor Jr.

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, examines how family members adapt, resist, and/or construct alternative visions and practices of family life. Prerequisite(s): course 1 or Community Studies 80A and course 80H. Enrollment limited to 25. (General Education Code: E,) P. Zavád

Overview 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. (Formerly The Amazon Valley and Human Kind.) Offered in alternate academic years. (General Education Code: E,) T he 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 contesting explanations for Latin America’s relatively poor economic performance and divergent policy implications. Prerequisite(s): course 1. (General Education Code: E,) H. Shapiro

*Not offered in 2003-04
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: E.) H. Shapiro

Focuses on the ways in which Latin Americans of Indian descent have interacted voluntarily and involuntarily with nonindigenous cultures. Examines their perspectives, thoughts, frustrations, and successes. Touches on land issues and examines the ways current indigenous cultures of Latin America face and adapt to social change. Focuses on the Andes, lowland Amazon, and Mesoamerica. (General Education Code: E.) G. Díégado

173. Latin American Immigration to the U.S. W
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 Latino immigrant communities to the U.S., bi-national communities. (General Education Code: E.) S. Jónás

*175. Migration, Gender, and Health.
Through an interdisciplinary, cross-border approach, examines complex nature of Latino 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. (General Education Code: E.) P. Zavella

*176. Transnational Feminism in Cinema.
Explores the project of women of color in feminist film theories, film, and video. Examines the politics of representation in films/videos 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: E.) R. Fregoso

*177. Latinas in Hollywood.
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 nineteenth century and the early era of film, addresses how Latina sexualities and racialized gender are imagined, invented, explored, coded, and regulated in popular culture forms such as films. Enrollment limited to 25. (General Education Code: E.) R. Fregoso

*178. Gender, Transnationalism, and Globalization.
Focusing on Latin America, examines ways relationship of gender and feminism to contemporary theories of transnationalism and globalization affect social understandings and formation of ideas about nation, national borders, boundaries, and social identities. Explores links between transnational and globalizing processes and emerging global civil society and transborder feminist solidarity movements in the Americas. Enrollment limited to 25. (General Education Code: E.) R. Fregoso

*179D. Mayan Society, Literature, and Thought.
Intensive investigation of major aspects of the ethnography and literature of Mayan people since the Spanish Invasion. Concentration on forms of social life and meaning of discourse such as public performance in fiestas, joking, and tale-telling; and on individual biographic/autobiographic expression. Prerequisite(s): one of the following: course 80M, 100B, 142A, 147, 170, or History of Art and Visual Culture 150A. Enrollment limited to 25. May be repeated for credit. (General Education Code: E.) C. Wilson

Situates “The Border” historically and within the context of U.S. imperialism. Examines the formalization of political “borders,” methods of enforcement, and intra-group conflicts. Examines the varied experiences of colonialism and immigration between Mexicans, Puerto Ricans, Native Americans, and Cubans. Explores how the tools of “The Border” and “Borderlands” are being used to untangle the roles of race prejudice and sexual and gender discrimination. (General Education Code: E.) G. Arredondo

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 an analytical paper or produce another major work agreed upon by student, faculty supervisor, and internship sponsor; supervisor must also provide review of experience. Prerequisite(s): petition on file with sponsoring agency. T he 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. Prerequisite(s): petition on file with sponsoring agency. T he 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. T he 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.) Prerequisite(s): petition on file with sponsoring agency. T he Staff

193. Local Field Study. F,W,S
Supervised off-campus study in local Spanish-speaking community. Prerequisite(s): petition on file with sponsoring agency. T he Staff

*194B. Colombia: Sociedad y política.
Overview 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. T he 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 differing strategies of the several models 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 25. (General Education Code: E.) G. Díégado

*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 Latina/o studies and Latin American studies approaches. By bringing empirical materials and conceptual frameworks from Latin American studies to bear on Latina/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 limited to 20. Enrollment limited to juniors and seniors. (General Education Code: E.) T he Staff

*194G. Chile: Social and Political Change.
Examines the special 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, internal as well as external, that broke the Chilean tradition of democratic rule in 1973, and to the current configuration. Taught in English. Enrollment limited to 25. (Formerly Chile D e Allende) (general Education Code: E.) T he Staff

194J. Movimientos sociales contemporáneos. W
Taught in Spanish. Provides students with an opportunity to critically analyze various national/international impacts of Latino/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: E.) T he Staff

194K. Drogas en la historia y la cultura de las Américas. 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. Offered in alternate academic years. (General Education Code: E.) G. Díégado

*194L. Étnicas/medio ambiente y desarrollo.
Interdisciplinary analysis of the interaction between ethnicities, tropical forests, and development policy in Latin America. Historical, anthropological, and sociopolitical perspectives on environmental rights and use, with a focus on Afro-Latin American and indigenous peoples. Taught in Spanish. Will be offered winter or spring quarter. Prerequisite(s): competence in Spanish. Enrollment limited to 25. T he Staff

194M. Twentieth-Century Revolutions. W
Treatment of twentieth-century Latin American revolutions from Zapata to the Zapatistas. Focuses on the causes and consequences of revolutions rather than on their narrative histories. (Also offered as Sociology 162. Students cannot receive credit for both courses.) Enrollment limited to 25. (General Education Code: 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 transformations, and twenty-first-century prospects. Major emphasis on contemporary evaluations/debates about past movements and new perspectives. Also features a section on cross-border strategies, movements, and alliances for social justice. (General Education Code: E.) S. Jónás

*Not offered in 2003–04
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 racialized social locations have constructed oppositional and/or relational theories and alternative epistemologies or political scholarly interventions and, in the process, have problematized borders, identities, cultural expressions, and coalitions. Enrollment restricted to graduate students. P. Zavella

212. Latina/o Ethnographic Practice. F
Interrogates the social construction of Latina/o cultures in their varied regional, national-ethnic, and gendered contexts. Assumes that culture is a dynamic process constructed within a context of hierarchical relations of group power, in which Latina/o groups have been structurally subordinated and socially oppressed. Focuses more on how power relations create a context for the creation of specific Latina/o cultural expressions and processes than on unraveling the structures of oppression. Enrollment limited to 25. Enrollment restricted to graduate students. P. Zavella

Additional Courses of Interest

Anthropology 80G. Barrio Popular Culture Anthropology 130B, Brazil
Community Studies 80A, Chicanos and Social Change Environmental Studies 130A, Agroecology and Sustainable Agriculture
Environmental Studies 155, Sustainable Development and Environmental Issues at the U.S.-Mexico Border
Film 163, M oxies 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, Chicana/Chicano History
History 149, History of the Southwest: Colonial Period to 1920
History 170, Women in Latin America
History 177, History of M odern Cuba
History of Art and Visual Culture 190B, The Virgin of Guadalupe Images and Symbolism in Spain, Mexico, and the U.S.
Music 4A and 4B, Latin American Ensemble: "Voces" and "Taki Nari"
Music 80E, Musica 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 102B, Romanticism to Modernism
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 literature should consult the concentration in national/transnational literatures under Literature, page 279.
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 Classical Political Theory
105B Modern Political Theory
105C Recent and Contemporary Political Theory
107 Political Maturity of Survivalship 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
131 Water, Wildlife, 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

Law and Society
Legal Studies
112 Women and the Law

Law and Culture
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
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 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
193 Field Study
194 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 one proseminar from a designated list; or an equivalent seminar approved in advance by the legal studies academic adviser. (The list of designated proseminars 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 proseminar 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: ES.) The Staff

105A. Classical Political Theory. F
A study of the cultural context of the Greek polis and the origins of political theory and philosophy. Authors studied include Aeschylus, Sophocles, Thucydides, Plato, and Aristotle. Among themes considered are the relation of public and private life, morality and politics, theory and practice, political participation and community, and justice and equality. (Also offered as Politics 105A. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. D. M. Athiowetz

105B. Modern Political Theory. S
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. (Also offered as Politics 105B. Students cannot receive credit for both courses.) Enrollment restricted to legal studies majors during priority period. V. Seth

105C. Recent and Contemporary Political Theory. W
Studies in nineteenth- and twentieth-century theory, centering on the themes of revolution, equality, community, liberty, and authority. Authors studied include J. S. Mill, Toqueville, Marx, Nietzsche, Freud, Weber. (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 Surviviorship 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...
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.) J. Ehrns

111. Problems in Constitutional Law, W. 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 period only. 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. Panday

120A. Congress, President, and the Court in American Politics, F. Study of political development, behavior, performance, and significance of central governmental institutions of the United States. 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 only. Satisfies American History and Institutions Requirement. D. Wirfs

120B. Society and Democracy in American Political Development, F. 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 only. 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 only. Satisfies American History and Institutions Requirement. E. Bertram

127. Black Politics and Federal Social Policy, S. 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 period only. (General Education Code: E.) M. Brown

128. Poverty and Public Policy, F. 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 the Subject A and Composition requirements: Economics 100A and 113, or permission of instructor. Enrollment limited to 20. Enrollment restricted to majors in economics, business management economics, global economics, legal studies, combined environmental/economics, and Latin American and Latino studies/economics majors. (General Education Codes: W, E.) R. Faitt, L. Klatzer

129. Political Economy of Policy Reform, F. Analyzes the adoption, timing, sequencing, and relative economic performance of different “market-friendly” economic reform strategies. Explores issues of “shock therapy” versus “gradualism,” connections between form of regime (democracy or dictatorship) and economic reform packages, and strengths and limitations of a rational-choice theoretic approach to explaining outcomes. (Also offered as Economics 129. Students cannot receive credit for both courses.) Prerequisite(s): Economics 100A. The Staff

131. Water, Wildlife, and Natural Resources Law, F. Introduction to U.S. water, wildlife, and natural resources law: policy and management practices. Students construct a local paradigm at the regional watershed level and critically analyze the positions of contending stakeholders over watershed resources. Enrollment restricted to sophomore, junior, and senior legal studies majors during the priority period. The Staff

136. Federal Indian Law and International Comparative Indigenous Peoples’ Law, F. 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 powers. Explores future of Indian law in the twenty-first century. Addresses tribal relations of aboriginal sovereignty over culture and land in the context of increasing world recognition of indigenous rights. (Formerly Federal Indian Law and Tribal Sovereignty.) Enrollment restricted to legal studies majors during priority period. (General Education Code: E.) The Staff

137. International Environmental Law and Policy, S. 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, S. Explores variety of texts including novels, short stories, and essays as a source for reflection about the nature of law, legal reasoning, and social policy, rules and individual cases, the nature of legal punishment. Psychology 3 and 40 are recommended prior to taking this course. (Also offered as Psychology 144. Students cannot receive credit for both courses.) Prerequisite(s): course in philosophy. D. Guwara

139. War Crimes, S. 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. Omer

142. Anthropology of Law, S. An ethnographically informed consideration of law, dispute management, and social control in a range of societies including the contemporary United States. 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 majors in anthropology and legal studies. D. Brands

144. Social and Political Philosophy, S. 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. D. Guwara

147A. Psychology and Law, W. 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. Psychology 3 and 40 are recommended prior to taking this course. (Also offered as Psychology 147A. Students cannot receive credit for both courses.) Enrollment restricted to psychology, pre-psychology, legal studies, legal studies/politics, legal studies/philosophy, legal studies/economics majors. C. Haney

147B. 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 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 resource 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 limited to 60. Enrollment restricted to juniors and seniors. (General Education Code: W) J. Elkins

*150. Children and the Law. 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. J. Elkins

152. Courts and Litigation. F A study of the role of courts in society and the uses of litigation to address and deflect social problems. Focus is on recent developments in American litigation, but comparative materials may be considered. Enrollment restricted to legal studies majors during priority period. The 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. The 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. The 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 early colonial constitutional thought within the context of contemporary 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 limited to 20. Enrollment restricted to legal studies majors during priority period. J. Elkins

*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 limited to 20. Enrollment restricted to legal studies majors during priority period. 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. J. Elkins

*157. Sovereignty and Law. Explores some themes in legal and political theory, especially on the relationship of theories of justice, law, and ethics. Enrollment restricted to legal studies majors during priority period. May be repeated for credit. J. Elkins

*159. Property. 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. The Staff

160. Industrial Organization. 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. (Also offered as Economics 160. Students cannot receive credit for both courses.) Prerequisite(s): Economics 100A. (Formerly Anti-Trust and Industrial Organization.) R. Grulson

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 enterprise. (Also offered as Economics 162. Students cannot receive credit for both courses.) Prerequisite(s): Economics 100A. R. Bossio

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. Wittman

172. The Sociology of Law. W Explores the social forces that shape legal outcomes and the ways law, in turn, influences social life. It 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.) H. Fukurai

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, W 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 gender 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; Economics 1, 2, and 100A; Economics 113 strongly recommended. (General Education Code: W) L. Kletzer

193. Field Study, F,W,S Field research performed off-campus, under the supervision of a member of the legal studies faculty. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 8. May be repeated for credit. The Staff

195A-B-C. 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

196. Senior Capstone. S Examines related legal topics from an interdisciplinary perspective. Each focuses broadly on the relationship between law as a distinct system and law as an attempt to achieve justice, which requires that law remain open to claims of political morality generally. To what extent are legal norms internal to a separate system called “law” and to what extent are claims of political right in general relevant to question of what law is? Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment restricted to senior legal studies majors. (General Education Code: 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. Prerequisite(s): petition on file with 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 6 Merrill.
Linguistics

239 & 241 Stevenson College
(831) 459-2905
(831) 459-4988
http://ling.ucsc.edu

Faculty and Professional Interests

Professor

JUDITH AISSEN
Syntax, M ainy languages

SANDRA CHUNG
Syntax, Austronesian languages

DONKA FARKAS
Semantics, Romance languages, Hungarian

JORGE HANKAMER
Syntax, computational linguistics, Turkish

JUNKO ITÔ
Phonology, Scandinavian languages, Japanese

WILLIAM A. LADUSAW
Semantics, pragmatics

JAMES McCLOSKEY
Syntax, sociolinguistics, Irish

R. ARMIN MESTER
Phonology, German, Japanese

GEOFFREY K. PULLUM
Syntax, mathematical and computational linguistics, philosophy of linguistics

WILLIAM F. SHIPLEY, Emeritus

Associate Professor

JAYE PADGETT
Phonology, Russian, Slavic

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 studies the ways in which 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 262). 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: phonetics, introductory syntax, and introductory semantics.

Five upper-division courses: introductory 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 must clearly fit into a coherent program of study in linguistics.

Foreign language/ mathematics competency requirement: Linguistics majors are required to demonstrate either foreign language or mathematics competency as follows:

Foreign language competency: students must successfully complete six quarters of language study at UCSC (three quarters for Latin or Greek) or demonstrate an equivalent level of competence through a recognized language test or evidence of credit from another institution.

Mathematics competency: Alternatively, students with a strong formal background can choose to satisfy the mathematics competency requirement by demonstrating sufficient preparation in mathematics for advanced formal work in linguistics. This requirement is satisfied by passing two courses chosen from the following list: Mathematics 11A, 19A, or 21; Computer Science 12A; Computer Engineering 16; Economics 11A; or any course which has one of these courses as a prerequisite.

Senior exit requirement: In their senior year, students must pass a comprehensive examination. With advance approval, especially strong students may instead pursue a senior thesis or senior project.

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 courses 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. Computerational 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: lower-division phonetics, syntax, and semantics; upper-division phonology, and four upper-division electives. There is no comprehensive requirement for the minor.

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 underlying 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 words: their historical origins and their sound, meaning, spelling, and function.

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.

Courses 51, 52, and 53 are “disciplinary introductions.” These courses have no linguistics prerequisites and serve as entry courses to the specialized upper-division sequences. Upper-division courses generally have at least one of these courses as a prerequisite (usually course 51 or 52 or both).

Courses 101, 102, 113, and 116 are the core upper-level courses in linguistic structure and are offered each year. The two phonology courses (101 and 102) provide an introduction to the study of the sound system of language. These courses use a problem-solving approach to developing understanding of phonological theory and phonological regularities in various languages. The intermediate syntax course (113) continues the development of syntactic theory begun in course 52, extending the range to more complex constructions and rules and introducing alternative theoretical approaches. The semantics course (116), which has as prerequisites courses 53, Semantics I, and either course 52, Syntax I, or course 55, Syntactic Structures addresses advanced problems in the analysis of meaning.

Several upper-division elective courses are offered each year. For a list of these courses, contact the Linguistics Department.

To enroll in the graduate (200-level) courses, undergraduates require special permission from the instructor.
Permission is usually granted only to especially motivated undergraduates who have completed all the core course requirements for the major with excellent performance.

Preparation for the UCSC Master’s Degree

Each year a number of UCSC students with B.A. degrees in linguistics or language studies are admitted into the graduate program to pursue the M.A. in theoretical linguistics. Interested students should discuss the possibility with one or more faculty members and formally apply to the graduate program during the winter quarter of the senior year. For up-to-date information on the application process, consult our web site (http://ling.ucsc.edu); and see the Linguistics Department manager.

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, morphology (theoretical and computational), mathematical foundations, 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 theory, relational grammar, and a range of particular languages (Turkish, Tozott, 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.

From the beginning of their studies, students are engaged in original research and critical evaluation, since the aim of the program is to provide sophisticated training as a foundation for a career in academic research and teaching. The program begins with a sequence of foundations and core courses in linguistic theory. Subsequent course work emphasizes theoretical depth; it is increasingly centered around the doctoral student’s own research, culminating in the presentation of a dissertation on some aspect of linguistic theory and analysis.

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; morphol–
yogy, 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/morphology 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.ucsc.edu/graduate/index.html.

Lower-Division Courses

20. Introduction to Linguistics. F

An introduction to the major areas, problems, and techniques of modern linguistics. (General Education Code: IH.J.) J. McCloskey, J. Itô

51. Phonetics. F,S

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: IH.) The Staff, G. Pullum

52. Syntax I. F

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 Codes: IH, WJ.) 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 calculi, modal and tense logics) and their interpretations. A basic literary course in the language of logical representation. (General Education Code: IH.) The Staff

55. Syntactic Structures. F

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 Codes: IH, WJ.) J. Hankamer

80C. Language, Society, and Culture.

The study of language from a sociological perspective. Multilingualism, language change and variation, pidgins and creoles, the origin and diversification of dialects. Will be offered 2003–04. (General Education Code: T5-Humanities and Arts or Social Sciences.) J. Padgett

80D. Language and Mind: Chomsky’s Program. S

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 080L. Students cannot receive credit for both courses.) Enrollment limited to 80. (General Education Code: T5-Humanities and Arts or Social Sciences.) J. McCloskey

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 Computer Science 080G. Students cannot receive credit for both courses.) (General Education Code: T2-Natural Sciences.) G. Pullum

80V. Structure of the English Vocabulary. F

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. (General Education Code: T4-Humanities and Arts.) T the Staff


Prerequisite(s): petition on file with 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: WJ.) A. Mester

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. J. Itô

105. Morphology. F

Study of the principles of word formation. Derivation, inflection, and compounding. Cross-linguistic study of
*180. 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., as provided by course 20). Will be offered in the 2004–05 academic year. T he Staff

The phonology, morphology, and syntax of Japanese. As preparation for the course, students should have taken course 20 or some equivalent linguistics courses in syntax and phonology. Some knowledge of German is also required. R. M ester

*216. Phonology Proseseinaw.
One or more topics in phonological theory. Topics vary: the course is intended to be a bridge between the core phonology course (212) and advanced research seminars (219). Likely topics include feature theory, underspecification, prosodic phonology and morphology, lexical phonology, and phonology/phonetics. Will be offered in the 2004–05 academic year. Prerequisite(s): course 212. Enrollment restricted to graduate standing or consent of instructor. May be repeated for credit. T he Staff

219. Phonology Seminar. F
Advanced topics in phonology drawn from the current research interests of the instructor. Prerequisite(s): course 212. Enrollment restricted to graduate standing or consent of instructor. May be repeated for credit. J. Aissen

221. Syntax A. F
Introduction to syntactic theory. Phrase structure; subcategorization; 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. J. Aissen

223. Syntax C. S
Continuation of Syntax B. The syntax of anaphora. Topics vary from year to year, and may include the following: co-reference in antecedent-pronomon relations; reflexives and reciprocals; disjoint reference; bound-variable anaphora; ellipsis; semantic and pragmatic constraints on anaphora. Prerequisite(s): course 222. Enrollment restricted to graduate standing or consent of instructor. T he Staff

*226. Prosseinaw in Syntax.
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. Will be offered in the 2004–05 academic year. Prerequisite(s): course 222. T he Staff

229. Syntax Seminar. W
Advanced topics in syntax drawn from the current research interests of the instructor. Prerequisite(s): course 222. Enrollment restricted to graduate standing or consent of instructor. May be repeated for credit. J. M ester

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. T he Staff

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. T he Staff

†Not offered in 2003–04
*236. Proseminar in Semantics.
In-depth investigation of some topic in semantics and pragmatics. Topics vary from year to year, covering literature and current research in linguistic semantics and pragmatics. Will be offered in the 2004–05 academic year. 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. May be repeated for credit. The Staff

240. The Pedagogy of Linguistics (1 credit), F,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. May 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. Will be offered in the 2004–05 academic year. 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. Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 10. Enrollment restricted to graduate standing or consent of instructor. May be repeated for credit. J. Hankamer

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

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
GEORGE T. AMIS, Emeritus
MURRAY BAUMGARTEN
Dickens, Victorian literature and culture, the Bible, translation, modern Jewish writing, the Holocaust
HARRY BERGER JR., Emeritus
GABRIEL BERNS, Emeritus
MARGARET R. BROSE
Italian literature, 19th- and 20th-century poetry and poetics, the novel, romanticism, medieval literature, gender studies, autobiography
JULIANNE BURTON-CARNIVAL
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 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 and politics as political formations
PASCALE GATTI
Nineteenth- and 20th-century French literature, sociolingustics, political history, Céline, Genet
MARY-KAY GAMEL
Performance studies, and Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance
SUSAN GILLMAN
Nineteenth-century American literature and culture theories of race, race, and gender; world literature and cultural studies
WLAJ 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 Africa, narrative theory
NORMA KLAHN
Latin American literary and cultural studies (specialization: Mexico), Chicano/Latino literature and culture from a cross-border perspective, popular culture and the novel, poetics and politics, fiction and history, nation and narration, cultural and feminist theories
H. M. LEICESTER JR.
Psychoanalysis, poststructuralism, gender theories, theory of cultural change, cultural studies, and popular culture opera, film, American country music
JOHN P. LINCH
Greek and Latin literature, Plato and Aristotle, Lucrètius, Virgil, and Petronius and education
NATHANIEL E. MACKAY
Twentieth-century American literature, Afro-American literature, creative writing
HELENE MOLGEN
The English novel: feminist, cultural, and psychoanalytic theory
MadelINE MOORE, Emerita
MARTA MORELLO-FROSCH, Emerita
PRISCILLA W. SHAW, Emerita
PAUL N. SKEEN
Contemporary U.S. fiction, popular culture (especially detective fiction), pradical criticism and reviews oral history, the teaching of literature, American writers abroad, journalism
GRETA SLOBIN, Emerita
S. PAGE STEGNER, Emeritus
RICHARD TERRIDAN
Nineteenth- and 20th-century French and European literature and culture, literary and cultural theory, contemporary critical theory, cultural globalization
THOMAS A. VOLGER, Emeritus
MICHAEL J. Warren, Emeritus
ROB WILSON
Transnational and postcolonial literatures, especially as located in Asia/Pacific emrournas as proposed against American empire of globalization; cultural poetics of America; the sublime, Longinus to Hiroshima; mongrel poetics of experimental writing, especially poetry

Associate Professor
JUDE 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
KAREN BASS
Greek and Latin literatures, Greek drama, Hellenistic poetry, feminist interpretation, literary and cultural theory, pre- and early modern studies
CHRISTOPHER CONNERY
World literature and cultural studies, globalization and geographical thought, the 1960s, Marxism, pre-modern and modern Chinese cultural studies, cultural revolution
KIRSTEN SIYVA GRYZUS
Comparative Americas studies, Chicano/Latino literature and cultures, 19th-century U.S. literature, poetry and translation, gender theory
MARGO HENDRICKS
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 KINOSHITA
Intercultural relations in 12th- and 13th-century literature, Medieval European studies, globalism, postcolonial theory, world and literary studies
LOURDES MARTINEZ-ECHEZARAIL
Latin American and Caribbean literatures, Afro-Latin American literatures, cultures, and societies, national narratives, Brazilian literature, literature of Cuba and the Cuban diaspora, critical race theory
TYRUS MILLER
Modernity, avant-garde, and postmodernist literature, the interrelations of the arts in the 20th century, aesthetics 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
DANIEL SELDEN
Afroasiatic languages and literatures, Greek and Latin, Hellenistic culture, the classical tradition, history of criticism, literary theory

*Not offered in 2003–04
DEANNA 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
LOUIS CHUDE-SOEKEI
Modern and contemporary African American literature, Caribbean and West African literatures, post-colonial literature and theory, modernism, black diaspora cultural studies, popular culture

JODY GREENE
Seventeenth- and 18th-century British and French literature and culture, pre- and early modern studies, early modern colonialisms, gay and lesbian cultural studies, gender studies, history of authorship, history of the book

MICHA E. PERKS
Reading and writing contemporary fiction, memoir, historical fiction, gender, literature and culture, alternative communities

JUAN POBLETE
Latin(0) American literatures, transnational/global cultures (literature, radio, film); Latin(0) American cultural studies; 19th-century studies, the history of reading practices

Lecturer
GEORGE P. HITCHCOCK, Emeritus

Professor
MICHAEL H. COWAN (American Studies)
Nineteenth- and 20th-century American literature, urban studies, American cultural theory and history, multicultural analysis, autobiography

TERESA DE 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)
Nineteenth- and 20th-century American literature, including Mark Twain, the American West, and popular culture American and American culture theory

DAVID SWANGER (Education and Creative Writing)
Aesthetic education, educational philosophy, creative writing, poetry, pedagogy, literary theory

Lecturer
CHARLES ATKINSON (Writing)
Director, Learning Assistance Program in Writing; creative writing, poetry

ROSSWELL SPAFFORD (Writing)
Journalism, media criticism, fiction, poetry, service learning, educational partnerships, community studies

Program Description
Literature at UC Santa Cruz is taught through a single Literature Department, rather than through separate departments of English, French, Spanish, etc. 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 also permits focused work in national literary traditions. Students may concentrate in American, British, or all English literatures; in French, German, or Italian; in Latin and/or Greek; or in Spanish/Latin American/Latin literatures. Alternatively, students may choose their studies by period, pre- and early modern studies focus on early literary traditions from antiquity through the Middle Ages, the Renaissance, and the neo-classical period, while modern literary studies concentrates on literature of the eighteenth, nineteenth, and twentieth centuries. Finally, the world literature and cultural studies concentration is dedicated to non-Western literatures and literature in a global context.

The Literature Department also offers a concentration in creative writing in which, in addition to studying literature, students work with faculty in upper-division workshops to improve their own creative writing skills. In the senior year, each student produces a senior project consisting of a significant body of creative work. Interested students may apply for admission to this concentration by submitting a portfolio of their writing after the completion of one lower-division creative writing course at UCSC.

Literature majors at UC Santa Cruz are trained in critical reading, writing, and thinking, as well as in literary interpretation. These skills have wide applicability: they may help students to gain employment in other media such as film, theater, video, visual arts, and electronic media; and they offer avenues into related disciplines such as history, philosophy, psychology, sociology, anthropology, politics, and history of art and visual culture. Literature majors traditionally enter a wide variety of careers ranging from law and journalism to management, government, international studies, publishing, technical writing, and teaching at all levels.

The Literature Department faculty strongly recommends that all students study a second language. Proficiency in more than one language vastly enhances 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.

Letter Grade Requirement
Beginning with students admitted in fall 2001 and later, 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 or more languages; proficiency in a second language is therefore required.

The Standard Literature Major
Thirteen courses are required: two lower-division and five upper-division courses. All of the latter may be a senior seminar, which may be used to satisfy the campus comprehensive (exit) requirement. In exceptional cases, and with faculty permission, students may write a senior thesis to satisfy the exit requirement.

Lower-Division Courses
Lower-division courses are designed as introductions to critical reading and writing. Students should complete their lower-division course work before beginning upper-division work.

Three lower-division courses

1. Literature 1, Literary Interpretation: close reading and analysis of literary texts
2. one Literature 61-series course: categories, methodologies, and problems of literary study
3. one Literature 80-series courses: topical, thematic, and comparative study of literary texts

Upper-Division Courses
Upper-division courses provide more detailed treatment of literary and theoretical problems, themes, and periods. Students are strongly encouraged to take courses across chronological periods and national boundaries.

Ten upper-division courses

1. Literature 101, Theory and Interpretation: approaches to literary and cultural theories
2. six upper-division courses in an area of concentration (described below)
3. three upper-division electives in literature

Distribution requirements Among the 10 upper-division courses, at least two must focus on literature written prior to the year 1750; one course must focus on non-Western literature or literature in a global perspective; and one must focus on poetry. Some courses fulfill more than one of these distribution requirements. A list of annual course offerings indicating distribution codes for each course is available in the department office or on the Literature Department web page.

With prior permission from a faculty adviser, one elective may be replaced by an upper-division course related to the student's area of concentration and chosen from another program in the humanities, arts, or social sciences.

The Intensive Literature Major
Fifteen courses are required: three lower-division and 12 upper-division courses. One of the upper-division courses may be a senior seminar, which may be used to satisfy the campus comprehensive (exit) requirement.

Lower-Division Courses
The same requirements apply as for the standard literature major. Students who choose the intensive literature major are required to achieve competence in a second-language literature. Upper-division literature course work may require completion of a lower-division language sequence or the equivalent.

Upper-Division Courses
The intensive major requires 12 upper-division courses. Distribution requirements for the intensive major are the same as those for the standard literature major. In addition, students must complete at least two courses in a second-language literature studied in the original language. As in the standard major, with prior permission from a faculty adviser, one elective may be replaced by an upper-division course related to the student's area of
concentration and chosen from another program in the humanities, arts, or social sciences.

The comprehensive requirement must be satisfied by the completion of a senior seminar or a senior thesis.

The Concentrations

The purpose of the upper-division area of concentration is to help students shape a coherent program of study. The department provides several defined concentrations, described below. For all concentrations except national/transnational literatures, texts may be read in the original or in translation.

National/Transnational Literatures

These concentrations examine literature within the frameworks of particular languages or national and regional traditions. Courses in these concentrations study texts in the original language.

- American, British, and other English literatures
  Students may concentrate in American or British literature. Alternatively, they may focus more broadly on literature in English, including both of the above 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 the 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 or both.

- 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, language, and cultural practices of Spain, Latin America, and Latino populations in the United States.

Creative Writing

The department 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 UC 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 at the Literature Department Office) and a thoughtful selection from their work (10–20 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 redeclare) the major in literature. At that time, students should meet with their adviser to discuss plans for a senior project.

Pre- and Early Modern Studies

The interdisciplinary study of literature and cultures from antiquity through the early eighteenth century, especially in Europe. 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, and twentieth centuries. 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 student’s 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 (Literature/Creative Writing 194 or 195) 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 their adviser 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.

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 another 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 (see major requirements above);
- Literature 101, Theory and Interpretation;
- four other upper-division literature courses.

Transfer credit. A student may petition to receive credit toward the lower-division requirements of the major for up to three courses taken at other institutions. An introduction to literature course may be used to satisfy the Literature 1 course requirement. Any other two literature courses may be applied toward the Literature 61 series and the Literature 80 series course requirements. Transfer of Credit petition forms are available in the Literature Department Office.

Credit for repeated courses. Courses that vary significantly in material or methodology from one presentation to the next may be repeated for credit and are so designated in the course description in the UCSC General Catalog.

Advising. Faculty advisers are available in the Literature Department Office throughout the week during each academic term; students may make appointments in advance to meet with them. Staff advisers are also available on a drop-in basis. Students are encouraged to consult with a faculty adviser once a quarter.

Senior checklist. Three quarters before anticipated graduation, all literature majors must complete a checklist in collaboration with a department adviser. The purpose of the checklist is to confirm progress toward graduation and the satisfaction of all major requirements. Completion and approval of a senior checklist are required for graduation.

Opportunities for study abroad. The University of California's Education Abroad Program (EAP) operates study centers in countries throughout the world, all associated with host institutions of high academic standing. EAP serves over 1500 upper-division students from the nine UC campuses every year. Students who participate in a UC Education Abroad Program study year may petition to apply up to three courses from EAP toward the major. Petition forms are available in the department office.

The Graduate Programs

The Doctoral Program

The UC Santa Cruz doctoral program offers an innovative multidisciplinary approach to literary studies under the auspices of the Department of Literature. While the program affords a coherent academic experience for all students, the final choice of programmatic emphasis and a trajectory of concerns is decided by each individual. Because the program is relatively small, students are able to work closely with faculty throughout their graduate careers and are encouraged to take advantage of the rich array of events, research clusters, and lectures offered on campus.

The doctoral program reflects faculty interests in American, Asian/Pacific, and New World studies; world literature and cultural studies; European literature from the classical to the early modern period (pre- and early modern studies); eighteenth-, nineteenth-, and
twentieth-century literatures; gender studies; post-colonial and emergent literatures; and textual studies. Students may elect to participate in cooperative programs between literature and women’s studies or American studies and receive a designated emphasis on their degree.

Among the areas that represent special strength in the department are contemporary American literature and poetics; Latin American/Latino literature; literatures of the Americas, a cross-border hemispheric perspective that envisions the Americas as an area of study; world literature and cultural studies, which treats literary, intellectual, and cultural production in globally historicized contexts; nineteenth-century studies; and pre- and early modern studies, where comparative and interdisciplinary work is encouraged and which includes classical literature and philosophy, medieval and Renaissance French, Italian, and English cultures and literatures (including visual culture), and Spanish Golden Age literature. Within all areas, faculty drew on wide-ranging critical practices such as feminism, race and gender studies, Marxism, psychoanalysis, queer theory, and culture studies.

The program requires significant literary work in two languages. All students are required to complete a minimum of two courses, preferably three, in a second-language literature in which the reading is done in the original language. The second literature must serve as a component of the qualifying exam that certifies the student’s readiness to begin writing the dissertation. Primary concentrations are available in English/American, French, and Spanish/Latin American/Latino literatures. Secondary concentrations are available in all of the above, plus German, Italian, Latin, and Greek, as well as other non-English literatures relevant to individual areas of concentration.

The common requirements are as follows:

- a one-quarter proseminal, Literature 200, to be taken in the first year;
- twelve courses leading to the definition of an area of concentration. At least two courses must be in a second-language literature; up to four may be from the offerings of other departments; up to three may be independent study courses; and one course must focus on pre-1750 literature and culture;
- teaching assistant training, administered as a course offered by the Literature Department;
- three quarters of supervised teaching experience;
- a three-week summer intensive language course, administered by the Literature Department;
- a qualifying examination (with written and oral components);
- a prospectus outlining and defining the dissertation project;
- a dissertation.

A master’s degree is conferred upon request to Ph.D. candidates who have completed the course work requirements for the Ph.D. (The teaching assistant training and supervised teaching experience are not considered part of the course work requirements for the M.A.) In addition to completing the required course work, students must write a master’s thesis under the supervision of a faculty advisor or successfully complete the Literature Ph.D. Qualifying Exam.

More detailed information for prospective graduate students, including application and admission to graduate studies, examinations, and requirements for the doctorate of philosophy degree, is available from the Division of Graduate Studies and on the department web site: http://humwww.ucsc.edu/tr/.

Graduate students in literature may obtain a parenthetical notation on their diploma that they have specialized in women’s studies 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’s arts degree program in literature is intended for students whose aim is to 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, in critical theory.

The M.A. program requires students to complete the equivalent of nine seminars of graduate-level study in literature, including a 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 proseminal, 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://gradstudies.ucsc.edu.

Literature

1. Literary Interpretation, F,W,S

Close reading and analysis of literary texts, including representative examples of 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(s): satisfaction of the Subject A and Composition requirements. (General Education Codes: IH, W.) P. Skenev, D. Shamse, P. Gaitet

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.

* A. Theater and Theatricality.

Survey of the relation of theater to cinema from 1905 to the 1960s. Theater-positive tendencies include Melies, Eisenstein, and German Expressionists. Examines cinematic resistance to theater in the opposition to sound film in France and the Soviet Union, Vertov's kino-eye, and Bresson's barring actors from film. (Formerly course 60H.) (General Education Code: IH.) E. Jackson Jr.

* D. Introduction to Reading Drama.

Introduction to the Western theatrical tradition through the study of dramatic form in social context. (General Education Code: IH.) T. Honnef

E. 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 Codes: IH, E.) L. Chude-Sokell

F. 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, the poetics of prose. (General Education Code: IH.) J. Aladino Font

M. 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 History 921. Students cannot receive credit for both courses.) (Formerly Approaches to Myth.) (General Education Code: IH.) M. Gamel

*P. Introduction to Reading Poetry.

An introduction to selected modes and forms of poetry with an emphasis on close textual analysis. Examples will be drawn from different historical periods and poetic traditions. (General Education Code: IH.) The Staff

80. Topics in Literature.

*A. Biblical Narratives.

No book has so decisively influenced the development of the Western world as the Bible. Traces the Bible’s influence on narrative, themes, and ideas in Western literature. Explores major Biblical stories and themes in a comparative context and traces their reappearance in Western literature and imaginative works. (General Education Code: T4-Humanities and Arts.) G. Hanel

I. 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. Topic: (Re)Inventing California. Explores contrasting understandings and projections of California across 400 years, with emphasis on the nine-teenth and twentieth centuries. (General Education Code: T4-Humanities and Arts.) J. Burton-Carvalho

*L. The Holocaust: The Destruction of European Jewry.

Focus on destruction of the Jews of Europe by Nazi Germany. Issues are historically grounded and include works of literature, social sciences, philosophy, and film. Students cannot receive credit for this course and History 90W. Offered in alternate academic years. (General Education Code: T4-Humanities and Arts, E.) P. Kenez, M. Baumgarten

M. Romantic Fiction, S

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 Mérimée. (General Education Code: T4-Humanities and Arts.) L. Nygaard

*Not offered in 2003–04
American Literature

42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) T he Staff

100. Survey of American Literature.

A. Colonial to Mid-Nineteenth Century. S
Major works from the colonial and early national periods to the mid-nineteenth century, with attention to their social and cultural context. Satisfies the American, English, and Modern Literature concentrations. K. Grueze

B. Mid- to Late-Nineteenth Century.
Major works from the middle of the nineteenth century to the end of the century, with attention to their social and cultural context. Satisfies the American, English, and Modern Literature concentrations. S. Gillman


A. Introduction to Afro-American Literature. W
Examination of major Afro-American writing of the past 150 years, with attention to the historical, cultural, and general literary context (W) of which it emerged, and upon which it commented. Satisfies the American, English, and Modern Literature concentrations. (General Education Code: E.) N. M. axey

B. Chicano Literature. W
An intensive examination of contemporary Chicano autobiography, narrative, poetry, and film. Satisfies the American, English, and Modern Literature concentrations. (General Education Code: E.) K. Grueze

103. American Prose.

C. Contemporary American Literature. S
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. May be repeated for credit. L. Chude-Soké

104. American Poetry.

E. Open Field Poetry and Poetics.
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. N. M. axey

105. American Popular Culture.

C. The Films of John Carpenter.
Study of development and central themes of preeminent genre director of “post-Hollywood” era, concentrating on central core of major works in horror/science fiction genres from Halloween to In the Mouth of Madness with attention to comedies and action films. Satisfies the American, English, and Modern Literature concentrations. H. Léster Jr.


B. 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. P. Skenazy

120. Individual Authors.

D. Faulkner, S
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. P. Skenazy

F. Henry James and Edith Wharton.

T. Ernest Hemingway and F. Scott Fitzgerald. W
A study of the works of Hemingway and Fitzgerald in relation to each other, their time(s), and the authors’ personal relationship. Satisfies the American, English, and Modern Literature concentrations. P. Skenazy

140. Topics in American Literature.

I. Regions in American Literature. F
Examines development of regional writing in the U.S. Major works from the colonial period to the end of the 19th century have exploited and transformed genre fiction. Authors include George Schuyler, Octavia Butler, Samuel Delany, Steven Barnes, Jewelle Taylor Gomez, Budolph Fisher, Chester Himes, Barbara Neely, Victor Headley and others. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Senior Seminar distribution requirement. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. (General Education Code: E.) R. Wilson

J. Picturing California: Memoir and Image. W
Examines California as depicted in word and image by photographic pioneers. Satisfies the American, English, and Modern Literature concentrations; also satisfies the Poetry and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. (General Education Code: E.) J. Burton-Carvalaj

*Not offered in 2003–04
195. Senior Essay, F,W,S
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. Prerequisite(s): petition on file with sponsoring agency. The Staff

198. Group Tutorial, F,W,S
The Staff

199. Tutorial, F,W,S
The Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

British Literature

*103. English Renaissance Literature.
Sampling of early modern English prose, verse, and drama. Topics include Renaissance Humanism, the Protestant revolution and “Puritanism,” court culture, and colonialism. Examines the Burdachian notion of the Renaissance as initiating the birth of the modern subject and weighs it against more recent historicist and poststructuralist critical theory. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirements. The Staff

104A. Reading the Traditional 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. J. Greene

104B. Reading the Traditional Canon, Part II. S
Explores poetry and prose from 1800 to 1950 through extensive reading in the Romantics, Victorians, Moderns, articulating the connections among them, connecting their work to key social, political, scientific, and technological moments defining these eras. Satisfies the British, English, and Modern Literature concentrations; also satisfies the Poetry distribution requirement. M. Baumgarten

A chronological survey of the English novel from Defoe to Joyce, introducing some of the major trends and developments in English fiction. Students are encouraged to take all three quarters, but each quarter may be taken separately.

Survey of major works of post-WWII British fiction. Emphasis on postmodernism and experimental fiction, questions of social and sexual identity, utopia and dystopia, and problems of historical representation in fiction. Satisfies the British, English, and Modern Literature concentrations. T. Miller

110. Literature of the Victorian Era.
*1A. Survey of Victorian Literature.
A survey of British Victorian literature (1830-1901) featuring representative texts and authors from Tennyson to Oscar Wilde. Readings include poetry, drama, novels, and nonfiction prose. Satisfies the British, English, and Modern Literature concentrations. J. Jordan

A. Literature and Culture, 1660-1740. W
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. J. Greene

115. Introduction to Romanticism. F
A survey of major romantic themes and authors between 1780 and 1820. Relationships to preromantic and postromantic authors are explored. 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. H. Leicester Jr.

From the eighteenth to the twentieth century. Texts include work by Fielding, Austen, Brontë, Dickens, Conrad, and Woolf. Satisfies the British, English, and Modern Literature concentrations. J. Jordan

130. British Authors.
*A. Introduction to 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. H. M. Leicester Jr.

*E. Milton.
Selected poetry and prose. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Poetry and Pre- and Early Modern distribution requirements. The Staff

G. Charles Dickens. F
Reading of four or five representative novels. Satisfies the British, English, and Modern Literatures concentrations. May be repeated for credit. M. Baumgarten

*1. Shakespeare.
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 requirements. May be repeated for credit. The Staff

135. Modern British Poetry. W
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. T. Miller

140. Special Topics in British Literature.
*F. Women’s Literature.
Works by British women from the eighteenth century to the present, with special attention to the relationship of literature to history, psychology, and aesthetics. Satisfies the British, English, and Modern Literature concentrations. T. Miller

150. Experiment and Tradition in Twentieth-Century Literature.
A selective study of English and/or American writings from 1900 to 1950, with particular attention to the theoretical, historical, and artistic premises behind the concept of “modernism.” Satisfies the British, English, and Modern Literature concentrations. The Staff

190. Senior Seminar.
Seminars 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 British literature. All students are required to complete an essay of significant length as part of the seminar course work. Prerequisite(s): Literature 101. May be repeated for credit.

A. Studies in Shakespeare. S
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 and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. M. Hendricks

*E. Studies in Twentieth-Century British Literature.
Intensive study of selected authors or other problematic issues in twentieth-century modernist literature. Topic: desire between women. Satisfies the British, English, and Modern Literature concentrations; also satisfies the Senior Seminar distribution requirement. Prerequisite(s): Literature 101. Enrollment limited to 22. The Staff

G. Studies in Early Modern British Literature. F
Study of selected authors or issues in early modern British literature. Topic: medieval epic. Satisfies the British, English, and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. H. M. Leicester Jr.

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. The Staff

195. Senior Essay, F,W,S
Prerequisite(s): Literature 101, petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

198. Group Tutorial, F,W,S
May be repeated for credit. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Other English Literature

105. Caribbean Literature. S
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 read include Edward Kamau Brathwaite, Wilson Harris, George Lamming, Paule Marshall, V. S. Naipaul, Victor
130. Individual Authors.  
*A. James Joyce.*  
Study of fiction of James Joyce, emphasizing narrative innovations, cultural conflicts, and crisis of nationalism in the early twentieth century. Satisfies the English and Modern Literature concentrations. The Staff

192. Directed Student Teaching, F,W,S  
Teaching of a lower-division seminar under faculty supervision. Prerequisite(s): petition on file with sponsoring agency. The Staff

195. Senior Essay, F,W,S  
Prerequisite(s): Literature 101; petition on file with 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., correspondence), or student is doing or most of the course work off campus. Prerequisite(s): petition on file with sponsoring agency. The Staff

198. Group Tutorial, F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

Literature/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: A.) (F) K. Yamashita, (W) M. Perks (S) E. M. Atkinson

42. Student-Directed Seminar, F,W,S  
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

52. Intermediate Fiction Writing, F,W,S  
An intermediate-level course in fiction designed for prospective creative writing majors. Prerequisite(s): submission of writing at first class meeting. May be repeated for credit. (General Education Code: A.) (F) K. Yamashita, (W) J. Brathey, (S) S. Hendren

53. Intermediate Poetry Writing, F,W,S  
An intermediate-level course in poetry designed for prospective creative writing majors. Prerequisite(s): submission of writing at first class meeting. May be repeated for credit. (General Education Code: A.) (F,W) E. M. Atkinson (S) C. Atkinson

91. Methodologies in Creative Writing Instruction, W  
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. Prerequisite(s): permission of instructor: contact instructor (abtlsson@ucsc.edu) during fall quarter. May be repeated for credit. C. Atkinson

99F. Tutorial (2 credits), F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

170. Methods and Materials, W  
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: (W) memoir. Satisfies the Creative Writing Literature concentration. Enrollment restricted to creative writing literature majors. May be repeated for credit. (General Education Code: A.) P. Skenez

180. Advanced Writing: Fiction, F,S  
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: A.) (F) K. Yamashita, (S) M. Perks

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: A.) (F) R. Wilson, (W) E. M. Atkinson, (S) N. M. adley

191. Methodologies in Creative Writing Instruction, W  
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. Prerequisite(s): permission of instructor. C. Atkinson

192. Directed Student Teaching, F,W,S  
Teaching of a lower-division seminar under faculty supervision. (See course 42.) The Staff

193. Creative Writing in the Schools, S  
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 instructor 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, F,W,S  
Seminar for students beginning work on their creative writing senior project. Led by a faculty member, the seminar helps prepare each student to complete the project. Attention is given to focusing of creative topics, review of work in progress, work rhythms, and revision. Prerequisite(s): Literature 101. Enrollment restricted to senior creative writing literature majors.

A. Poetry, S  
Satisfies the Creative Writing Literature concentration. Prerequisite(s): Literature 101. Enrollment restricted to senior creative writing literature majors.

B. Fiction, S  
Satisfies the Creative Writing Literature concentration. Prerequisite(s): Literature 101. Enrollment restricted to senior creative writing literature majors. M. Perks

195. Senior Essay, F,W,S  
Prerequisite(s): Literature 101; petition on file with 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., correspondence), or student is doing or most of the course work off campus. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

199. Tutorial, F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

French Literature

99. Tutorial, F,W,S  
Prerequisite(s): petition on file with sponsoring agency. The Staff

131. The Middle Ages, F  
Study of twelfth- and thirteenth-century texts, with attention to problems of history and social change. In modern translations with selected readings in Old French or Provençal. Topic: courtly love and the feudal imaginary. An introduction to twelfth-century courtly romances and selected troubadour lyrics in their historical context. Satisfies the French and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. May be repeated for credit. S. Kinoshita

132. Early Modern France.  
Sixteenth through eighteenth-century texts: trends, genres, techniques, aristocratic and popular culture, women as writers. Satisfies the French and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. May be repeated for credit. C. Fracasso

134. French Literature Outside France, W  
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. May be repeated for credit. (General Education Code: E.) P. Gaitt

136. Introduction to Modernity, S  
Study of nineteenth- and twentieth-century literary innovation and/or representations of sociohistorical events. Topic: the novelist. Satisfies the French and Modern Literature concentrations. May be repeated for credit. R. Tardiman

152. Texts and Contexts, S  
Implications of social and political change examined in terms of literary theory and practice. Equal emphasis placed on literary and other kinds of cultural texts: historical, political, and cinematic. Topic: Genre. Satisfies the French and Modern Literature concentrations. May be repeated for credit. P. Gaitt

*Not offered in 2003–04*
Prerequisite(s): Literature 101; petition on file with 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. Prerequisite(s): petition on file with 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
Prerequisite(s): petition on file with sponsoring agency. The Staff

Greek Literature

Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

German Literature

*102. Introduction to German Literature.
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.
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. W
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, Novalis, Hoffmann, Eichendorff, and Heine. Satisfies the German and Modern Literature concentrations. L. Nygaard

*154. The German Novelle.
A study of the major nineteenth-century German authors, including Kleist, Hoffmann, Grillparzer, Droege-Hülshoff, Keller, Meyer, Storm, and Hauptmann. Satisfies the German and Modern Literature concentrations. L. Nygaard

164. Modern German Fiction. S
Selected readings from the novel and novella in twentieth-century German literature. Satisfies the German and Modern Literature concentrations. Offered in alternate academic years. T. Honnef

167. Modern German Literature and Film. F
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: Handke, Christa Wolf, Bernhard, Mann, Kluge, Kafka, Brecht, Döblin, Rilke, van Hoddin, Benn, Herzog, Fassbinder, Wenders. Satisfies the German and Modern Literature concentrations. May be repeated for credit. T. Honnef

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. Prerequisite(s): petition on file with 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
Prerequisite(s): petition on file with sponsoring agency. The Staff

Italian Literature

The Staff

99F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

102. Introduction to Italian Literature. F
A close reading of a small number of texts (lyric, dramatic, narrative) representing the major authors and periods of Italian literature, with intensive practice in spoken and written Italian. Satisfies the Italian and Modern Literature concentrations. D. Shemek

130. Author and Contexts.
Designed to give an in-depth study of a given author's literary production and its cultural context.

*B. Boccaccio.
Critical study of the Decameron. Satisfies the Italian and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. D. Shemek

D. Dante's Divine Comedy. S
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. Satisfies the Italian and Pre- and Early Modern Studies Literature concentrations; also satisfies the Poetry and Pre- and Early Modern distribution requirements. M. Brose


*A. Modern Italian Poetry.
Study of development of the Italian lyric from romanticism to present, with close stylistic and thematic analyses of works of Leopardi, D'Annunzio, Ungeatti, Quasimodo, Pasolini, and Montale. Satisfies the Italian and Modern Literature concentrations; also satisfies the Poetry distribution requirement. M. Brose

180. Women in Italy: Nineteenth and Twentieth Centuries. W
Explores the specificity of Italian women's writing and studies their literary activities in historical and social context. Readings include Italian feminist and some history as well as literary texts. Specific periods and readings may vary from year to year. Satisfies the Italian and Modern Literature concentrations. D. Shemek

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. Prerequisite(s): petition on file with sponsoring agency. The Staff

May be repeated for credit. The Staff

199. Tutorial. F,W,S
The Staff

*Not offered in 2003-04
199F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Latin Literature

Prerequisite(s): Petition on file with course sponsoring agency. The Staff

99F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

100. Introduction to Latin Literature. S
Topic: Suetonius, life of Caligula. Primary readings from Cicero and secondary readings on rhetorical theory and practice. 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. C. Hadrick Jr.

102. Roman Poetry.
Topic: Virgil’s *Aeneid*. 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

103. Prose Authors. F
Topic: (F) Cicero and Catullus. Satisfies the Latin and Pre- and Early Modern Studies Literature concentrations; also satisfies the Pre- and Early Modern distribution requirement. May be repeated for credit. D. Solson, M. Gamel

104. Special Topics in Latin Literature. W
Topic for winter 2004: Plautus. May be repeated for credit. M. Gamel

193. Field Study. F,W,S
Provides for an individual program of study sponsored by a faculty member and carried 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

Prerequisite(s): Literature 101. 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., by correspondence), or student is doing all or most of the course work off campus. Prerequisite(s): petition on file with sponsoring agency. The Staff

May be repeated for credit. T. Miller

199. Tutorial. F,W,S
The Staff

199F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Modern Literary Studies

103. Constructions of the Modern. F
 Definitions of the “modern” (after 1750) are developed within historically and culturally specific contexts. Satisfies the Modern Literature concentration. R. Terdiman

121. The Gothic Imagination in Fiction, Film, and Theory. F
Explores how the Gothic imagination constructs nightmare versions 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 fictions as *The Monk*, *Frankenstein*, *D. nautilus*, *Maus*, and *Blackbird*. Films change each year, but may include *Alien* and *Sweetie*. May be repeated for credit with permission of instructor, as topic varies. Satisfies the Modern Literature concentration. H. Moglen

124. The European Novel.
*A. Eighteenth Century to Modernism.* Major works of European fiction in their social, cultural, and intellectual contexts. Emphasizes the nineteenth- and twentieth-century novels. Works are read in translation. Satisfies the Modern Literature concentration. R. Terdiman

125. Modern Cinema.
*A. Post-Colonial Cinema.* Explores the role of the colonizer, anti-colonial struggles, neo-colonial impositions, and postcoloniality as an evolving construct. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) T. Miller

D. Cinema and Social Change in Latin America. S
Surveys selected Latin American and Latino feature and documentary films from 1950 to the present. Topics include gender, sexuality, race and (trans)national identity, revolution, repression and resistance, migration, exile, and return. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) J. Burton-Carvalhal

N. The Horror Film. W
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 construction, history of modes of production, and shifts in discourse of horror. H. Leicester Jr.

135. Women Modernists. S
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. Miller

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, personal, 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, Martin Buber, Hannah Arendt, and S.Y. Agnon.

A. Jewish Diaspora, Ethnicity, and Urban Life. W
Focuses on modern Jewish diaspora, ethnicity, and urban life. Satisfies the Modern Literature concentration. (General Education Code: E.) B. Thompson

*B. Modernity as Jewish Challenge and Catastrophe: The American Experience.* Examines modernity as Jewish challenge and catastrophe, and focuses on the American experience. Satisfies the American, English, and Modern Literature concentrations. (General Education Code: E.) B. Thompson

*C. Literature and the Holocaust.* Reading and analysis of fiction and poetry, focusing on Holocaust literature as a problem in critical theory, cultural studies, and literary history. Though most of the works are read in translation, some knowledge of European languages is helpful. Topic: the problem of authenticity. Satisfies the Modern Literature concentration. May be repeated for credit. T. Miller

D. Jewish Writers and the American City. W
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 materials on the American city. Satisfies the American, English, Modern, and World concentrations. (Formerly American Literature 102F) (General Education Code: E.) M. Baumgarten

*E. Hebrew Poetry.* Hebrew poetry—biblical, medieval, modern—explores cultural and literary issues central to our contemporary world. Texts and discussion focus on Jewish and Israeli literary traditions. Satisfies the Modern Literature concentration; also satisfies the Poetry distribution requirement. May be repeated for credit. M. Baumgarten

G. Global Jewish Writing: Diasporas Compared. F
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 concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) S. Bass

*J. Jews in Italy: Writing and Witnessing the Holocaust.* Examines major Jewish writers in Italy focusing on Judaism between world wars and under Fascism; the Resistance; urban and/or ghetto cultures of Rome, Turin, Ferrara, Venice; gender roles; and development of new literary genres. Films, poetry, cultural documents. Satisfies the Modern Literature concentration. M. Brode

D. Japan and America: Dislocations of the Postmodern. S
Examines, by contrast, conceptions of the “postmodern” in two geohistorically specific contexts in terms of the relations between knowledge and power, culture and technology. Questions of national “identity,” the pluralization of “truth” in cross-cultural confrontations, and the authority, privilege, and subjectivity of “history,” among others, are explored. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) E. Jackson Jr.
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. N.ickel

*B. Russian Literature since the Revolution.
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 socialist realism. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. W. N.ickel

**E. Classic Russian Novels.
Detailed literary analysis of novels by Gogol, Goncharov, Tolstoy, Dostoevsky, and Pasternak. Focus upon aesthetic devices of texts, as well as upon ethical and philosophical issues that inform them. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (Formerly Women in Post-Stalinist Russia.) W. N.ickel

156. Russian Literature in Translation. F.
Selected readings from the novel and novella in twentieth-century Russian literature, from Dostoevsky to Pasternak. Satisfies the Modern Literature concentration: also satisfies the Global distribution requirement. W. N.ickel

157. Russian Literature since the Revolution.
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. W. N.ickel

158. 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. W. N.ickel

**K. Great French Novels.
Provides an introduction to important French novels of the nineteenth and twentieth centuries. All works are read in French. Satisfies the Modern Literature concentration. W. N.ickel

167. German Authors in Translation.
**G. Goethe’s Faust:
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. Nygaard

168. German Literature in Translation.
**B. Nazism and Literature.
Study of various literary reactions to Nazism. Examines cultural conditions at the time the movement arose, authors who supported it, authors who opposed it, and post-war writers who have attempted to deal with the Nazi past. Satisfies the Modern Literature concentration. L. Nygaard

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. W. N.ickel

180. Latin American Literature in Translation.
**F. Latin American Women Writers.
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 Code: E.) J. Burton-Carvajal

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 modern literary studies. All students are required to complete an essay of significant length as part of the seminar course work. Prerequisite(s): Literature 101. May be repeated for credit.

*A. Proust and Contemporary Criticism.
Reads a substantial portion of Proust’s In Search of Lost Time in English translation and examines the important body of contemporary criticism on Proust that both illuminates the novel and raises significant critical and theoretical issues. Satisfies the Modern Literature concentration; also satisfies the Senior Seminar distribution requirement. Prerequisite(s): Literature 101. F. Kertzman

**N. Topics in Modern Literary Studies.
Selected authors or issues in modern literary and cultural studies. Topics for winter 2004: section 1: cross-cultural film theory and fiction and society in nineteenth- and twentieth-century France; section 2: intense survey of film theory and practice articulated across geopolitical, cultural, racial, and ethnic formations. Focused primarily, but not exclusively, on Japan, Korea, and Chinese-speaking East Asia. Enrollment restricted to senior literature majors. May be repeated for credit. L. Nygaard

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) T. Staff

195. Senior Essay, F,W,S
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., correspondence), or student is doing all or most of the course work off campus. Prerequisite(s): petition on file with sponsoring agency. T. Staff

199. Group Tutorial, F,W,S
May be repeated for credit. T. Staff

199. Tutorial, F,W,S
T. Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. T. Staff

Pre- and Early Modern Literary Studies

42. Student-Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) T. Staff

99. Tutorial, F,W,S
T. Staff

102. Ancient Literature in Cross-cultural Perspective, S
Topic: The Gospel of Matthew. Satisfies the Pre- and Early Modern 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

*107. Reading Egyptian Hieroglyphs.
Introduction to Egyptian hieroglyphs as a graphic, conceptual, and communicative system. Covers the basic elements of classic Egyptian grammar, drawing primarily on actual inscriptions from Egyptian monuments. Will read one prose and one poetic 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. D. Selden

115. 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. J. Lynch

121. Ancient Novel, F
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, Harkar; Achilles Tatius, and Heliodoros. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. K. Basi

A study of Gnosticism and Neoplatonism as they emerge out of Near Eastern traditions (Greek, Egyptian, Semitic, Iranian), and their ultimate convergence in Judaism as the teaching and practice of Kabbalah. Satisfies the Pre- and Early Modern Studies and World Literature concentrations; also satisfies the Global and Pre- and Early Modern distribution requirements. D. Selden

132. Medieval French Romance, S
Arthuriad, “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. Kinohtia

*135. Travel Writing and Intercultural Relations in the Middle Ages.
Provides a historically-based and theoretically-informed introduction to medieval and early modern European contacts with other cultures. Readings include fourth through seventeenth-century writings about travel, discovery, and conquest in Asia, Africa, and America. Satisfies the Pre- and
Early Modern Studies and World Literature concentrations; also satisfies the Global and Pre- and Early Modern distribution requirements. S. Kinoshita

Examines early modern theories of theatricality, cultural, and social values. Topic for winter: Renaissance Italian theater. Satisfies the Pre- and Early Modern Studies Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. May be repeated for credit. D. Shemek

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.

*A. Spanish Masterpieces of the Golden Age.
Works from various genres including the Poem of the Cid, the Celestina, and Lazarillo de Tormes. Satisfies the Pre- and Early Modern Studies Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. J. Aladro Font

C. 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

177. Discourses in Early Modern Cultures.
*A. "Race" in Early Modern Cultures.
Examines the literary, linguistic, visual, scientific, and theological histories of the modern notion of race. Satisfies the Pre- and Early Modern Studies Literature concentration; also satisfies the Pre- and Early Modern distribution requirement. Enrollment restricted to sophomore, junior, and senior students. M. H. Hendricks

183. Dante's Divina Comedy.
Reading of the Inferno, the Purgatorio, and selected cantos of the Paradiso along with selections from Dante's lyrics. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Poetry and Pre- and Early Modern distribution requirements. M. Brown

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(s): Literature 101. May be repeated for credit.

P. Topics in Pre- and Early Modern Studies.
W. Examination of individual authors or critical problems in ancient, medieval, or early modern/Renaissance literature. Topics vary from year to year. (W) Ancient myths/modern poetics. Satisfies the Pre- and Early Modern Literature concentration; also satisfies the Poetry, Pre- and Early Modern, and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. M. Gamde

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) 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. Prerequisite(s): petition on file with sponsoring agency. T he Staff

198. Group Tutorial, F,W,S
May be repeated for credit. T he Staff

199. Tutorial, F,W,S
T he Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. T he Staff

Russian Literature

42. Student-Directed Seminar, F,W,S
Seminars taught by upper-division students under faculty supervision. T he Staff

99. Tutorial, F,W,S
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. Prerequisite(s): petition on file with sponsoring agency. T he Staff

199. Tutorial, F,W,S
T he Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. T he Staff

Spanish/Latin American/Literture

60. Introduction to Literary Genres, F
The study of poetry, drama, and prose in Spain and Latin America. (General Education Code: HH, E.) L. Martínez-Echázabal

99. Tutorial, F,W,S
T he Staff

99F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. T he Staff

102. Introduction to Hispanic American Literature.

*B. Romanticism to Modernism.
Follows the literary manifestations of the growing consciousness of the Latin American writer: discovery of native themes, imitation of European models, search for a "new language". Relates historical events with literary movements. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) L. Martínez-Echázabal

130. Studies in Latin American Literary Genres.
D. Latin American "testimonio." W
Contemporary non-fiction testimonial literature of Latin America. Authors: Marta Rojas, Elena Poniatowska, Rigoberta Menchu, Noemí Vieyra, Omar Cabezas Lacayo, Aníbal Quijada Cerda, Mario Payeros, Eduardo Galeano, Ricardo Porras, Hugo Neiva Samanes, Luis González de Alba. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. Prerequisite(s): Spanish 5. (General Education Code: E.) J. Poblete

E. Latin American Poetry, S
Poets from "modernismo" to the present in Spanish America. Studies how this poetry attempts to define Latin America, its past, its present history, and its vision for the future. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global and Poetry distribution requirements. (General Education Code: E.) N. Klahn

*F. U.S. Latino/a Writing in Spanish/English and Spanglish.
Explores the relationships between literature and mass culture, modernization, and globalization through the study of the so-called Boom of Latin American narrative. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) J. Poblete

M. Modernidad y literatura: El Boom de la novela latinoamericana.
Explores different aesthetic options of famous Latin American masters of the short story. Includes authors such as Quiroga, Borges, Cortázar, Gorodischer, Monterroso. Among the different types of writing to be explored are fantastic, detective, meta-literary, social critique, historical, and philosophical. Satisfies the Modern, Spanish, and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) J. Poblete

*N. El Cuento Hispanoamericano: Variedades estéticas de la literatura breve en America Latina.
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 Code: E.) J. Poblete

152. Spanish Golden Age Theater.
Studies in the comedia as exemplified in the works of Lope de Vega, Tirso de Molina, Calderón, and Ruiz de Alarcón. Satisfies the Pre- and Early Modern Studies and Spanish Literature concentrations; also satisfies the Global and Pre- and Early Modern distribution requirement. Offered in alternate academic years. J. Aladro Font

153. The Picaresque Novel, W
The picaresque novel of 16th-century Spain considers the fictive environment as reality in order to introduce its protagonist as a rebel against social domination. The picaresque
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. F
Examines 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

195. Senior Essay, F,W,S
Prerequisite(s): Literature 101. T. 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. Prerequisite(s): petition on file with sponsoring agency. T. The Staff

198. Group Tutorial, F,W,S
May be repeated for credit. T. The Staff

199. Tutorial, F,W,S
T. The Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. T. The Staff

World Literature and Cultural Studies

106. Literacy and the Coming of the Book.
What difference in world history do books make? Topics in the history of literary institutions, including the production, distribution, and reception of printed works. The transition from manuscript to print. The history of reading. The end of the book? Satisfies the Pre- and Early Modern Studies and World Literature concentrations; also satisfies the Global and Pre- and Early Modern distribution requirements. J. Greene

109. Topics in Cultural Studies, F,W,S
Topics in the theory of cultural studies. Topics for 2003–04: (F) twentieth-century Cuban literature, (W) Latin(o) American popular culture, (S) Ethiopian literature. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. May be repeated for credit. (General Education Code: E.) L. Martinez-Echazabal, J. Poblete D. Selden

117. History and Memory in the New World.
Writers in the U.S., Latin America, and the Caribbean have been drawn repeatedly to the theme of intercultural conflict as they recall the traumatic history of the hemisphere. Examining fiction, poetry, and film expands the horizons of “American” literature. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. (General Education Code: E.) K. Gruesz

123. The 1960s.
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 Code: E.) C. Connery

124. Cultural Theory in Historical Perspective, W
Examination of representations of medieval and early modern Mediterranean history. Topic: (Re)Thinking the Mediterranean. Explores the Mediterranean as a unit of analysis that challenges the segmentation of histories and literary traditions along national lines. Focuses on cultural contact in the medieval and early modern periods. Satisfies the Pre- and Early Modern and World Literature concentrations; also satisfies the Global and Early Modern distribution requirements. (General Education Code: E.) S. Kinoshita

132. Global Cities.
An examination of cities as local spaces in the global economy and global imaginary. Topics include politics of spatial representation, spatialization and historical change, urban subjects, architecture and cultural politics, literary and cinematic representations of urban space, and spaces of contestation.

*A. Paris and Cairo.
A study of representations of Paris and Cairo in literature and travel writings from the Middle Ages to the present with special emphasis on their interconnections in the age of colonialism and post-colonialism. Secondary readings in history and art history. Satisfies the Modern and World Literature concentrations; also satisfies the Global distribution requirement. S. Kinoshita

135. Classical Chinese Culture and Literature, Tenth Century B.C.E. through Sixth Century C.E. F
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, eremitism, 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.) Offered in alternate academic years. (General Education Code: E.) C. Connery

136. Classical Chinese Culture and Literature, Sixth Century through Sixteenth Century, W
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.) Offered in alternate academic years. (General Education Code: E.) C. Connery

140. The Historical Imaginary.
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 Code: E.) S. Gillman

190. Senior Seminar, F
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. Prerequisite(s): Literature 101. May be repeated for credit. *A. Topics in World Literature and Cultural Studies.
Topic: Latin American Poetry. Studies diverse and conflicting roles played by poetry in formation of individual and collective identities in Hispanic cultures in the modern/postmodern period. Focuses on construction of the “personal” within/against the “social” through poetic form and language. Approach considers ethnicity, subjectivity, nationalism, canon (re)formation, popular culture, gender, and sexuality. Satisfies the Modern and World Literature concentrations; also satisfies the Global, Poetry, and Senior Seminar distribution requirements. Prerequisite(s): Literature 101. Enrollment restricted to senior literature majors. May be repeated for credit. (General Education Code: E.) N. Klahn

B. Studies in Slavery, Race, and Nation in the Americas, F
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 antislavery novels by black nationalist Martin Delany, Cuban nationalist Cirilio Villavende, and “sentimental” reformers Harriet Beecher Stowe and Gertrudis Gomez de Avellaneda. 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 Code: E.) S. Gillman

E. Studies in Autobiographical Fiction by Latinas, S
A study of the ways Latinas have privileged first-person narration in the last two decades, positing questions of origins, genealogies, cultural identities, and transculturalization in their search for self-definition and self-assertion. Authors will include Sandra Cisneros, Nicolasa Mohr, Esmeralda Santiago, Julia Alvarez, Cristina Garcia, Norma 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 Code: E.) N. Klahn

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. T. The Staff

195. Senior Essay, F,W,S
Prerequisite(s): Literature 101. T. 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. Prerequisite(s): petition on file with sponsoring agency. T. The Staff

198. Group Tutorial, F,W,S
T. The Staff

199. Tutorial, F,W,S
T. The Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. T. The Staff

*Not offered in 2003–04
Literature: Graduate Courses

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. Terdiman

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. The 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. May 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 on a particular author, critic, theorist, or text. Topics for 2003–04: (F) Readings and Recent Writings of Derrida (requires ability 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 with sponsoring agency. The Staff

American Literature: Graduate Courses

205. Topics in American Literature, F,W
An in-depth study of a topic in American Literature. Topics for 2003–04: (F) Black Trans-Atlantic Criticism and Theory; (W) Theorizing American Culture. Enrollment restricted to graduate students. May be repeated for credit. L. Chude-Saku, S. Gillman

210. Reconstructing U.S. Literary History, S
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. Topic: Latino canonicity. Enrollment restricted to graduate students. May be repeated for credit. K. Gruesz

294. Teaching-Related Independent Study, F,W,S
Directed graduate research and writing coordinated with the teaching of undergraduate students. Prerequisite(s): petition on file with sponsoring agency. The Staff

295. Directed Reading, F,W,S
Directed reading that does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. The Staff

296. Special Student Seminar, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

297. Independent Study, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

British Literature: Graduate Courses

240. Topics in British Literature, W
Investigation of a topic in British literary history. Topic: women writers and traditions of the English novel. Enrollment restricted to graduate students. May be repeated for credit. H. M. Ogden

249. Teaching-Related Independent Study, F,W,S
Directed graduate research and writing coordinated with the teaching of undergraduates. Prerequisite(s): petition on file with sponsoring agency. The Staff

254. Directed Reading, F,W,S
Directed reading that does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. The Staff

269. Special Student Seminar, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

279. Independent Study, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Other English Literature: Graduate Courses

294. Teaching-Related Independent Study, F,W,S
Directed graduate research and writing coordinated with the teaching of undergraduates. Prerequisite(s): petition on file with sponsoring agency. The Staff

295. Directed Reading, F,W,S
Directed reading that does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. The Staff

296. Special Student Seminar, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

297. Independent Study, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

French Literature: Graduate Courses

294. Modern French/Francophone Philosophies of Difference, S
Examines select modern French/Francophone philosophical and psychoanalytic discussions of difference in the work of Lacan, Fanon, Irigaray, Derrida, and Deleuze and their influence on current critical theory. Texts are studied in French although students may use translations. Enrollment restricted to graduate students. C. Freccaro

230. Studies in Literary and Cultural History, W
In-depth examination of one period of French literature. Topic: TBA. Enrollment restricted to graduate students. May be repeated for credit. S. Kinoshita, R. Terdiman, C. Freccaro

294. Teaching-Related Independent Study, F,W,S
Directed graduate research and writing coordinated with the teaching of undergraduates. Prerequisite(s): petition on file with sponsoring agency. The Staff

295. Directed Reading, F,W,S
Directed reading which does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. The Staff

296. Special Student Seminar, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

297. Independent Study, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

295. Directed Reading, F,W,S
Directed reading that does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. The Staff

296. Special Student Seminar, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

297. Independent Study, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with 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
Prerequisite(s): petition on file with sponsoring agency. The Staff

296. Special Student Seminar, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

297. Independent Study, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

299. Thesis Research, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff
**Italian Literature: Graduate Courses**

*230. Author and Context.*
T he Staff

*270. Studies in Italian Poetry.*
T he Staff

**295. Directed Reading. F,W,S**
Directed reading that does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. T he Staff

**296. Special Student Seminar. F,W,S**
Prerequisite(s): petition on file with sponsoring agency. T he Staff

**297. Independent Study. F,W,S**
Directed reading that does not involve a term paper. Prerequisite(s): petition on file with sponsoring agency. T he Staff

**Pre- and Modern Literary Studies: Graduate Courses**

**201. Studies in Antiquity. F**
An in-depth study of a topic in Mediterranean and Near Eastern antiquity. Topic for fall 2003: History and Tragedy. Enrollment restricted to graduate students. May be repeated for credit. K. Basili

**204. Studies in Early Modernity. S**
In-depth examination of a topic in Early Modern Studies. Topic: fictions of the pose: self-representation in portraits, poems, and plays. Enrollment restricted to graduate students. May be repeated for credit. H. Berger Jr.

**220. Individual Authors. S**
Special focus on work of a single author in literary historical and/or historical context. Topic: Dante. Enrollment restricted to graduate students. May be repeated for credit. M. Brose

**249. Teaching-Related Independent Study. F,W,S**
Directed graduate research and writing coordinated with the teaching of undergraduates. T he Staff

**296. Special Student Seminar. F,W,S**
Prerequisite(s): petition on file with sponsoring agency. T he Staff

**297. Independent Study. F,W,S**
Prerequisite(s): petition on file with sponsoring agency. T he Staff

Prerequisite(s): petition on file with sponsoring agency. T he Staff

**Latin Literature: Graduate Courses**

**294. Teaching-Related Independent Study. F,W,S**
Directed graduate research and writing coordinated with the teaching of undergraduates. T he Staff

**295. Directed Reading. F,W,S**
Prerequisite(s): petition on file with sponsoring agency. T he Staff

**296. Special Student Seminar. F,W,S**
Prerequisite(s): petition on file with sponsoring agency. T he Staff

**297. Independent Study. F,W,S**
Prerequisite(s): petition on file with sponsoring agency. T he Staff

Prerequisite(s): petition on file with sponsoring agency. T he Staff

**Modern Literary Studies: Graduate Courses**

**231. National Literatures of Latin America. W**
A. Cuba, W
Topic: “Race,” art, and culture in twentieth-century Cuba. Explores ways in which art and other forms of cultural expression have dealt with “race” in twentieth-century Cuban society. Attention to the post-1959 period and the ways writers, artists, and intellectuals of African descent as well as governmental institutions and cultural policies have tackled the so-called “black problem.” Enrollment restricted to graduate students. L. Martínez-Echazábal

**World Literature and Cultural Studies: Graduate Courses**

**201. Theory and Methods.**
Global theories of history and cultural production. T he Staff

**209. Topics in Cultural Studies. F,W**
Topics: (F) romance, metaphysics, tributary systems, part I; (W) romance, metaphysics, tributary systems, part II. Enrollment limited to 20. Enrollment restricted to graduate students. May be repeated for credit. S. Kinoshita, (W) D. Selden

**Marine Biology**

See Biological Sciences, page 129.
Marine Sciences

UCSC offers a master of science degree in marine sciences with four concentrations: biology, chemistry, Earth sciences, and physics. Undergraduate courses, some of which satisfy general education requirements, are also available. For the program description and courses offered, see Ocean Sciences, page 307.

Mathematics

297 Kerr Hall
(831) 459-2969
http://www.math.ucsc.edu

Faculty and Professional Interests

Professor

RALPH H. ABRAHAM, Emeritus
NICHOLAS BURGOYNE, Emeritus
BRUCE N. COOPERSTEIN
Group theory, combinatorics, particularly Chevalley groups and their associated geometric and 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

MARVIN J. GREENBERG, Emeritus
Al. Kelley, Emeritus
EDWARD M. LANDESMAN, Emeritus

DEBRA LEWIS
Geometric/algebraic, birational geometry theory, applications of variational methods, computational mathematics

GEOFFREY MASON
Groups, representation theory and modular forms, Lie algebras and conformal field theory

RICHARD MONTGOMERY
Celestial mechanics, differential geometry, gauge theory, Hamiltonian theory (quantum and classical), and control theory

TUDOR S. RATIU, Emeritus
GERHARD RINGEL, Emeritus

MARTA SCHONBEK
Nonlinear partial differential equations, with emphasis on fluid equations

ANDREY TODOROV
Algebraic geometry and complex differential geometry and their applications to theoretical physics, Teichmüller theory

ANTHONY J. TROMBA
Global nonlinear analysis, calculus of variations, minimal surfaces and Plateau’s problem, Riemann surfaces

HAROLD WIDOM, Emeritus

Associate Professor

ROBERT BOLTJE
Group theory, algebraic number theory

VIKTOR Ginzburg
Global analysis, symplectic topology, Hamiltonian dynamical systems, Poisson geometry, symmetries, and group actions

JIE QING
Nonlinear analysis, harmonic analysis, partial differential equations with applications to differential geometry, mathematical physics

HIROTAKA TAMANOI
Algebraic topology, orbifold string topology, conformal field theory, hypergeometric differential forms, Schwarzian derivatives

JONATHAN WEITSMAN
Geometry and mathematical physics

Assistant Professor

ERHUD MOSE BARUCH
Group representations, L-functions, automorphic forms, number theory

FRANK BAUERLE
EDWARD MIGLIORE
RICHARD R. MITCHELL
MARSHALL SYLVAN, Emeritus

Lecturer

FRANK BAUERLE
S. KELLEY, Emeritus

Mathematics Placement Exam

Mathematics placement exam scores are valid for one year. Students whose areas of study require precalculus or calculus courses are strongly advised to take the placement exam and the required courses early in their academic careers. The placement exam is given just prior to the beginning of each quarter, in the sixth and seventh weeks of each quarter, and at prospective student orientations. Bring photo identification for entry into the placement exam.

If your MPE score is
Enroll in this course
12–19
2
20–30
3
31–39
11A
40–45
19A
46 or higher
19A or 20A

Students who plan to take a precalculus course or the first quarter of calculus must enroll in the course indicated by their score on the mathematics placement exam (MPE) or the College Entrance Examination Board Advanced Placement (AP) calculus exam or pass the appropriate prerequisite course.

UC Santa Cruz Mathematics Placement Exam

Mathematics placement exam scores are valid for one year. Students whose areas of study require precalculus or calculus courses are strongly encouraged to take the placement exam and the required courses early in their academic careers.

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, students interested in studying mathematics are strongly encouraged to take algebra, geometry, and trigonometry before entering the university. Prospective freshmen are also encouraged to take the mathematics placement exam during their senior year of high school at a UCSC-scheduled exam. If they place into course 2 or 3, they should take those courses at UC Santa Cruz during the summer, so they can begin the calculus series when they enter in the fall.
- Lower-division courses with numbers in the range 11A-B through 30 (calculus, linear algebra, multivariable calculus, differential equations, and problem solving) prepare students for further study in mathematics, the physical and biological sciences, or quantitative areas of the social sciences. Students should complete these courses early in their academic careers.

College Board Advanced Placement Calculus Exams

Students who have received 4 credits for the College Entrance Examination Board Advanced Placement (AP) calculus exam should normally enroll in course 19B, whereas those with 8 credits should normally enroll in course 23A. However, students who are considering a major in the physical and biological sciences and who received a score of 3 on either the calculus AB or BC AP exam are also encouraged to enroll in course 19A or 19B, respectively, in order to improve their knowledge of calculus before continuing their studies. Students wishing to challenge themselves and who received a score of 5 on
the AB exam or 4 on the BC exam may choose courses 20A and 20B, Honors Calculus.

If your AP AB score is

<table>
<thead>
<tr>
<th>Score</th>
<th>Course(s)</th>
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<tbody>
<tr>
<td>3</td>
<td>11A or 19A</td>
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<tr>
<td>4</td>
<td>11B or 19B</td>
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<tr>
<td>5</td>
<td>20A or 11B or 19B</td>
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If your AP BC score is

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<th>Score</th>
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<tbody>
<tr>
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<td>11B or 19B</td>
</tr>
<tr>
<td>4 or 5</td>
<td>20A or 22 or 23A</td>
</tr>
</tbody>
</table>

Prerequisite Courses

Students who have passed course 2 may enroll in course 3. Students who have passed course 3 may enroll in course 11A or 19A. Students who have passed an articulated precalculus course at a college or university may enroll in course 11A or 19A (they must verify eligibility of the course and course completion with the Mathematics Department staff).

Premajor Requirements

Premajor requirements for all concentrations in the major are courses 20A and 20B, Honors Calculus or 19A-B, Calculus for Science, Engineering, and Mathematics 21, Linear Algebra, and 23A-B, Multivariable Calculus. The mathematics education concentration has one additional premajor requirement, Engineering 5, Statistics, which counts as the ninth required course for the major. For non-mathematics majors, courses 11A-B can be substituted for 19A-B, but they are not recommended for students planning to major in computer engineering, computer science, electrical engineering, information systems management, or physics. Although not considered a premajor requirement, course 100 is a prerequisite for most upper-division mathematics courses.

Major Requirements

Pure Mathematics

This concentration is intended for those who desire a comprehensive understanding of mathematics, including those considering going to graduate school in mathematics. Students are required to complete at least nine courses (with laboratories, if appropriate) from among those numbered 100 or higher; course 24 or Engineering 27 (not both) can also be counted as one of the nine courses toward fulfillment of the major requirements. Five of these courses must be 100, Honors Calculus. All other courses are intended for chemistry, computer engineering, computer science, electrical engineering, information systems management, or physics. Although not considered a premajor requirement, course 100 is a prerequisite for most upper-division mathematics courses.

Mathematics Education

This concentration is intended to prepare students for teaching kindergarten through high school (K–12). In addition to the premajor requirements, students are required to complete the following eight courses: CSE 19A-B, CSE 103, Complex Analysis, or 105A, Real Analysis 110, Introduction to Number Theory; 111A, Algebra; 148, Numerical Analysis, or 145, Introductory Chaos Theory; or Engineering 146, Chaotic Dynamical Systems or Engineering 147, Computational Methods and Applications, and 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 107, 108, 153, 172, 177
- Computer Science 101, 109, 112, 130

A typical program for a computational mathematics major might include the following:

1st year

<table>
<thead>
<tr>
<th>Course(s)</th>
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<td>19A-B, 23A</td>
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2nd year

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<th>Course(s)</th>
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<td>21, 23B, 24, 100, 110</td>
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3rd year

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<th>Course(s)</th>
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<td>103, 105A, 143, 145 or Engineering 146</td>
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4th year

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<th>Course(s)</th>
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<tbody>
<tr>
<td>106A, 111A, Engineering 147, 194</td>
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</table>

A typical program for a mathematics education major might include the following:

1st year

<table>
<thead>
<tr>
<th>Course(s)</th>
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<tr>
<td>19A-B, 23A</td>
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2nd year

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<th>Course(s)</th>
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<tr>
<td>21, 23B, 100, 110, Engineering 5</td>
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3rd year

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<tr>
<th>Course(s)</th>
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<tbody>
<tr>
<td>111A, 128A, 181, Engineering 131</td>
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4th year

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<th>Course(s)</th>
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<tr>
<td>103, 105A, 188, 194</td>
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Minor Requirements

The minor is intended for students who are interested in mathematics and want a strong mathematical foundation for studying in areas that rely heavily on analytical skills. Students are required to complete at least eight courses numbered 21 or above, with course 100 required. The courses that may be counted toward fulfillment of the minor requirements are courses 21, 23B, course 24 or Engineering 27 (not both), and those numbered 100 or higher. No senior seminar or thesis is required.

A typical mathematics minor program for a physics major might be:

1st year

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<th>Course(s)</th>
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<td>19A-B, 23A</td>
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2nd year

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<th>Course(s)</th>
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<td>21, 23B, 24, 100</td>
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3rd year

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<th>Course(s)</th>
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<td>103, 105A, 106A, 111A</td>
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4th year

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<th>Course(s)</th>
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<tr>
<td>106B, 145 or Engineering 146</td>
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</table>

Courses

Course 2, College Algebra for Calculus is designed for students who do not meet the requirements for admission to course 3, Precalculus, and who need comprehensive and careful preparation for calculus. Course 2 emphasizes algebra, graphs, and functions. The prerequisite for course 2 is a minimum placement examination score of 12. Students not meeting the minimum requirement should take a college algebra course at a community college.

Course 3, Precalculus is recommended for students who need some preparation in algebra and trigonometry prior to taking calculus. This course covers functions and their inverse, exponential, logarithms, and trigonometry.

Statistics 5 is a standard course in applied statistics and is intended for majors in the social sciences. Engineering 7 is intended for undergraduate and graduate students in the biological sciences. Students cannot receive credit for both Engineering 5 and 7. An advanced course in probability is also offered in alternate years.

Courses 11A-B, Calculus with Applications, are intended for biology and Earth sciences majors. However, students in these majors who score 40 or more points on the Mathematics Placement Exam are strongly encouraged to take the 19A-B sequence, which is required for all mathematics courses 23 and above. Laboratory sections are mandatory.

Courses 19A-B, Calculus for Science, Engineering, and Mathematics, are intended for chemistry, computer engineering, computer science, electrical engineering, information systems management, mathematics, and physics majors. Laboratory sections are mandatory.

Courses 20A and 20B, Honors Calculus, are intended for students who would enter particularly deeply into the foundational and theoretical issues of calculus. Laboratory sections are mandatory.

Course 21, Linear Algebra, covers vector spaces, matrices, determinants, systems of linear equations, and eigenvalues. It is intended for students in the physical and biological and social sciences and is prerequisite to course 111A.

Course 22, Introduction to Calculus of Several Variables, is intended for science students whose schedules do not permit a full and comprehensive two quarters of multivariable calculus. Students who intend to pursue further studies in mathematics must take 23A-B and not 22. Laboratory sections are mandatory.

Courses 23A-B, Multivariable Calculus, are intended for mathematics majors and students in computer engineering, computer science, electrical engineering, information systems management, and physics who desire more rigorous mathematical training. Laboratory sections are mandatory.

Course 100, Introduction to Proof and Problem Solving, is an introduction to the methodology of advanced mathematics, emphasizing proof techniques. Basic areas such as set theory and logic are introduced, together with extensive applications within mathematics. A waiver of this course is possible; students must see the faculty under-graduate vice chair.

Graduate level courses. All graduate courses are open to undergraduates who have taken the recommended prerequisites; students should consult with the course instructor. Advanced undergraduates are strongly advised to take or audit graduate courses that interest them.
Graduate Program

The Mathematics Department offers programs leading to the M.A. and Ph.D. degrees. Prospective students should contact the department for both graduate programs prior to applying.

M.A. Degree Requirements

Students are required to complete courses 200, 201, 202, 203, and 204 and pass an M.A. level examination. In addition, students must do either of the following:
- complete five additional courses in mathematics. No more than two such courses may be independent studies;
- write a master’s thesis and complete three additional graduate courses in mathematics. No more than one course may be an independent study or thesis research course.

Ph.D. Degree Requirements

All of the following are required:
- pass the algebra and analysis written examinations;
- satisfy the foreign language requirement;
- pass the qualifying examination;
- complete three quarters as a teaching assistant;
- complete six graduate courses in mathematics other than 200, 201, 202, 203, 204, and 209. No more than three courses may be independent study or thesis research courses;
- write a Ph.D. thesis and present the thesis defense.

Students admitted to the Ph.D. program may receive an M.A. degree en route to the Ph.D.; students admitted to the M.A. program may transfer to the Ph.D. program upon passing the preliminary examinations, at the Ph.D. level.

Further information on the M.A. and Ph.D. programs, as well as on university application procedures, may be obtained from the Division of Graduate Studies.

Lower-Division Courses

2. College Algebra for Calculus. F,W

Operations on real numbers, complex numbers, polynomials, and rational expressions; exponents and radicals; solving linear and quadratic equations and inequalities; functions, algebra of functions, graphs; conic sections; mathematical models; sequences and series. Prerequisite(s): score of 12 or higher on Mathematics Placement Exam or transfer credit.

3. Precalculus. F,W,S

Inverses and properties of functions, 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 Engineering 3. Students cannot receive credit for both course 3 and Economics 11A. B. 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): 11A: course 2B or 3 or Engineering 3 or score of 31 on math placement exam; 11B: course 11A. (General Education Codes: IN, Q.) T he Staff


A: 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 11A and Economics 11B. B: 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): 19A: course 2B or 3 or Engineering 3 or score of 40 or higher on math placement exam; 19B: course 19A. (General Education Codes: IN, Q.) T he 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. T he 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. T he Staff


Systems of linear equations, matrices, determinants. Introduction to abstract vector spaces, linear transformation, inner products, geometry of Euclidean space, and eigenvalues. One quarter of college mathematics is recommended as preparation. (General Education Code: Q.) T he 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 area and volumes. Applications from biology, chemistry, earth sciences, engineering, and physics. Prerequisite(s): course 11B or 19B. T he Staff

23A-B. Multivariable Calculus. F,W,S

A: 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. B: 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’ theorem. Applications to physics and differential equations, differential forms. Prerequisite(s): 23A: course 19B; 23B: course 23A. T he 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. Prerequisite(s): course 22 or 23A; course 21 is recommended as preparation. T he 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 Math Placement Exam score of 40 or higher. B. Cooper"
Prerequisite(s): either Engineering 27 or courses 21 and 24; and either course 100 or Computer Science 101; course 101 is recommended as preparation. The Staff

110. Introduction to Number Theory. F
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: Q) The Staff

111A-B. Algebra, F, S-W
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. Students cannot receive credit for course 111B and course 111T. Prerequisite(s): course 21 or Engineering 27 and either course 100 or Computer Science 101. 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. W
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 Engineering 27 and either course 100 or Computer Science 101. The Staff

117. Advanced Linear Algebra. F
Review of abstract vector spaces. Dual spaces, bilinear forms, and combinatorics. Introduction to tensor products and exterior algebra. Prerequisite(s): course 21 or Engineering 27 and either course 100 or Computer Science 101. The Staff

118. Advanced Number Theory. W
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 or 111T. The Staff

*120. Coding Theory.
An introduction to mathematical theory of 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, directional derivatives, curves and differentiable forms in space, mappings. Curves, the Frenet formulas, covariant derivatives, frame fields, the structure equations. The classification of space curves up to rigid motions. Vector fields and differentiable forms on surfaces; the shape operator. Gaussian and mean curvature. The theorem of egregium; global classification of surfaces in three space by curvature. Course 105A strongly recommended. Prerequisite(s): course 21 and 23B and either course 100 or Computer Science 101. The Staff

*121B. Differential Geometry and Topology.
Examples of surfaces of constant Gauss curvature, surfaces of revolutions, 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 spaces, 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 characteristic, 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, CD 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 Engineering 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

130. Celestial Mechanics. W
We solve the two-body (or Kepler) problem, then move onto the N-body problem where there are many open problems. 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. Restricted three-body problem. Prerequisite(s): courses 19A-B and course 23A or 26 or Physics 5A or 6A; courses 21 and 24 strongly recommended. Enrollment limited to 35. The Staff

*134. Cryptography.
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. Bolt

*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 Engineering 27; and either course 100 or Computer Science 101; 106A recommended. The Staff

145. Introductory Chaos Theory. F
The Lorenz and Rössler 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 Engineering 146. Prerequisite(s): course 22 or 23A; and course 21; and course 100 or Computer Science 101. The Staff

145L. Introductory Chaos Laboratory (1 credit). F
Laboratory sequence illustrating topics covered in course 145. One three-hour session per week in microcomputer laboratory. Concurrent enrollment in course 145 is required. The Staff

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. Concurrent enrollment in course 148L is required. Prerequisite(s): course 22 or 23A; and course 21 and 24 or Engineering 27; and course 100 or Computer Science 101. The Staff

148L. Numerical Analysis Laboratory (1 credit). F
Laboratory sequence illustrating topics covered in course 148. One three-hour session per week in microcomputer laboratory. Concurrent enrollment in course 148 is required. The Staff

160. Mathematical Logic I. W

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. S
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. Prerequisite(s): petition on file with sponsoring agency. The Staff

194. Senior Seminar. W
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. Prerequisite(s): petition on file with sponsoring agency. The Staff

*Not offered in 2003-04
199. Tutorial. F,W,S
Prerequisite(s): petition on file with sponsoring agency.
The Staff

Graduate Courses

*200. Algebra I.
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, PIDs, UFDs, polynomial rings. Prerequisite(s): courses 111A and 117 are recommended. May be repeated for credit. The Staff

*201. Algebra II.
Module theory: exact sequences, free modules and vector spaces, modules over a PID, applications. Linear algebra: characteristic polynomials, normal forms. Field theory: high level proof of 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.
Multilinear algebra, including 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 Noetherian rings, Hilbert basis and Nullstellensatz theorem. Course 201 is recommended as preparation. The Staff

*203. Analysis I.
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 Fubini theorem and integration on product spaces. Prerequisite(s): course 105A or equivalent; course 105B is recommended. The Staff

*204. Analysis II.
Hilbert space, trigonometric series, Banach space techniques, Baire’s theorem. The Hahn-Banach theorem, complex measures and the Radon-Nikodym theorem. Introduction L¹ theory, the dual to L¹. The Staff

205. Analysis III. F
L¹ spaces in detail. Differentiation, distribution theory, Fourier transforms, Sobolev spaces. Courses 203 and 204 are recommended as preparation. The Staff

*206. Computational Mathematics I.
Solving mathematical problems using C, C++, or various high level proof of 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

*207. Elements in Topology.
Manifolds, fundamental groups, Seifert-van Kampen theorem, surfaces, covering spaces. Courses 121 A and 203 recommended. The Staff

*209. Complex Analysis.
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. The Staff

210A-B. Algebraic Topology. W,S
A: LP spaces in detail. Differentiation, distribution theory, Fourier transforms. 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. B: A continuation of 210A. Topics include theory of characteristic classes of vector bundles, cobordism theory, and homotopy theory. Offered every two or three years. Prerequisite(s): courses 200 and 203. Course 210A recommended for 210B. The Staff

*211. Riemann Surfaces.
Riemann surfaces, conformal maps, harmonic forms, holomorphic forms, the theorem of Riemann-Roch, the theory of moduli. The Staff

213A. Partial Differential Equations I. F
First of the two PDE series covering basically Part I in Evans’ book, Partial Differential Equations, which includes transport equations, Laplace equations, heat equations, wave equations, characteristics of nonlinear first order PDE, Hamilton-Jacobi equations, equations of conservation laws, some methods to solve equations with close forms, and Cauchy-Kowalevskaya theorem. Prerequisite(s): courses 106A and 106B recommended. The Staff

213B. Partial Differential Equations II. W
Second of the PDE series covering basically Part II in Evans’ book and some topics in nonlinear PDE including Sobolev space, Sobolev inequalities, existence, regularity and a priori estimates of solutions to second order elliptic PDE, parabolic equations, hyperbolic equations and systems of conservation laws, and calculus of variations and its applications to PDE. Prerequisite(s): courses 106A, 106B, and 213A recommended. The Staff

214. Theory of Finite Groups. F
Covers nilpotent groups, solvable groups, Hall subgroups, the Frattini subgroup, the Fitting subgroup, Schur-Zassenhaus theorem, fusion in p-groups, the transfer map, Frobenius theorem on normal p-complements. Courses 200 and 201 are recommended as preparation. The Staff

Operators on Banach and Hilbert spaces. The spectral theorem. Compact operators; von Neumann operators. Other special classes of operators, operators. Courses 203, 204, 205, and 209 are recommended as preparation. The Staff

*216. Advanced Analysis.
Topics include maximal function, the Lebesgue set, the Fatou theorem, Weyl’s theorem are proved. Root space decomposition, analogues of Riemann-Roch for algebraic fields (after A. Weil), inverse Galois problem (Belyi theorem) and consequences. The Staff

Topics include elliptic equations, existence of weak solutions, Lax-Milgram theorem, interior and boundary regularity, maximum principles, Harnack inequality, Eigenvalues for symmetric and non-symmetric elliptic operators, calculus of variations (first variation: Euler Lagrange equations, second variation: existence of minimizers). Other topics covered as time permits. Courses 204 and 205 are recommended as preparation. The Staff

*218. Advanced Parabolic and Hyperbolic Partial Differential Equations.
Topics include linear evolution equations, second order parabolic equations, maximum principles, second order hyperbolic equations, propagation of disturbances, hyperbolic systems of first order, semigroup theory, systems of conservation laws, Riemann problem, simple waves, rarefaction waves, shock waves, Riemann invariants, and entropy criteria. Other topics covered as time permits. The Staff

Topological methods in nonlinear partial differential equations, including degree theory, bifurcation theory, and monotonicity. Topics also include variational methods in the solution of nonlinear partial differential equations. (Formerly Applications of Partial Differential Equations to Geometry, Fluid Dynamics and Physics) Enrollment restricted to graduate students. The Staff

*220A. Representation Theory I.
Lie groups and Lie algebras, and their finite dimensional representations. Prerequisite(s): courses 200 and 204. The Staff

*220B. Representation Theory II.
Lie groups and Lie algebras, and their finite dimensional representations. Prerequisite(s): course 220A. The Staff

*222A. Algebraic Number Theory.
Topics include algebraic integers, completions, different and discriminant, cyclotomic fields, parallelotopes, the ideal function, idèles and adèles, elementary properties of zeta functions and L-series, local class field theory, global class field theory. Courses 200, 201, and 202 are recommended as preparation. The Staff

*222B. Algebraic Number Theory.
Topics include geometric methods in number theory, finiteness theorems, analogues of Riemann-Roch for algebraic fields (after A. Weil), inverse Galois problem (Belyi theorem) and consequences. The Staff

*223A. Algebraic Geometry I.
Topics include examples of algebraic varieties, elements of commutative algebra, local properties of algebraic varieties, line bundles and sheaf cohomology, theory of algebraic curves. Weekly problem solving. Courses 200, 201, and 202 are recommended as preparation. The Staff

*223B. Algebraic Geometry II.
A continuation of course 223A. Topics include theory of schemes and sheaf cohomology, formulation of Riemann-Roch theorem, birational maps, theory of surfaces. Weekly problem solving. Course 223A is recommended as preparation. The Staff

*225A. Lie Algebras.
Basic concepts of Lie algebras, Engel’s theorem, Lie’s theorem, Weyl’s theorem are proved. Root space decomposition for semi-simple algebras, root systems and the classification theorem for semi-simple algebras over the complex numbers. Isomorphism and conjugacy theorems. Course 202 is recommended as preparation. The Staff

*Not offered in 2003–04  †Quarter to be determined

*226A. Infinite Dimensional Lie Algebras and Quantum Field Theory I. Introduction to the infinite-dimensional Lie algebras which occur in modern mathematics and mathematical physics: Heisenberg and Virasoro algebras, representations of the Heisenberg algebra, Verma modules over the Virasoro algebra, Kac determinant form, and unitary and discrete series representations. Enrollment restricted to graduate students. The Staff

*226B. Infinite Dimensional Lie Algebras and Quantum Field Theory II. Continuation of F. Kac-Moody and affine Lie algebras and their representations. Reduction of integrable modules, representations via vertex operators, modular invariance of characters, and introduction to vertex operator algebras. Enrollment restricted to graduate students. The Staff

*227. Lie Groups. Lie groups and algebras, the exponential map, the adjoint action, Lie's three theorems, Lie subgroups, the maximal torus theorem, the Weyl group, some topology of Lie groups, some representation theory: Shur's lemma, Peter-Weyl theorem, roots, weights, classification of Lie groups, the classical groups. Prerequisite(s): course 106A and 203. The Staff

*228. Lie Incidence Geometries. Linear incidence geometry is introduced. Linear and classical groups are reviewed, and geometries associated with projective and polar spaces are introduced. Characterizations are obtained. The Staff


232. Morse Theory. W Classical Morse Theory. The fundamental theorems relating to critical points to the topology of a manifold are treated in detail. The Bolt Periodicity Theorem. A specialized course offered every few years. The Staff

234A. Calculus on Manifolds. F Manifolds and differentiable structures, tangent and cotangent bundles, vector bundles, mappings, immersions and embeddings, transversality and Sard's theorem, tensors, vector fields and flows, differential forms, integration on manifolds, Stokes' theorem. Course 204 is recommended for preparation. The Staff

234B. Differential Geometry I. W Riemannian metrics and connections, geodesics, the geodesic flow, convex neighborhoods, curvature, the Jacobi equation, complete manifolds and the Hopf-Rinow theorem, the Hadamard theorem. Prerequisite(s): course 234A. The Staff

234C. Differential Geometry II. S Principal bundles, associated bundles and vector bundles, connections on principal and vector bundles. More advanced topics: curvature, introduction to cohomology, the Chern-Weil construction and characteristic classes, the Gauss-Bonnet theorem or Hodge theory, eigenvalue estimates for Beltrami Laplacian, comparison theorems in Riemannian geometry. Prerequisite(s): course 234B. The Staff


238. Elliptic Functions and Modular Forms. S The course, aimed at second-year graduate students, will cover the basic facts about elliptic functions and modular forms. The goal is to provide the student with foundations suitable for further work in advanced number theory, in conformal field theory, and in the theory of Riemann surfaces. As a prerequisite, successful completion of graduate sequence 200-202 and either 209 or 103 is recommended. The Staff

*239. Homological Algebra. 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. The aim 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. W Introduces ordinary representation theory of finite groups (over the complex numbers). Main topics are characters, orthogonality relations, character tables, induction and restriction, Frobenius reciprocity, Mackey's formula, Clifford theory, 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. S 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. F Material includes associative algebras and their modules; projective and injective modules; projective covers; injective hulls; Krull-Schmidt Theorem; Cartan matrix; semi-simple 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. Topology I. 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 theory, geodesic equations, and an introduction to Poisson geometry. Courses 203, 204, and 234A are recommended as preparation. The Staff

249B. Mechanics II. F 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; celestial mechanics. 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 Navier-Stokes equations. Prerequisite(s): courses 106A and 106B recommended. Enrollment restricted to graduate students. The Staff

254. Geometric Analysis. Introduction to some basics in geometric analysis through the 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 a priori estimates of systems of elliptic PDE. Prerequisite(s): courses 213A, 234A, and 234B recommended. The Staff

256. Algebraic Curves. Introduction to 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. S The Staff

*282. Topics in Geometry. The Staff

*283. Topics in Combinatorial Theory. The Staff

*284. Topics in Dynamics. The Staff

*Not offered in 2003-04
Topics such as derivation of the Navier-Stokes equations, Examples of flows including water waves, vortex motion, and boundary layers. Introductory functional analysis of the Navier-Stokes equation. The Staff

286. Topics in Number Theory. 
Topics in number theory, selected by the instructor. Possibilities include modular and automorphic forms, elliptic curves, algebraic number theory, local fields, the trace formula. May also cover related areas of arithmetic algebraic geometry, harmonic analysis, and representation theory. Courses 200, 201, 202, and 205 are recommended as preparation. The Staff

287. Topics in Topology. 
Topics in topology, selected by the instructor. Possibilities include generalized (co)homology theory including K-theory, group actions on manifolds, equivariant and orbifold cohomology theory. May be repeated for credit. The Staff

Seminar (no credit). F,W,S 
A weekly seminar attended by faculty, graduate students, and upper-division undergraduate students. All graduate students are expected to attend. The Staff

Special Student Seminar. F,W,S 
Students and staff studying in an area where there is no specific course offering at that time. The Staff

Independent Study. F,W,S 
Either study related to a course being taken or a totally independent study. The Staff

Master's Thesis Research. F,W,S 
The Staff

Thesis Research. F,W,S 
The Staff

Medieval Studies

Students wishing to pursue a course of study in medieval studies should consult the concentration in pre- and early modern studies under Literature, page 279.

Merrill College

College Office
(831) 459-2144
http://www2.ucsc.edu/merrill
For college description and list of faculty, see page 81.

Lower-Division Courses

10. Becoming a Successful Student (2 credits). W,S 
An interactive course providing the opportunity to assess and revise methods of and purposes in studying. Critical, effective approaches to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources are explored. Prerequisite(s): contact college office for interview-only criteria. The Staff

20N. 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. Prerequisite(s): interview with instructor before first class meeting. Enrollment limited to 20. P. Roby

42. Student-Directed Seminar. F,W,S 
Seminar 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 films, 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. (General Education Codes: T3-Social Sciences, E.) J. Schechter

88B. 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: T3-Social Sciences.) G. Shomaker

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: T5-Humanities and Arts or Social Sciences.) The Staff

80X. Cultural Identities and Global Consciousness (Freshman Honors Section-Merrill Core Course). F 
Introduces students to the rapidly evolving global society. Using autobiographies, nonfiction, novels, and films, 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. Prerequisite(s): Merrill College members are selected for this year-long honors program on the basis of an application submitted prior to fall quarter. (General Education Codes: T3-Social Sciences, E.) J. Schechter

80Y. The Perspective of First Peoples (Freshman Honors). 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. Prerequisite(s): participants are selected on the basis of their high school records and an essay. Students must have passed the Subject A examination. Enrollment limited to 22. Enrollment restricted to Merrill College freshmen in the Merrill Honors Program. (General Education Code: T4-Humanities and Arts.) J. Schechter

80Z. Modern Moral Problems (Freshman Honors). 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. Forms part of the Merrill College Freshman Honors sequence. Prerequisite(s): by interview; Merrill College members are selected for this year-long honors program on the basis of an application submitted prior to fall quarter. Enrollment limited to 22. (General Education Code: C.) J. Isbister

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 play-grounds. Includes weekly sections, readings of practical and theoretical relevance, field notes, and a final paper. Prerequisite(s): permission of instructor; contact Classroom Connection Coordinator at 459-5671. Enrollment limited to 40. 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 play-grounds. Includes weekly sections, readings of practical and theoretical relevance, field notes, and a final paper. Prerequisite(s): permission of instructor; contact Classroom Connection Coordinator at 459-5671. Enrollment limited to 40. 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. Prerequisite(s): approval of the student’s adviser and the provost. The Staff

93F. Field Study (2 credits). F,W,S 
Provides for individual program of study sponsored by the college and performed off campus. Prerequisite(s): approval of instructor. 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. Prerequisite(s): approval of instructor. May be repeated for credit. The Staff

Various topics to be arranged between student and instructor. Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits). F,W,S 
Various topics to be arranged between student and instructor. Prerequisite(s): petition on file with 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, languages, model-building, reality, thinking, logic, creativity, the steps of problem solving, common blocks, and techniques of unblocking. Prerequisite(s): meeting 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 
Teaching of a lower-division seminar by an upper-division student under faculty supervision. (See course 42.) Prerequisite(s): petition on file with sponsoring agency 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. Up to three such courses may be taken for credit in one quarter. Prerequisite(s): approval of student’s adviser and the provost. May be repeated for credit. 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. Prerequisite(s): approval of student’s adviser and the provost. 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. Up to three such courses may be taken for credit in one quarter. Prerequisite(s): approval of student’s adviser and the provost. 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 faculty member. The Staff

195. Senior Research Project, F,W,S
Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

198. Independent Field Study, F,W,S
Provides for college-sponsored individual 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. Petitions may be obtained at the Merrill College Office. Prerequisite(s): approval of student’s adviser, certification of adequate preparation, and approval by the Merrill Provost. The Staff

199. Tutorial, F,W,S
Various topics to be arranged between student and instructor. Prerequisite(s): petition on file with sponsoring agency. The Staff

**Music**

244 Music Center
(831) 459-2292
music@ucsc.edu
http://music.ucsc.edu

Faculty and Professional Interests

**Professor**

LINDA BURMAN-HALL
Baroque music and performance practices; historic keyboard repertoire (harpsichord, organ, and fortepiano); Indonesian music culture; 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 DUDLEY, Emeritus

EDWARD E. HOUTHOUN
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 LIEBERMAN
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 C.P.E. Bach and Lou Harrison

GORDON MUMMA, Emeritus

NICOLE A. PAIEMENT
Orchestral and choral conducting, baroque, classical, and contemporary music history; performance practices, Händel; le Groupe des Six; French 20th-century music; interdisciplinary art

JOHN M. SCHIECHTER
Ethnomusicology; music theory; South American traditional and contemporary music; Quechua music; music and ritual; organology; Stravinsky; Director, UCSC Latin American Ensemble

ASSOCIATE PROFESSOR

HI KYUNG KIM
Composition, 20th-century music; tonal and Schoenbergian analysis; orchestration, Korean traditional music

ASSISTANT PROFESSOR

AMY C. BEAL
American music; 20th-century music; experimentalism, postwar 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

KARETON E. HESTER
Preadapted, electroacoustic and spontaneous composition; flute, saxophones and interdisciplinary performance; improvisational and Afrocentric music theory, analysis and history

PAUL NAUERT
Theory, composition; rhythm and meter; music cognition; mathematical and computer models of the compositional process

LECTURER

KAREN L. ANDRIE
Cello

ERIK ABULANANTHAM
Group piano

GERALD J. BASSERMANN
Electronic music

MARK BRANDENBURG
Clarinet

PAUL D. CONTOS
Saxophone

MARY JANE COPE
Piano, fortepiano

WILLIAM D. COULTER
Classical guitar

JACQUES A. DESJARDINS
Concert choir

PETER Q. ELSEA
Electronic music and music technology

MарIA V. EZEBOVA
Piano

BARRY L. GREEN
String bass

ROBERT KLEVAN
Wind Ensemble

PATRICE L. MAGINNIS
Voice

ROY T. MALAN
Violin, viola

GEORGE F. MARSH
Percussion: trap set

OWEN MIYOSHI
Trumpet

JANE A. ORZEL
Bassoon

MESUT ÖZGEN
Classical guitar

JOHN T. SACKETT
Music theory

WAYNE J. SOLOMON
Trombone

BRIAN J. STAUFENBRIEL
Voice

UNDANG SUMARNA
West Javanese gamelan

WILLIAM K. WING
Orchestral percussion, percussion ensemble

GREER ELLISON WOLFSON
Flute

STAFF

Horn

Oboe

**Professor**

WILLIAM G. MATHEWS, Professor of Astronomy

Galaxies, high-energy astrophysics, gas-gas 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 completed Music Center includes a 400-seat recital hall with recording facilities, specially 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. McHenry 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 major 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/L-B/M-C/N, 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. Many students will need to take Music 60, 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 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 examination (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>(frsh)</td>
<td>lessons ensemble</td>
<td>lessons ensemble</td>
<td>lessons ensemble</td>
</tr>
<tr>
<td>group piano, Mus 60, may be required; see courses 30A-B-C</td>
<td></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 ensemble</td>
<td>lessons ensemble</td>
<td>lessons 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 (recomm)</td>
<td>Mus 13 (recomm)</td>
<td>Mus 14 (recomm)</td>
</tr>
<tr>
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<td>lessons ensemble</td>
<td>lessons ensemble</td>
<td>lessons 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. Students are tested in the areas of theory, music literature, ear training, and sight-singing. This exam 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. 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 segments 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 audit 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, 101A-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 ensembles, 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 UCSC student recital series at least once a year. In addition to these requirements, voice majors are required to take French I, German I, and Italian I.

The B.M. program differs 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 (but 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.

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<tr>
<th>Year</th>
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<th>Winter</th>
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<td>lessons (3)</td>
<td>lessons (3)</td>
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</tr>
<tr>
<td>(frsh)</td>
<td>ensemble (2)</td>
<td>ensemble (2)</td>
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<td>gen ed col core (5)</td>
<td>gen ed (5)</td>
<td>gen ed (5)</td>
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<tr>
<td>2nd</td>
<td>lessons (3)</td>
<td>lessons (3)</td>
<td>lessons (3)</td>
</tr>
<tr>
<td>(soph)</td>
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<td>ensemble (2)</td>
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<td>Mus 60 2*</td>
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<td>ensemble (2)</td>
<td>ensemble (2)</td>
</tr>
<tr>
<td>Mus 100A (5)</td>
<td>Mus 100B (5)</td>
<td>Mus 101C (5)</td>
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<td>from 100B or 101A</td>
<td>from 101B or 101C</td>
<td></td>
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<td>4th</td>
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<td>gen ed elective (5)</td>
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</tbody>
</table>

*Music 60 (Group Instruction in Piano) 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 30ABC.
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 repertory 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.

Minors

Music

The music minor provides 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-CN; 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 or the three-course electronic music studio sequence (81, 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 creating music with the tools of modern technology. It is designed to complement the music major or programs in other media by providing instruction in advanced skills of audio 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);
- courses 80C, 81, 124, 125, and 167;
- course 80L, or 80R (for 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 musics of Africa, Europe, and the United States 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:

- 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 and/or recital), or for music course work in general, particularly in the core curriculum 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. 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 50A/L.

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.

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*Music 60 (Group instruction in Piano) 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.)

A transfer student 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.

Bass: B. Green
Bassoon: J. Orzel
Cello: K. Andrie
Clarinet: M. Brandenburg
Class Piano: M. Ezerova
Cornet: W. Mathews
Flute: G. Ellison Wollson
Guitar, classical: W. Coulter, M. Ögren
Harp: L. Burman-Hall
Horn: Staff
Oboe: Staff
Percussion: G. Marsh, W. Winant
Piano, classical: M. J. Cope, M. Ezerova, A. Leikin
Saxophone: P. Contos
Trombone and tuba: W. Solomon
Trumpet: O. Miyoshi
Violin and viola: R. Malan
Voice: P. Maginnis, B. Staufenbiel

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. Desjardins
Women's Chorale: Staff
Chamber Singers: N. Paiement
University Opera Theater: B. Staufenbiel
Opera Workshop: P. Maginnis, B. Staufenbiel
Early Music Consort: L. Burman-Hall, M. Miller
Graduate Program

The M.A. degree program in music integrates studies in performance, composition, analysis, and research. In consultation with a faculty advisor, the student pursues a two-year course of studies culminating in a final project that typically combines an original composition or written thesis with a related public performance.

Required courses include course 200. Introduction to Research Methods course 201, Pretonal and Tonal Analysis, and course 202, Tonal and Posttonal Analysis. Students also select three courses from the 203 series of seminars in performance practices of Western or non-Western music (Middle Ages, Renaissance, Baroque, Classical, Romantic, and twentieth-century periods, and traditional musics of Asia and Latin America). Students in composition may substitute course 220, Graduate Seminar in Music Composition, for up to two quarters of course 203. Students are encouraged to create a program involving corollary studies such as computer studies, area cultural studies, linguistics, anthropology, theater arts, and visual arts.

Current skill in reading and comprehension of a relevant foreign language must be demonstrated upon enrollment by enrollment by satisfactory completion of level 3 on the UCSC language 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 advisor, students may substitute algorithmic composition or 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 200, 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 an instrumentalist, vocalist, conductor, or performances of selected works.

Some additional rehearsal time, both individually and with the group is required. Prerequisite(s): 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: A.) The Staff

1C. University Concert Choir (2 credits). F, W, S

A study of selected works for mixed chorus, with emphasis on masterworks for chorus and orchestra, culminating in a public concert. Familiarity with basic music notation recommended. Prerequisite(s): by audition with conductor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) L. Burman-Hall

2. University Orchestra (2 credits). F, W, S

A study of selected works for orchestra, culminating in one or more public concerts. Prerequisite(s): admission by audition with conductor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) N. Paiement

3. Large Jazz Ensemble (2 credits). F, W, S

Instruction in performance in large jazz ensembles with written arrangements. Preparation for public performance. Prerequisite(s): 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: A.) R. Klevan

4A. Latin American Ensemble: Voces (2 credits). F, W, S

Instruction in vocal literature from Latin America, focusing on Mexican, South American, and/or Latin American vocal literature. Prerequisite(s): consent of instructor. May be repeated for credit. (General Education Code: A.) U. Sumarna

4B. Latin American Ensemble: Taki Ñan (2 credits). F, W, S

Instructor and performance. Prerequisite(s): consent of instructor. May be repeated for credit. (General Education Code: A.) A. Leikin

5A. West Java Javanesen Gamelan Ensemble: Beginning (2 credits). F, W, S

Instruction in practice and performance of gamelan music from Java and Sundanese. Preparation of several works for public presentation. Prerequisite(s): attend first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) U. Sumarna


Instruction in practice and performance of gamelan music from Java and Sundanese. Preparation of several works for public presentation. Prerequisite(s): attend first class meeting.

See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) U. Sumarna

5C. West Java Javanesen Gamelan Ensemble: Advanced (2 credits). F, W, S

Instruction in practice and performance of gamelan music from Java and Sundanese. Preparation of several works for public presentation. Prerequisite(s): attend first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) U. Sumarna

8. Balinese Gamelan Angklung II (2 credits). F, W, S

Instruction in practice and performance of gamelan music from Bali and Indonesia, including ritual and new music. Preparation of several works for public performance. Prerequisite(s): attend first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) L. Burman-Hall


A study of selected advanced-level works for wind ensemble, culminating in one or more public concerts. Prerequisite(s): admission by audition with conductor prior to first class meeting. May be repeated for credit. (General Education Code: A.) R. Klevan

11. Introduction to Western Music, F, W

A study of selected masterworks in relation to the periods which they represent. Emphasis upon the listening experience and awareness of musical style and structure. Illustrated lectures and directed listening. (General Education Codes: IH, A.) A. Beal, D. Cope, A. Lekin, L. Miller


Continuation of course 13. Triads and 7th chords and their inversions. Introduces Chordal modes. melodic and harmonic analysis, four-part harmony, and keyboard harmony. Sight-singing, ear training, and dictation. Knowledge of musical notation and scales required. Students who wish to take this course and have not taken course 13 or the placement exam should consult the instructor. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 35. May be repeated for credit. (General Education Code: A.) M. H. Miller

30A-B-C, Theory, Literature, and Musicianship I, F, W, S

An integrated and intensive approach to musicianship, 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 sixteenth through early nineteenth centuries. 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): A: admission by core curriculum placement examination or by passing course 14 with a final examination score of approximately 80% or higher; B and C: instructor determination at first class meeting.

*Not offered in 2003–04

Chamber Music: Staff

Large Jazz Ensemble: Staff

Small Jazz Ensembles: Staff

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
Course A prerequisite to B; B prerequisite to C. Concurrent enrollment in 30L-M-N required; and concurrent enrollment in course 60 unless prior keyboard training can be demonstrated. Enrollment limited to 20. H. K. Kim, A. Lחק. P. Nauer, J. Schechter.

30L-M-N. Theory, Literature, and Musicianship I Laboratory (2 credits). F-W-S
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): I: admission by core curriculum placement examination or by passing course 14 with a final examination score of approximately 80% or higher; M: instructor determination at first class meeting of course 30B; N: instructor determination at first class meeting of course 30C. Concurrent enrollment in courses 30A-B-C is required. The Staff

42. Student-Directed Seminar. F, W, S
Seminars taught by upperdivision students under faculty supervision. (See course 192.) Prerequisite(s): petition on file with sponsoring agency. The Staff

51. Vocal Repertoire Class (2 credits), F, W, S
The study and performance of vocal repertoire from 1400 to the present, including solo song, oratorio, opera, ensemble music. Emphasis is given to the development of effective performance skills, culminating in public performance. Prerequisite(s): attend first class meeting; concurrent enrollment in individual voice lessons with instructor of this course is required. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 20. May be repeated for credit. (General Education Code: A.) P. M. Agnini, B. Staufenfaden

54. North Indian Music Workshop (2 credits).
A course covering the music of North India taught using the oral traditions of Indian music. For beginners as well as more experienced students, this course is well suited for instrumentalists and vocalists. Prerequisite(s): interview; instructor determination at first class meeting. May be repeated for credit. (General Education Code: A.) 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. Curriculum is coordinated with keyboard requirements of courses 30A-B-C. Students are billed for a course fee. Prerequisite(s): instructor determination prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 8. May be repeated for credit. The Staff

61. Individual Lessons: Half Hour (2 credits), F, W, S
One-half 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. Prerequisite(s): 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. Prerequisite(s): admission by audition with the instructor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 6. May be repeated for credit. The Staff

75. Jazz Theory, S
Studies in the modes, scales, chord alternations 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: A.) K. Heter

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 Codes: T4-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 Europe, Africa, and the Americas. Focuses on understanding and appreciating the musical styles and cultural functions in the performing arts of these areas. Incorporates live class performance of music discussed. Offered on a rotational basis with other non-Western music courses in the 80 series. (General Education Codes: T4-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 Codes: T6-Natural Sciences or Humanities and Arts, A, E.) 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 Balinese, 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 Codes: T4-Humanities and Arts, A, E.) L. Burman-Hall

80E. History of Jazz. W, S
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, lecture demonstrations, and film presentations. (General Education Codes: T4-Humanities and Arts, A, E.) K. Heter

80F. Music in Latin American Culture: Regional Traditions. F
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 Canción, 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 Codes: T4-Humanities and Arts, A, E.) J. Schechter

80G. American Musical Theater.
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 Codes: T4-Humanities and Arts, A, F.) L. Burman-Hall

80H. American Popular Music. F
Covers vernacular styles including Stephen Foster, vaudeville, Tin Pan Alley, the Hit Parade, blues, gospel, soul, rhythm and blues, Anglo-American folk ballads, country music, bluegrass, 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 Codes: T4-Humanities and Arts, A, F.) L. Burman-Hall

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 Codes: T4-Humanities and Arts, A, F.) L. Burman-Hall

80K. Opera and Drama.
A survey of opera from its beginnings ca. 1600 to the present, with emphasis on the ways in which opera’s formal structures express dramatic content. Class screenings and critical readings provide the basis for discussion of specific operas. Offered in alternate academic years. (General Education Codes: T4-Humanities and Arts, A, F.) The Staff

80L. Artificial Intelligence and Music.
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 Codes: T6-Natural Sciences or Humanities and Arts, A, D.) Cope

80M. Film Music. S
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

*Not offered in 2003–04
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, and viewing of relevant films. A musical background, including the ability to read music, is helpful but not necessary. Offered in alternate academic years. (General Education Codes: T4-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 for background for study of the music as the band evolved through time. Offered in alternate academic years. (General Education Codes: T4-Humanities and Arts, A.) F. Lieberman

80P. Wagner's Operas
Introduction to operas of Richard Wagner including their artistic, mythic, and political dimensions. Previous course work includes 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 Codes: T4-Humanities and Arts, A.) F. Lieberman

80Q. A Survey of African Music
Traces the various stylistic musical areas throughout the African continent and explores the development of traditional African music from antiquity into the twentieth century. (General Education Codes: T4-Humanities and Arts, A, E.) K. Hexter

80R. Music and the World Wide Web
A survey of musical applications of the World Wide Web and the technologies they employ: tools 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 Codes: T6-Natural Sciences or Humanities and Arts, A.) G. Basermann

*80S. Women in Music*
An exploration of the sociological position of women as composers and performers in Western music history with a focus on specific figures from the Middle Ages to the present. (Also offered as Women's Studies 080S. Students cannot receive credit for both courses.) Offered in alternate academic years. (General Education Codes: T4-Humanities and Arts, A.) L. Miller

*80T. Celtic Music*
An introduction to traditional folk music of Ireland, Scotland, Brittany, 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 Codes: T4-Humanities and Arts, A.) T. Staff

*80V. The Music of the Beatles*
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/technological contexts. Course 80V is recommended but not required as preparation. (General Education Codes: T4-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 Codes: T4-Humanities and Arts, A.) F. Lieberman

80X. Music of India
A survey course in Hindustani (North Indian) and Karnatak (South Indian) music covering the Raga (modal system) and Talas (metric 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 Codes: T4-Humanities and Arts, A, E.) T. Staff

81. Electronic Sound Synthesis
Introduction to electronic music studio techniques, 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. Elsä

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. Prerequisite(s): approval of department. T. Staff

99. Tutorial, F,W,S
A program of directed study arranged with a department faculty member. Prerequisite(s): petition on file with sponsoring agency. T. 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. Prerequisite(s): petition on file with sponsoring agency. T. Staff

Upper-Division Courses

100A-B-C. Theory, Literature, and Musicianship I, II, F-W-S
Tonal counterpoint. Chromatic harmony and its ramifications. Introduction to twentieth-century methods of composition, including serial techniques. Prerequisite(s): 100A: course 30C and 30N and Piano Proficiency Exam; 100B: course 100A; 100C: course 100B; instructor determination at first class meeting. Enrollment limited to 20. B. Carson, D. Cope, D. Jones, H. K. Kim, P. Nauert

101A-B-C-D. History of Western Art Music, W-S-F-W
A detailed chronological study of Western art music from antiquity to the present. Coordinated lectures, readings, listening assignments, and analysis of representative works. A: Antiquity, Middle Ages, Renaissance; B: Baroque; C: Classical and Romantic; D: twentieth century. Prerequisite(s): for 101A: course 30A; for 101B: course 30B; for 101C: and 101D: course 30C. A. Beal, D. Jones, A. Lekin, L. Miller, P. Nauert

120. Seminar in Music Composition
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. K. Kim, P. Nauert

124. Intermediate Electronic Sound Synthesis
Competition 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. Elsä

125. Advanced Electronic Sound Synthesis
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. Elsä

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. K. 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 scenshow. Attention will be given to movement, acting, coaching, and operatic stage-directing technique. Instruction culminates in studio productions of scenes from operas and musicals. Prerequisite(s): admission by permission of vocal instructor, or by audition with instructor prior to first class meeting. Enrollment limited to 30. May be repeated for credit. (General Education Code: A.) P. Maginnis, B. Staufenbier

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 scenshow. Attention will be given to movement, acting, coaching, and operatic stage-directing technique.

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. Prerequisite(s): admission by audition with instructor prior to first class meeting; auditions usually take place in full quarter. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A.) P. Maginnis, B. Staufenbier

161. Individual Lessons: One Hour (3 credits), F,W,S
One hour of individual instrumental or vocal instruction. Repetory, 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. Prerequisite(s): 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

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 lesson instrument or voice is required. Students are billed for a course fee. Prerequisite(s): juried audition. See the enrollment conditions section of the quarterly Schedule of Classes. The Staff

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. Prerequisite(s): 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. L. Burman-Hall, L. Miller

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. Prerequisite(s): 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

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. Prerequisite(s): 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

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. Prerequisite(s): admission by audition with the conductor prior to first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. (General Education Code: A) J. Patern

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. May be repeated for credit. P. Elsa

168. Contemporary Music Ensemble (2 credits).
A study of selected works for various small combinations of instruments and voice, culminating in one or more public concerts. Prerequisite(s): admission by audition with the instructor prior to the first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. May be repeated for credit. A. Beal, D. Cope, D. Jones, H. K. Kim

170. Gender Wayang Ensemble (2 credits).
Techniques and repertory 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 metal percussion (individual lessons, gamelan, or percussion ensemble experience). Prerequisite(s): admission by audition with instructor at first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 4. May be repeated for credit. (General Education Code: A) J. 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. Prerequisite(s): admission by audition with instructor at first class meeting. See the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 4. May be repeated for credit. The Staff

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. Prerequisite(s): admission by audition with instructor at first class meeting. Enrollment limited to 20. May be repeated for credit. K. Hesser

180A. Studies in World Musics: Asia and the Pacific. S
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 limited to 30. Enrollment restricted to music majors and graduate students. Anthropology majors with sufficient musical background may enroll with permission of instructor. (General Education Codes: A, E.) L. Burman-Hall, F. Lieberman

In-depth ethnomusicological studies of selected music cultures of sub-Saharan Africa and South and North America, including Native America. 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; satisfaction of the Subject A and Composition requirements; concurrent enrollment in a non-Western performing ensemble is strongly recommended. Enrollment limited to 22. Enrollment restricted to music majors and graduate students. Anthropology majors with sufficient musical background may enroll with permission of instructor. (General Education Codes: W, A, E.) J. Schechter

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 juried public forms (lecture, performance, research paper). A. Beal, L. Burman-Hall, A. Leikin, L. Miller

201. Pretonal and Tonal Analysis.
A study and analysis of pre-tonal and tonal music from the Greeks through the mid-nineteenth century. The course combines a history of theory with analyses that utilize contemporaneous theoretical concepts. Enrollment re-

*Not offered in 2003-04
202. Tonal and Posttonal Analysis. W
Encompasses various forms of linear analysis, set theory, and selected topics in current analytical practice. Offered in alternate academic years. D. Cope, D. Jones, H. K. Kim, P. Nauert

203. Special Topics in Performance Practice.
Investigation of primary and secondary sources of information about the culturally and historically accurate performance of music in various times and places. Undergraduates who have completed the appropriate Music 101 courses may enroll in 203 courses by interview with the instructor.

* A. 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. Writing and performance of representative works. Offered on a rotational basis with other courses in the 203 series. E. Houghton, L. Miller

* B. Performance Practice in the Renaissance.
A study of performance practices in Renaissance music, including concepts of mode, musica ficta, ornamentation, tune 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

* C. Performance Practice in the Baroque.
An examination of historically informed performance practice techniques 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

D. Performance Practice in the Classic Period. F
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

* E. Performance Practice in the Romantic Period.
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

F. Performance Practice in the Twentieth Century. S
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, D. Cope, D. Jones, J. Schechter

G. Concepts, Issues, and the Practice of Ethnomusicology. S
Ethnomusicological field methodology; vocal and instrumental performance practices as related to the ethnomusicological endeavor. Specific topics: philosophical paradigms, historical overview, and definitional 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. Schechter

H. 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. L. Burman-Hall, H. K. Kim, J. Schechter

*204. Graduate Seminar in Music Education.
Designed to provide a coherent and integrated approach to classroom music teaching. Students have part-time responsibility 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. Prerequisite(s): interview with instructor at first class meeting. Enrollment limited to 6. Enrollment restricted to graduate students. The Staff

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 undergraduate students. May be repeated for credit with different instructor. Prerequisite(s): interview with instructor at first class meeting. Enrollment limited to 16. D. Cope, D. Jones, H. K. Kim, P. Nauert

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 Hiller 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. Prerequisite(s): admission by interview with instructor; composition portfolio required. Enrollment limited to 10. Enrollment restricted to graduate students. D. Cope

261. Graduate Applied Instruction (3 credits). F, W, S
One hour of individual instrumental or vocal instruction for graduate students. Repertory, technique, and performance practice. A minimum of nine hours per week of individual practice is required. Students are billed a course fee. Prerequisite(s): 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. The Staff

265. Graduate Ensemble Participation (2 credits). F, W, S
Participation by graduate students in ensembles. Enrollment limited to two per ensemble. Prerequisite(s): 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. The Staff

281. Electronic Sound Synthesis. W
Introduction to electronic music studio techniques, related electroacoustical studies, and procedures of electronic music composition. Practical experience in the UCSC electronic music studio with an analog synthesizer; mixing, equalization, multitrack recording equipment, and other sound processing. Prerequisite(s): permission of instructor; course 80C. Enrollment limited to 5. Enrollment restricted to graduate students. P. Elkins

295. Directed Reading. F, W, S
Directed reading which does not involve a term paper. May be repeated once for credit. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Additional Courses of Interest
Check the quarterly Schedule of Classes for 2003–04 course offerings.

The Staff

Physics 80A, Physics and Psychophysics of Music
Economics 80C, Money and Art: Two All-Consuming Passions
Economics 137. Performing Arts in the Public and Private Economy

Natural History
See Environmental Studies, page 218.

Natural Sciences
See Physical and Biological Sciences, page 315.

Neuroscience and Behavior
See Biological Sciences, page 129.
**Oakes College**

College Office  
(831) 459-2418  
http://oakes.ucsc.edu

For college description and list of faculty, see page 86.

### Lower-Division Courses

**10. Academic Success (2 credits). F**
Provides opportunity to assess and revise methods of and purposes in studying. Critical, effective approaches to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources explored. Prerequisite(s): enrollment by permission of college adviser. P. M. onsor, M. Corona

**42. Student-Directed Seminar. F,W,S**
Seminars taught by upper-division Oakes students under faculty supervision. (See course 192.) T The Staff

**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. (General Education Codes: TS, Humanities and Arts or Social Sciences, E.) T The Staff

**85. Oakes Community Service (3 credits). F,W,S**
Provides an opportunity for students to do volunteer community service work in a public or private sector organization for eight hours per week. Course work includes review of community service literature, skills development, oral presentations, and writing assignments. May be repeated for credit as a two-quarter sequence. (Formerly Oakes Service) T. Casey

**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. T 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. Prerequisite(s): petition on file with sponsoring agency. T The Staff

**95. Directed Reading. F,W,S**
Directed reading on selected topics in literature. Prerequisite(s): petition on file with sponsoring agency. T The Staff

**99. Tutorial. F,W,S**
Individual study for lower-division students directed by a fellow of Oakes. Prerequisite(s): petition on file with sponsoring agency. T The Staff

**99F. Independent Study (2 credits). F,W,S**
Independent study on various topics to be arranged between student and instructor. Prerequisite(s): petition on file with sponsoring agency. T 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 member willing to supervise. 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. 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 adviser. May be repeated for credit. T The Staff

**195. Senior Thesis. F,W,S**
Senior thesis related to college-sponsored individual majors. Prerequisite(s): petition on file with sponsoring agency. Sponsoring faculty must be member of individual major committee. May be repeated for credit. T 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 adviser, certification of adequate preparation, and approval by provost. May be repeated for credit. T The Staff

**199. Tutorial. F,W,S**
Individual study for junior and senior members of Oakes College directed by a fellow of Oakes. Prerequisite(s): petition on file with sponsoring agency. T The Staff

**199F. Independent Study (2 credits). F,W,S**
Independent study on various topics to be arranged between student and instructor. Prerequisite(s): petition on file with sponsoring agency. T The Staff

### Ocean Sciences

A312 Earth and Marine Sciences Building  
(831) 459-4730  
http://oceansci.ucsc.edu

**Faculty and Professional Interests**

**Professor**
KEENETH W. BRULAND  
Chemical oceanography, biogeochemistry of trace metals and radionuclides, aquatic chemistry, geochemistry
MARGARET L. (PEGGY) DELANEY  
Paleoceanography, marine geochemistry
ROBERT E. GARRISON (Emeritus)  
Biological oceanography
MARY W. SILVER  
Biological oceanography, marine plankton, midwater ecology
JONATHAN P. ZEHR  
Aquatic microbial ecology, biological oceanography

**Associate Professor**
A. CHRISTINA RAVELO  
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
MARGARET A. MCCLUSKEY  
Coastal circulation processes

**Associate Adjunct Professor**
JEFFREY D. PADUAN  
Coastal ocean dynamics, surface currents, wave heights, wind and tidal forcing from high-frequency radar data
C. SCHOLIN  
Species-specific DNA probes, algal bloom species
RANDALL S. WELLS  
Behavioral ecology and conservation biology of small cetaceans

**Assistant Adjunct Professor**
JOHN CARLOS GARZA  
Population and ecological genetics of marine organisms

**Lecturer**
EDWARD P. DELONG  
Marine microbial ecology, diversity, and phylogeny
JOEL GOLDMAN  
Phytoplankton ecology, microbial food chain dynamics
MARCIA GOWING  
Marine plankton ecology, polar biology
THOMAS GULDERSON  
Paleoceanography, tracer chemistry, carbon cycle, climate change

**Professor**
DANIEL P. COSTA (Biological Sciences)  
Physiological ecology of marine mammals and birds
PHILIP CREWS (Chemistry)  
Marine natural products chemistry, bioorganic chemistry, organic structural analysis by NMR, natural products of marine macro- and microorganisms
STANLEY M. FLATT (Physics)  
Wave propagation in random media, geophysics
A. RUSSELL FLEGAL (Environmental Toxicology)  
Anthropogenic perturbations of biogeochemical cycles
**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 advisors. 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 their parent discipline. An oral and a 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 area 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**
  Paleoclimatology, and sediment geochemistry are the focus in this pathway. Research areas include the history of global geochemical cycles and composition of the ocean on various timescales, the fate and diagnosis 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 paleoclimate 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.

**Marine Sciences Master's Degree Program**

The Ocean Sciences Department offers a master of science degree in marine sciences. The degree combines core courses and electives to provide depth and breadth in ocean sciences, with a focused thesis to provide expertise 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's 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 sciences seminar; and complete a master's thesis. An introduction to the marine environment stressing the interaction of physical, chemical, and biological processes in the ocean provides the oceanographic background needed for studies in marine biology. Students taking the prerequisite course must concurrently enroll in the course with permission from the instructor. Prerequisite(s): Chemistry 1C and Mathematics 11B or 1B, J. Zehr, The Staff

**Upper-Division Courses**

**101. The Marine Environment, W**

An introduction to the marine environment stressing the interaction of physical, chemical, and biological processes in the ocean. Prerequisite(s): one of the following courses: Introduction to Marine Science, Physical Oceanography, and Marine Microbial Ecology.

**102. Oceans and Climate Past, Present, and Future, S**

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. Prerequisite(s): one of the following courses: Oceanography 1 and 11 or 1A, B. Kudela.

**118. 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 212. Prerequisite(s): Biology 109C or 109D, and Chemistry 1C.

**124. Aquatic Organic Geochemistry, S**

Introduction to organic geochemistry with emphasis on aquatic environments. Explores how non-living organic matter shapes biogeochemical cycles by carrying and sequestering reduced carbon and major nutrients and examines influence of chemical structure and environmental factors on transport and fate of organic molecules. Provides an introduction to organic biomarkers. Students cannot receive credit for this course and course 224. Prerequisite(s): basic college chemistry (Chemistry 1B, 1C); at least one quarter of college level organic chemistry required (e.g., Chemistry 7). M. M. McCarthy

**130. Ocean Processes and Ecology, S**

This course looks at marine productivity from the standpoint of understanding photosynthesis. The first half will examine in detail how photosynthesis works; the second half covers controls, measurements, and global importance, including modern measurement techniques, satellite oceanography, and global warming. Prerequisite(s): previous course in ocean sciences recommended. Formerly Productivity (in the Sea.) 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 populations, food web, deep-sea pelagic and benthic ecology, fisheries oceanography, and human effects on the open ocean. Prerequisite(s): one ocean sciences course recommended. M. Silver

**156. Marine Plankton, S**

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. Prerequisite(s): one ocean sciences course recommended. M. Silver

**156L. Marine Plankton Laboratory (2 credits), S**

Two lab meetings weekly. Concerned primarily with evaluation of local plankton forms. Must be taken concurrently with course 156. Prerequisite(s): one of the following: Biology 118, 124, or 240; or Biology 136, 146, or 170. M. Silver

**157. Ecology of Reefs, Mangroves, and Seagrasses, W**

Integrated treatment of coral reefs, se 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. Prerequisite(s): one of the following: Biology 158. M. Silver

**Graduate Courses**

**214. Aquatic Geochemistry, S**

Introduction to the physics of the ocean-atmosphere system. Structure of the ocean and atmosphere. Energy bal-
ance 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 marine 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 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 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 chemical interactions of the oceans with the biosphere, atmosphere, and lithosphere. Topics include biogeochemical cycles and the use of chemical tracers to study oceanic and coastal processes. Course designed for graduate students; available to upper-division science majors. K. Bruland

*224. Aquatic Organic Geochemistry.
Introduction to organic geochemistry with emphasis on aquatic environments. Explores how non-living organic matter shapes biogeochemical cycles by carrying and sequestering reduced carbon and major nutrients and examines influence of chemical structure and environmental factors on transport and fate of organic molecules. Provides an introduction to organic biomarkers. Students cannot receive credit for this course and course 124. Prerequisite(s): permission of instructor. Enrollment restricted to graduate students. M. McManus

230. Ocean Processes and Ecology, S
This course looks at marine productivity from the standpoint of understanding photosynthesis. The first half will examine in detail how photosynthesis works; the second half covers controls, measurements, and global importance including modern measurement techniques, satellite oceanography, and global warming. Prerequisite(s): previous course in ocean sciences recommended. Enrollment restricted to graduate students. R. Kudela

238. Comparative Toxicology, S
Emphasizes the physiologic and biochemical basis of toxicity across organism systems and animal species, including the types of cellular response to toxic compounds and the role of organ system structure/function in susceptibility to toxicity. Students cannot receive credit for this course and Biology 134 and 234, and Environmental Toxicology 134 and 234. (Also offered as Biology 234. Students cannot receive credit for both courses.) Enrollment limited to 12. Enrollment restricted to graduate students; seniors with permission of instructor. T. Staff

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 biota. Students cannot receive credit for this course and course 142. (Also offered as Biology 242. Students cannot receive credit for both courses.) Prerequisite(s): Biology 20A-B-C and 20L or an equivalent introductory biology sequence with lab; one ocean sciences course recommended. Enrollment restricted to graduate students. M. Silver

280. Marine Geology. F
Geology of the marine environment. Topics include controls on the types, origin, and distribution of marine sediments; geology of oceanic crust; evolution of continental margins and plate boundaries; introduction to paleoceanography. Students cannot receive credit for this course and Earth Sciences 102. Enrollment restricted to graduate students. M. Daney

290. Proseminar.
Special topics in marine sciences to be offered from time to time by professors and staff members.

*A. Topics in Chemical Oceanography.
A weekly seminar series covering recent developments in chemical oceanography. Different topics and approaches will be stressed from year to year. May be repeated for credit. K. Bruland

*B. Topics in Biological Oceanography.
Explores different problems of special interest in biological oceanography. Different topics and approaches will be stressed from year to year. May be repeated for credit. M. Silver

*C. Topics in Marine Geochemistry.
Selected topics in geochemistry. Discussion of theoretical models, different approaches, and recent research. Topics vary from year to year. May be repeated for credit. M. Daney

*D. Topics in Marine Microbiology.
A weekly seminar series covering topics in environmental microbiology. Topics vary from year to year, and will include research in ecology, methodology, biochemistry and physiology of bacteria. Emphasis on the role of bacteria in biogeochemical cycling from microzone to global scales, with particular focus in marine systems. May be repeated for credit. J. Zehr

E. Topics in Climatic and Oceanic Change. F
Weekly seminar series covering recent developments in climatic and oceanic change. Different topics and approaches stressed from year to year. Prerequisite(s): interview with instructor prior to first class meeting. (Formerly Topics in Paleoclimatology.) May be repeated for credit. A. Ravolo

*G. Topics in Physical Oceanography.
Weekly seminar series covering topics in physical oceanography as well as biological-physical interactions in the oceans. Different topics and approaches stressed from year to year. Enrollment restricted to graduate students; undergraduates may enroll with permission of instructor. May be repeated for credit. M. McManus

H. Topics in Ocean Optics. S
Examines recent developments and application of biophotonics to the marine environment, including theory, instrumentation, and remote sensing. Different topics and approaches emphasized from year to year. Prerequisite(s): previous course in marine sciences recommended. Enrollment restricted to graduate students; seniors and graduate students with permission of instructor. May be repeated for credit. R. Kudela

J. Topics in Marine Organic Geochemistry.
Examines recent developments in use of organic geochemistry to trace oceanographic and biogeochemical processes. Focuses on introduction to organic biomarkers, 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 recommended. Enrollment restricted to graduate students; seniors with instructor’s permission. May be repeated for credit. M. McManus

K. Dynamics of Marine Ecosystems. S
Focuses on both physical and biological oceanography to further our understanding of how marine ecosystems function. The question of scale, both spatial and temporal, will be addressed. The class will be divided into three parts. Part A: processes on scales less than 1 km (e.g., biology and boundary layers, vertical structure and biology of the mixed layer). Part B: processes on scales from 1–1000 km (e.g., coastal upwelling regions, fronts and the accumulation of biological material, tides and waves and their effect on larval transport). Part C: processes on scales of 1000 km and greater (e.g., ocean basin circulation, the biology of major currents, rings and eddies; variability in ocean circulation and its biological consequences; the global ocean and climate change physical and biological aspects). Prerequisite(s): previous course in ocean sciences required. Enrollment restricted to graduate level standing and seniors with instructor approval. May be repeated for credit. M. McManus

N. Topics in Marine Ecological Modeling (3 credits). F
Reviews widely used models in marine ecology with emphasis on the thought processes leading to their formulation. Students learn skills necessary to develop models of their own. Enrollment limited to 20. Enrollment restricted to graduate students or approval for advanced undergraduates. M. Kinney, M. Silver

292. Seminar (no credit). F, W, S
Weekly seminar on various topics attended by faculty, graduate, and upper-division undergraduate students. T. Staff

293. Graduate Research Seminar (2 credits). S
Weekly seminar series covering a spectrum of topics in oceanography. Designed for Ph.D. program graduate students in ocean sciences and those in biology, Earth sciences, chemistry, and physics with research interests in oceanography. Enrollment restricted to graduate students. May be repeated for credit. T. Staff

294L. Ocean Ecology Laboratory. S
Provides hands-on introduction to laboratory and field applications of ocean ecology. Designed to augment lecture material from courses 218, 230, and 242; but this class is self-contained. Includes independent projects and field trips. Prerequisite(s): courses 218, 230, 242 or equivalent recommended. Enrollment restricted to graduate students or permission of instructor. May be repeated for credit. T. Staff

296. Teaching in Ocean Sciences (2 credits). F
For new and/or relatively inexperienced graduate students in pedagogy of ocean sciences. Role and responsibilities of teaching in ocean sciences described and developed. Includes discussions about effective teaching methods; hands-on issues for work in the laboratory; university expectations; and regulations regarding teaching, organizational strategies, time management, and working with instructors and staff. Prerequisite(s): graduate standing or permission of instructor. Enrollment restricted to graduate students. M. McManus

297. Independent Study, F, W, S
Independent reading, research, and written reports not related to thesis research. Prerequisite(s): petition on file with sponsoring agency. T. Staff

Prerequisite(s): petition on file with sponsoring agency. T. Staff
**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 of the greatest historical, intellectual, and personal interest.

The department offers courses that relate these traditional philosophical questions to contemporary work in linguistics, literature, and the social and natural sciences. In addition, the department offers several courses 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.

The study of philosophy enables students to expand their abilities in critical thinking and reasoning as well as to improve their skills in verbal and written communication. Students may major or minor in philosophy. The department also offers a major in philosophy with a concentration in religious thought.

Philosophy prepares students for many careers as well as for most professional schools, including law and medicine. Students who wish to go to graduate school 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). For the lower-division required courses and for some history of philosophy courses, students may petition to substitute courses taken at other institutions. These 11 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 Honors in the evaluation for that course. In addition to Honors in an advanced seminar, graduating seniors with a distinguished record of achievement in their philosophy courses may be awarded Honors or Highest 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

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**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 consider-
ing 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 required 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 course 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’s 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 a wide 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, 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.
- **Languages:** Knowledge of foreign languages will be individually determined based on the relevance of such linguistic skills to the research interests of the student.
- **Qualifying examination:** near the end of required course work, Ph.D. students will develop a research project and write a detailed dissertation prospectus. The qualifying examination, which will normally take place in the student’s third year of study, will consist of an oral examination conducted by the qualifying examination committee, which will include an outside member, on the research proposal.
- **Dissertation:** The final requirement for the Ph.D. degree is an oral presentation of a dissertation representing an original contribution to philosophical research.

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. paper:** as an M.A. student approaches the completion of 45 credits, he or she submits a master’s paper which will form the basis of an oral examination. The oral examination will be conducted by a committee of two faculty members and must occur before the end of the second year of study.

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@ucsc.edu. Further information regarding the program may be requested from the Department of Philosophy at (831) 459-4578, fax: (831) 459-2650, philgrad@ucsc.edu. Visit the web site at http://humanities.ucsc.edu/ph/home.html.

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: IH.) J. Chung

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: IH.) J. Ellis J. Nau

21. Wilderness Studies. S

Through 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. D'oris

*22. Introduction to Ethical Theory.* A consideration of ethical issues and theories focusing on the foundation 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: IH.) J. Tannenbaum


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: IH.) J. Tannenbaum

26. Existentialism and After. F

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: IH.) R. Goff


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 traditional 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: IH) D. Guevara

80. Topical Introductions.

*D. Death and Mortality.

Death as a source of moral and philosophical thought. Death and the self; death, writing, and language; Holocaust and death by technology. Enrollment limited to 60. (General Education Code: T4-Humanities and Arts.) R. Goff


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 Chemistry and Biochemistry 080G. Students cannot receive credit for both courses.) (General Education Code: T2-Natural Sciences.) D. Danner, E. Suckief

*H. 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: T4-Humanities and Arts.) R. Otte

L. Language and Mind: Chomsky's Program. S

A critical overview of the research program initiated by Noam Chomsky and its implications for theories of the human brain. (Also offered as Linguistics 080D. Students cannot receive credit for both courses.) Enrollment limited to 80. (General Education Code: T5-Humanities and Arts or Social Sciences.) G. Pullum

S. 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: T6-Natural Sciences or Humanities and Arts.) R. Otte

*T. Introduction to Feminist Philosophy.

A survey of key authors, texts, and issues constituting recent feminist philosophy. Authors such as Wolff, 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: T4-Humanities and Arts.) J. Hoy

91. Ancient Greek Philosophy. F

A study of Socratic method, of Platonic metaphysics, epistemology, and ethical theories, and of Aristotle's moral and political views through intensive reading of selected Platonic dialogues and Aristotelian texts. (Formerly course 101.) The Staff

92. The Rationalists. S

A study of the historical background and the present relevance of Descartes, Spinoza, and Leibniz. D. Guevara

93. The Empiricists. W

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. The Staff

94. The Empiricists. W

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. The Staff

95. Tutorial. F, W, S

The Staff

Upper-Division Courses

106. Kant, W

Intensive study of Kant's philosophy, particularly his epistemology and metaphysics developed in his Critique of Pure Reason. Prerequisite(s): one course in philosophy. D. Guevara

108. Nineteenth-Century Philosophy, F

A study of some European philosophers of the nineteenth century, with particular attention to Hegel, Schopenhauer, and Nietzsche. Prerequisite(s): one course in philosophy. 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. Prerequisite(s): course 11 or one course in the history of philosophy. (Formerly Twentieth-Century French Philosophy) J. Hoy

*110. Heidegger.

A close study of early and late texts by Martin Heidegger, especially Being and Time. Prerequisite(s): two courses in philosophy. J. Hoy

112. American Philosophy. S

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. Prerequisite(s): one course in philosophy. E. Suckief

113. The Origins of Analytic Philosophy. S

An examination of the beginnings of analytic philosophy, with primary interest in the reformulation of traditional philosophical problems by Frege, Russell, and the early Wittgenstein. Some attention is also paid to the development of Vienna Circle logical positivism (Schlick, Carnap, Waisman). May be repeated for credit. The Staff


Study of formal methods commonly used in analytic philosophy. Emphasis is on developing the technical tools to enable one to read and do modern analytic philosophy. Applications of various formal tools to philosophical problems will also be discussed. 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 this course and course 217. Prerequisite(s): course 9. Enrollment limited to 40. 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

121. Knowledge and Rationality. F

An investigation of modern theories of knowledge, justification, and rationality. One course in philosophy is strongly recommended prior to taking this course. J. Ellis

122. Metaphysics. S

Focuses on one or two topics selected from among the central issues in metaphysics. Topics may include causality; possibility and necessity; universals and particulars; time, change, and identity over time. Prerequisite(s): one course in philosophy. The Staff

123. Philosophy of Language. W

Current theories of the nature and preconditions of language, 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 philosophy, psychology, or linguistics. The Staff

*125. Philosophy of Science.

An examination of various topics that arise in thinking about science. Different philosophical problems, such as realism, instrumentalism, confirmation, explanation, space and time, and rational decision making are extensively discussed and criticized. R. Otte

133. Philosophy of Mind. W

An exploration of the mind-body problem. What is the relationship between mind and brain? Can consciousness be explained in physical terms? Prerequisite(s): one course in philosophy. J. Ellis

135. Philosophy of Psychology. F

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, juniors, and seniors. The Staff

139. Freud. S

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, defense, wish-fulfillment, unconscious fantasy, dreams, symptoms, transference, cure, sexuality) and emphasizing the underlying model of the mind and mental functioning. (Also offered as Psychology 163. Students cannot receive credit for both courses.) Offered in alternate academic years. J. Neu

*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 emphasis on the relation to contemporary issues. D. Guevara

*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 philosophy majors. J. D’Oris

*142. Advanced Ethics.

An examination of central issues in ethical theory including the nature of and justification for the moral point of view,
the place of reason in ethics, the status of moral principles, 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. W 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 Legal Studies 144. Students cannot receive credit for both courses.) Prerequisite(s): one course in philosophy. Offered 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 genetic engineering, cloning, human embryo research, genetic experimentation, use of an individual's genetic information, and the manipulation of human evolution. Also discusses fundamental issues such as the moral responsibility of scientists, our obligations to future generations, and the notion of human perfectability. Prerequisite(s): one philosophy course. E. Suckiel

146. Philosophy of Law. W Exploration 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 Legal Studies 146. Students cannot receive credit for both courses.) J. Nun

147. Women: The Philosophical Issues. S 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 Women's Studies 168. Students cannot receive credit for both courses.) J. Hoy

*152. Aesthetics. Problems about form, meaning and interpretation in art, as found in major aesthetic theories from the philosophical 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: A.) R. Goff

154. Philosophy in Literature. F Story, drama, and poetry considered as sources of philosophical perspective or as particular challenges to philosophical 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. W 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. Prerequisite(s): one course in philosophy. R. Goff

171. Faith and Reason. F Recent work in analytic philosophy of religion, concentrating 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. R. Ötte

*174. Spirituality and the Sacred. An examination of the personal, moral, and aesthetic elements of spirituality, their relationship to the individual’s idea of the sacred, and to philosophical and rational assessments of religion. Prerequisite(s): one philosophy course. E. Suckiel

180H. Philosophy Colloquium (2 credits). F,W,S A colloquia series that sponsors four speakers each quarter. 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. J. Tannenbaum

190. Advanced Seminars.

*B. Nietzsche. Intensive reading of not only Nietzsche's own texts, but important contemporary interpretive works on Nietzsche. Mainly covers nihilism and the aestheticization of existence, will-to-power, genealogy and interpretation, and Nietzsche's use or misuse for feminism. Enrollment limited to 20. Enrollment restricted to junior and senior philosophy majors. J. Hoy

*C. Advanced Topics in Contemporary Ethics. Examines one or more leading ethical theories, such as Kantianism, Virtue Theory, Consequentialism, and Husman ethical theory. Examines different foundational ethical principles and arguments for those principles, contrasting accounts of moral action and moral motivation, as well as epistemological and motivational role of emotions in ethical theory. Students cannot receive credit for this course and course 290C. Prerequisite(s): course 140 or 142 and one other upper-division philosophy course. Enrollment limited to 22. Enrollment restricted to junior and senior philosophy majors. May be repeated for credit. J. Tannenbaum

D. Kant’s Moral Theory. F A careful study of Kant’s moral theory, with an emphasis 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. E. Guevara

E. Kierkegaard. W Close study and discussion of major works by Soren Kierkegaard. Assessment of his influence on twentieth-century philosophy, literature, psychology, and religious thought. Enrollment limited to 20. Enrollment restricted to junior and senior philosophy majors. R. Guevara

F. 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 limited to 20. Enrollment restricted to senior philosophy majors. D. Hoy

*I. 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 limited to 20. Enrollment restricted to juniors and seniors. R. Goff

*J. 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. D. Guevara

*K. 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 of work in the phenomenological tradition. Among authors read: Ayer, Evans, Gibson, Gurwitsch, Husserl, Marr, Merleau-Ponty, Peacocke, and Strawson. Students cannot receive credit for this course and course 290K. Prerequisite(s): two philosophy courses. Enrollment limited to 20. Enrollment restricted to junior and senior philosophy majors. The Staff

*L. The Emotions. Analysis of particular emotions (e.g., jealousy, boredom, regret) and exploration of general theoretical issues (e.g., expression, control) with emphasis on moral psychology. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 20. Enrollment restricted to junior and senior philosophy majors. (General Education Code: W.) J. Nun

*M. William James. Intensive study of James's philosophy, including his psychological 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. (General Education Code: W.) E. Suckiel

*N. 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. R. Ötte

*O. 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. R. Ötte

*S. 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. May be repeated for credit. R. Ötte

*T. 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 Stud-
ies 194). Students cannot receive credit for both courses. Prerequisite(s): course 147 or Women’s Studies 100. Enrollment limited to 20. J. Høy

**W. 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 limited to 20. Enrollment restricted to junior and senior philosophy majors. D. Høy

**X. The Good Life. S**

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 limited to 20. Enrollment restricted to junior and senior philosophy majors. E. Suñol

**Y. Insults and Intentions. F**

Schoolyard wisdom about “sticks and stones” does not take one very far: insults not only take the form of words, and even words have effects; popular as well as standard legal distinctions between speech and conduct are, at least, as problematic as helpful. Questions to be addressed include: What kind of injury is an insult? Is its infliction determined by the Insultor? Philosophical, anthropological, psychoanalytical, and legal approaches to questions emphasized. Enrollment limited to 22. Enrollment restricted to juniors and seniors. J. Núñez

**Z. Moral Psychology.**

An interdisciplinary seminar on topics in moral psychology: moral development, moral education, and moral personality. There are empirical questions: e.g., how do developing persons develop moral concern, and what facilitates this development? But inescapably normative questions quickly arise: e.g., what is properly moral concern, and what, if anything, makes some forms of moral concern “more developed” than others? The aim is to make sense of both sorts of questions, and see their interaction. Prerequisite(s): one psychology course, and course 22 or 24 or permission of instructor. Enrollment limited to 20. Enrollment restricted to seniors and juniors. J. Dörfler

**192. Directed Student Teaching.**

Teaching of a lower-division course under faculty’s supervision. (See course 42.) T he Staff

**195A. Senior Essay. F, W, S**

Preparation of senior essay (approximately 25 pages) during one quarter. Prerequisite(s): petition on file with sponsoring agency. T he 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. Prerequisite(s): petition on file with sponsoring agency. T he Staff

**199. Tutorial. F, W, S**

T he Staff

**199F. Independent Study (2 credits). F, W, S**

Prerequisite(s): petition on file with sponsoring agency. T he Staff

**Graduate Courses**

**200A. Political and Social Thought Core Seminar: Politics of Recognition. F**

Investigates issues about identity and recognition as basis for claims about institutional legitimacy and social struggle. Paradigm is Heidegger’s account of existence as a cleavage between 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 limited to 15. Enrollment restricted to politics and philosophy graduate students. R. M. ester, D. Høy

**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 students in philosophy. J. Tannenbaum

**217. Intermediate Logic. S**

Natural deduction and semantics of first order predicate logic. Meta-theory, including completeness theorems for propositional and predicate logic. Students cannot receive credit for this course and course 117. Prerequisite(s): course 9. Enrollment limited to 40. Enrollment restricted to graduate students. T he Staff

**222. Metaphysics. S**

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 limited to 10. Enrollment restricted to graduate philosophy majors. T he Staff

**223. Recent European Philosophy. F**

Seminar on recent developments in European philosophy, with particular attention to German theorists such as Nietzsche, Heidegger, Gadamer, Horkheimer, Adorno, or Habermas. 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 limited to 15. Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. D. Høy

**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 truthful; 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 limited to 10. Enrollment restricted to graduate philosophy majors. T he Staff

**231. Metaphysics and Epistemology. W**

Focuses on 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, universal, and existence. Enrollment limited to 22. Enrollment restricted to graduate philosophy majors. R. Otte

**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 limited to 15. Enrollment restricted to graduate students. May be repeated for credit. J. Ellis

**235. Philosophy of Psychology. F**

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. Prerequisite(s): One course in philosophy, psychology, or linguistics. Enrollment restricted to graduate students. T he Staff

**240. The History of Ethics.**

Compares and contrasts two famous ethical works: Aristotle’s Nicomachean Ethics and Kant’s Grundwork for the Metaphysics of Morals. Traditionally, Aristotle and Kant are thought to offer opposing views of good action and good agents. Closely compares 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 probed with Scepticism, 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 141. Enrollment restricted to graduate philosophy majors. J. Dörfler

**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 graduate philosophy majors. E. Suñol

**252. Poststructuralism. S**

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 limited to 20. Enrollment restricted to graduate students. D. Høy

**290C. Advanced Topics in Contemporary Ethics. S**

Examines one or more leading ethical theories, such as Kantianism, Virtue Theory, CONSEQUENTIALISM, and Haman ethical theory. Examines different foundational ethical principles and arguments for those principles, contrasting accounts of moral action and moral motivation, as well as epistemological and motivational role of
emotions in ethical theory. Students cannot receive credit for this course and course 190C. Enrollment limited to 22. Enrollment restricted to graduate philosophy majors. 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 limited to 10. Enrollment restricted to graduate students. D. Guerra

290K. The Phenomenology of Perception. W The study of perception is an important and flourishing area of research within contemporary philosophy of mind and cognitive science. Seminar examines recent approaches to perception. Addresses whether it is possible, within the framework of contemporary science, to provide an account of the nature of perceptual experience. Provides a venue for intense collaborative investigations of a family of issues concerning the nature of perceptual consciousness and the mind. Students cannot receive credit for this course and course 190K. Enrollment restricted to graduate students. The Staff

*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 limited to 20. Enrollment restricted to graduate students. 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 limited to 20. Enrollment restricted to graduate students. D. Hoy

290X. The Good Life. S 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 limited to 20. Enrollment restricted to graduate philosophy majors. E. Suckiel

294. Teaching-Related Independent Study. F,W,S Directed graduate research and writing coordinated with the teaching of undergraduates. Enrollment restricted to graduate students. May be repeated for credit. The Staff

295. Directed Reading. F,W,S Directed reading which does not involve a term paper. Enrollment restricted to graduate students. May be repeated for credit. The Staff

296. Special Student Seminar. F,W,S A seminar for graduate students arranged between students and a faculty member. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. The Staff

297. Independent Study. F,W,S Prerequisite(s): petition on file with sponsoring agency. The Staff

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**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 Science’s 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 Evolutionary Biology; Environmental Toxicology; Mathematics; Molecular, Cell, and Developmental Biology; Ocean Sciences; Physics; and the Science Communication Program.

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**Physical Education**

East Field House (831) 459-2531 http://www.usc.edu/opers

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<thead>
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<th>Faculty and Professional Interests</th>
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<tr>
<td><strong>Executive Director</strong></td>
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<td><strong>Associate Supervisor</strong></td>
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<td>International folk dance, M exican dance, modern dance, yoga</td>
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**Physical Education Instructor**

RYAN ANDREWS  Weight training, wellness and physical conditioning
JOHN BARDOS  Racquetball
COURTNEY BLACKBURN  Tai chi chuan, fencing
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 HOLOCHER  Soccer
JULIE KIMBALL  Yoga, swimming
RUSSELL KINGON  Sailing, rowing
PAUL LESTER  Soccer
DANIELLE LEWIS  Weight training, wellness
JOAN R. MCCALLUM  Swimming, lifeguard training, water safety
CYNTHIA MORI  Weight training, physical conditioning, wellness
DAVID MULDAWER  Tennis, weight training
KIM MUSCH  Swimming, lifeguard training, water safety
LISA K. NORRIS  Jazz dance, ballet
YOUSHIITO SHIBATA  Aikido
CECILIA SHIN  Scuba
SOONHO SONG  Taekwondo (karate)
PHILIP C. VANDEMBERG  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 in as many courses 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, recreational, or wellness programs; or an intercollegiate athletic team.

**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. Skills to be learned are: water entries, sculling, treading, elements, floating, breath holding, and rhythmic breathing.

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*Not offered in 2003–04*
and survival techniques. Prerequisite(s): instructor determination of skills level at first class meeting. Enrollment limited to 15. J. Kimball

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 backstroke. Skills to be learned are underwater swimming, turns, improvement of freestyle and elementary backstroke, beginning side stroke, backstroke, breaststroke, diving, personal safety skills, and basic rescue techniques. Prerequisite(s): instructor determines skill level at first class meeting: pass Swimming Level I course or demonstrate equivalent skills. Enrollment limited to 20. M. C'Callum, J. Kimball

5C. Aquatics: Swimming Level III (no credit), F
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 skills in freestyle, sidestroke, elementary backstroke, and breaststroke. Enrollment limited to 30. M. C'Callum

5D. Aquatics: Swimming Level IV (no credit), W,S
Coeducational. Advanced skills. Designed to perfect the techniques and skills of all basic strokes plus butterfly, surface dives, survival swimming, basic diving, endurance swimming, and personal and rescue skills. Prerequisite(s): pass in Swimming Level III course or possess equivalent swimming skill requirements in freestyle, backstroke, sidestroke, competitive swimming; instructor determines skill level. Enrollment limited to 30. M. C'Callum

5E. Aquatics: Lifeguard Training (LT). 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, ADMIN, and Title 22 First Aid. Candidates must successfully pass final skill tests and written final exam with 80 percent score. Prerequisite(s): must have ability to swim 500 yards in ten minutes, tread water for one minute, swim swimming skills in free, back, breast, side, and elementary backstroke; must pass Red Cross LT text book; students are billed for a course fee. Enrollment limited to 20. K. M uch, J. M. C'Callum

5F. Water Safety Instructor (WSI). S
Coeducational. A Red Cross course designed to certify students who complete all required work as swimming instructors. Instruction in teaching techniques, stroke analysis, skills and organization, pool safety, and pool maintenance. Practice teaching assignments outside of class with practical and written final exams. Screen 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 skill. (Emergency Water Safety (EWS), or Lifeguard Training (LT) certificate is highly recommended); students are billed for a course fee (includes textbook). Enrollment limited to 12. K. M uch, J. M. C'Callum

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. M uch, J. M. C'Callum

5H. Aquatics: Competitive Swimming (no credit), W
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. K. M uch

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. It is strongly recommended that students enroll in course 5S. Students are billed for a course fee. Prerequisite(s): pass swimming skills tests and medical clearance. 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 are billed for a course fee. Prerequisite(s): course 5R or pass swimming skills test and medical clearance. Enrollment limited to 18. 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 are also offered in conjunction with this course which cover a variety of diving skills. Each student is 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 to 22-foot rowing dinghies. Students are billed for a course fee. Prerequisite(s): basic rowing or permission of instructor. Enrollment limited to 12. R. Kingon

9C. Boating: Intermediate Sailing (no credit), F,W,S
Coeducational. Introductory course designed to cover more advanced rowing techniques and the skills needed for safe open water rowing. Students are billed for a course fee. Prerequisite(s): basic rowing or permission of instructor. Enrollment limited to 12. 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 151). 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 are billed for 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 dinghy 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 are billed for a course fee. Prerequisite(s): basic rowing or permission of instructor. 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, T. Staff

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. R. Hanan, C. George, J. Bardos

15N. Court Sports: Tennis (no credit). F,W,S
Coeducational. The beginning section introduces the basics of forehand, backhand, and serve. Advanced beginning 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 are billed for a course fee. Enrollment limited to 24. R. Hanan, D. Muldawer

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 under-
stand the rules. Competitive section is open to students interested in participation in the UCSC NCAA Women’s Volleyball team. It covers information and practice in all aspects of the competitive volleyball season. The Staff

20A. Dance: Ballet (no credit). F,W,S
Coeducational. Sections offered at various technical levels graded from 1 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 are billed for 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 1 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 II or III. Section in jazz dance repertoire where advanced students have the opportunity to perform is offered in spring quarter. Students are billed for 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 1 to III. Emphasis on modern techniques and building phrases of movement. Section in choreography and improvisation offered in spring quarter. Section in dance repertoire offered periodically. Students are billed for 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 theory behind the methodology of modern épée fencing. Sections offered at beginning and experienced levels. Students are billed for 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 in physical and mental conditioning leading to improved skill in recreational and competitive areas of involvement. Students are billed for 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 are billed for a course fee. C. Blackburn

Coeducational. Instruction and practice in intermediate offensive and defensive skills of modern Hungarian sabre technique. Emphasis on physical and mental condition-
PROGRAMS AND COURSES

Associate Professor

SUE A. CARTER
Experimental condensed matter physics, polymer physics, molecular electronics, phase transitions, electronic and optical properties of materials

ONUTTOM NARAVAN
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

WILLIAM ATWOOD
Galaxies, high-energy astrophysics, gaseous nebulae, cornetto

WILLIAM G. MATHEWS (Astronomy and Cosmology, galaxy formation, high-energy astrophysics

GEORGE R. BLUMENTHAL (Astronomy and Cosmology, the study of fundamental particles and interactions; the theory of strong and electroweak interactions; elementary particles, phase transitions, and dynamics of polymers such as DNA. Undergraduate students are actively involved in several condensed matter physics laboratories.

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 is, therefore, at the base of all modern science and technology; and, even at an elementary level, this fundamental nature can be appreciated.

The Physics Department offers majors in both physics and astrophysics. 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 appropriate courses in another discipline, the physics and astrophysics majors provide excellent preparation for advanced study in technical subjects such as biology, chemistry, engineering, geophysics, and the philosophy of science. The physics major, along with certain applied physics courses and in combination with courses in other disciplines, 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. Other physics faculty research interests include the study of waves in random media applied to geophysical problems and 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 theorists 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. UCSC 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 various 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 courses in the major program (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. The Physics 7A, 7B sequence is an algebra- and trigonometry-based sequence covering the basic ideas and applications of physics. The laboratory courses, 5L-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 and astrophysics 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 UCSC physics and astrophysics programs begin with a four-quarter presentation of the introductory concepts of the subject. Introduction to Physics This is followed by courses 101A and 101B, which provide an introduction to relativity and quantum physics. The programs continue with a two-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 are two intensive laboratory courses designed to illustrate both historical experiments in the development of physics and astrophysics 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 and astrophysics majors at UCSC, 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 have included particle physics, condensed matter physics, astrophysics, biophysics, and various applied technologies. The senior thesis is a distinctive part of the UC 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.

Pathways within the major. The basic physics major provides a student with the flexibility to prepare for a variety of career options. However, in their upper-division years, some students may wish a coherent emphasis in a particular subfield. This can be achieved by the selection of upper-division physics courses and by the choice of elective courses in neighboring disciplines. In addition to the standard physics major taken by most students, the Physics Department has developed a suggested program of courses corresponding to two pathways: applied physics and geophysics. For students interested in astrophysics, a distinct astrophysics major is offered. Descriptions of these programs are available in the department office.

Course Requirements

Physics

The minimum requirements for the major include 5A/L, 5B/M, SL/N, 5D, plus the following 11 upper-division courses: 101A, 101B, 105, 110A-B, 112, 114A-B, 133, 134, and 139A. In addition, students must pass at least two upper-division electives: one elective chosen from courses 129, 139B, or 155 and one elective from any other upper-division physics course or one of the following astronomy and astrophysics courses: 112, 113, 117, or 118. In some cases, the second elective requirement may be satisfied by an appropriate upper-division science or engineering course.

Astrophysics

The minimum requirements for the major include 5A/L, 5B/M, SL/N, 5D, plus the following upper-division courses: 101A, 101B, 105, 110A-B, 112, 114A-B, 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.

Comprehensive Requirement

Finally, for students who need 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 to 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.

<table>
<thead>
<tr>
<th>Sample Physics Major Planner</th>
<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>
<td></td>
</tr>
<tr>
<td>(frsh) Phys 5A/L</td>
<td>Phys 5B/M</td>
<td>Phys 5C/N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phys 10† (2 units)</td>
<td>college core</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Math 23B</td>
<td>Phys 101A</td>
<td>Phys 101B</td>
<td></td>
</tr>
<tr>
<td>(soph) Phys 5D (2 units)</td>
<td>Eng 27</td>
<td>Phys 114A</td>
<td>Phys 133**</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>Phys 105</td>
<td>Phys 110A</td>
<td>Phys 110B</td>
<td></td>
</tr>
<tr>
<td>(f) Phys 114B</td>
<td>Phys 112</td>
<td>Phys 134**</td>
<td>Phys 139A</td>
<td></td>
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<tr>
<td>Phys 133**</td>
<td>elective</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4th</td>
<td>Phys 195A</td>
<td>Phys 195B</td>
<td></td>
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</tr>
<tr>
<td>(sr) Phys 134**</td>
<td>elective</td>
<td></td>
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</tbody>
</table>

* Course 10 and other physics electives are recommended
** Courses 133 and 134 need only be taken once

Astrophysics Major Planner

<table>
<thead>
<tr>
<th>Sample Astrophysics Major Planner</th>
<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>
<td></td>
</tr>
<tr>
<td>(frsh) Phys 5A/L</td>
<td>Phys 5B/M</td>
<td>Phys 5C/N</td>
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<tr>
<td>Phys 10† (2 units)</td>
<td>college core</td>
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</tr>
<tr>
<td>2nd</td>
<td>Math 23B</td>
<td>Phys 101A</td>
<td>Phys 101B</td>
<td></td>
</tr>
<tr>
<td>(soph) Phys 5D (2 units)</td>
<td>Eng 27</td>
<td>Phys 114A</td>
<td>Phys 133**</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>Phys 105</td>
<td>Phys 110A</td>
<td>Phys 110B</td>
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</tr>
<tr>
<td>(f) Phys 114B</td>
<td>Phys 112</td>
<td>Phys 134**</td>
<td>Phys 139A</td>
<td></td>
</tr>
<tr>
<td>Phys 133**</td>
<td>Astr Elective</td>
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<tr>
<td>4th</td>
<td>Phys 195A</td>
<td>Phys 195B</td>
<td></td>
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</tr>
<tr>
<td>(sr) Phys 135</td>
<td>Astr Elective</td>
<td></td>
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</tr>
</tbody>
</table>

* Course 10 and other physics electives are recommended
** Course 133 need only be taken once

Depending on the student's interests, further preparation for graduate school in physics or astrophysics 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 to Physics at Santa Cruz, 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

Required for the minor in physics are courses 101A and 101B and six upper-division courses chosen from the following: 105, 110A-B, 112, 114A-B, 133, 134, and 139A-B.

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 or astrophysics 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 or astrophysics 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. First-year students also take 205, Introduction to Research (also required for the Ph.D. degree). 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 interests. 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, cosmology, and waves in random media. 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 waived by passing four sections of the written Ph.D. qualifying examination. Master's candidates are encouraged to write a research thesis and may do so 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), the University of California Observatories (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 Stanford Linear Accelerator Center and the Stanford Synchrotron Radiation Laboratory provides additional local research opportunities. UCSC faculty and graduate students also participate in research programs at CERN in Geneva, DESY in Hamburg, Los Alamos, Oak Ridge National Laboratory, and Fermilab in Batavia, Illinois.
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 calculational techniques are developed. Knowledge of high school algebra is desirable. (General Education Codes: IN, Q) T. Schalk

2. The Quantum Enigma. S
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 calculational techniques are developed. (General Education Codes: IN, Q) F. Kuttner, F. Bridges

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. Prerequisite(s): concurrent enrollment in course 5L is required. Corequisite: Mathematics 19A. (General Education Codes: IN, Q) D. Dorfan

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): course 5A/L or 6A/L; concurrent enrollment in course 5M is required. Corequisite: Mathematics 19B. (General Education Codes: IN, Q) W. Alwood

5C. Introduction to Physics III. S
Introduction to electricity and magnetism. Electromagnetic radiation, Maxwell's equations. Prerequisite(s): courses 5A/L or 6A/L; courses 5B/M recommended. Concurrent enrollment in course 5N is required. Corequisite: Mathematics 19B. (General Education Codes: IN, Q) A. Aguilé

5D. Heat, 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): course 5A/L or 6A/L, and Mathematics 19B. (Formerly course 12) S. Flatté

5L-M-N. Introduction to Physics Laboratory (1 credit per quarter). F-W-S-5
Laboratory sequence illustrating topics covered in 5A-5B-5C, respectively. One three-hour laboratory session per week. Prerequisite(s): Concurrent enrollment in 5A-B-C is required. Corequisite of Mathematics 19A for 5L, Mathematics 19B for 5M, and Mathematics 22 or 23A for 5N. 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 19. (General Education Codes: IN, Q) T. Schalk, R. Johnson

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; concurrent enrollment in course 6M is required. Corequisite: Mathematics 11B or 19B. (General Education Codes: IN, Q) D. Smith, 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; courses 6B/M are suggested; concurrent enrollment in course 6N is required. Corequisite: Mathematics 22 or 23A. (General Education Codes: IN, Q) F. Kuttner, F. Bridges

6L-M-N. Introductory Physics Laboratory (1 credit per quarter). F-W-W-S-5
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): concurrent enrollment in 6A-B-C is required. Corequisite of Mathematics 19A or 11A for 6L; Mathematics 19B or 11B for 6M; and Mathematics 22 or 23A for 6N. 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 Codes: IN, Q) D. Dorfan

7B. Elementary Physics II. S
A continuation of 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. (General Education Codes: IN, Q) D. Smith

7L-M. Elementary Physics Laboratory (1 credit per quarter). W,S
Laboratory sequence illustrating topics covered in 7A-B, respectively. One three-hour laboratory session per week. Concurrent enrollment in 7A-B is required. The Staff

10. Overview 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 5 sequence. J. Primack

14. Introduction to Vector Calculus with Applications (2 credits). F
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. S. Flatté

42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192). Prerequisite(s): petition on file with sponsoring agency. The Staff

80A. Physics and Psychophysics of Music. F

80C. Cosmology and Culture. W
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: T7-Natural Sciences or Social Sciences.) J. Primmick

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 101A. B. Schumm

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 5B/M and 5C/N or 6B/M and 6C/N; course 114A. C. Hesch

*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): course 114A and 114B. S. Flatté

*Not offered in 2003-04
110A-B. Electricity, Magnetism, and Optics. W-S
Maxwell's equations, electrostatics, magnetostatics, induction, electromagnetic waves, physical optics, and circuit theory. Prerequisite(s): course 114B; course 110A. O. Narayan, B. Schumm

112. Thermodynamics and Statistical Mechanics. W
Consequences of the first and second laws of thermodynamics, elementary statistical mechanics, thermodynamics of irreversible processes. Prerequisite(s): course 101A and 101B. A. Young

114A-B. Mathematical Methods in Physics. S-F
A: Infinite series and power series, complex numbers, Fourier series, linear algebra including matrix diagonalization, systems of differential equations, coordinate transformations and tensor analysis, calculus of variations. B: Functions of a complex variable including the residue theorem, integral transforms, special functions including the gamma, beta, and error functions, Legendre polynomials and Bessel functions, partial differential equations and boundary value problems, Green function techniques and the delta function. B is offered in fall; A is offered in spring. Prerequisite(s): course 5C/N or 6C/N and Engineering 27 (formerly Mathematics 27); Mathematics 23A/B or equivalent; course 114A is prerequisite to 114B. A. Young

*115. Computational Physics.
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 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 develop appropriate error and stability estimates. Prerequisite(s): courses 101B, 105, 114A, and 114B, or equivalent. Basic programming experience in C or Fortran. No previous experience with Mathematica is required. Offered in alternate academic years. A. Young

120. Polymer Physics. W
Statistical properties polymers; scaling behavior, fractal dimensions; random walks, self avoidance; single chains and concentrated solutions; dynamics and topological effects in melts; polymer networks; solution, blend; application to biological systems; computer simulations. Prerequisite(s): course 112. J. Deutsch

129. Nuclear and Particle Physics. W
Properties and classification of the elementary particles, their weak and strong interactions, nuclear physics, high energy phenomena analyzed by quantum mechanical methods, experimental methodology. Prerequisite(s): course 139A; students with equivalent course work may contact instructor for permission to enroll. C. Haber

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. Prerequisite(s): courses 5C/N or 6C/N; course 101A or equivalent is recommended. F. Kuttner, D. Williams

134. Physics Advanced Laboratory, F,W
Individual experimental investigations of basic phenomena in atomic, nuclear, and solid state physics. Prerequisite(s): course 133. May be repeated for credit. S. Carter, F. Bridges

135. Astrophysics Advanced Laboratory, F
Introduction to the 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. (Also offered as Astronomy and Astrophysics 135. Students cannot receive credit for both courses.) Prerequisite(s): course 133 and at least one astronomy course. R. Dwyer

139A-B. Quantum Mechanics. S-F
The principles and mathematical techniques of nonrelativistic quantum mechanics: the Schrödinger equation, Dirac notation, angular momentum, approximation methods, and scattering theory. A offered in spring; B is offered in fall. Prerequisite(s): courses 101A and 101B and 114B. T. Banks, O. Narayan

143. Supervised Teaching (2 credits). F,W,S
Supervised tutoring in selected introductory courses. Students should have completed course 101A and 101B as preparation. Prerequisite(s): petition on file with sponsoring agency. The Staff

152. Optoelectronics. S
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. Prerequisite(s): courses 101A and 101B. S. Carter

155. Solid State Physics. W
Interatomic forces and crystal structure, diffraction, lattice vibrations, free electron model, energy bands, semiconducotor theory and devices, optical properties, magnetism, magnetic resonance, superconductivity. Prerequisite(s): course 139A; students with equivalent course work may contact instructor for permission to enroll. D. Belanger

160. Practical Electronics. S
Provides practical knowledge of electronics that experimentalists generally need in research. The course assumes no previous knowledge of electronics and progresses according to the interest and ability of the class. Based upon weekly lectures. However, with the aid of the instructor, the students are expected to learn mainly through the design, construction, and debugging of electronics projects. Prerequisite(s): courses 5C/N or 5N and 6C/N. Offered in alternate academic years. D. Dorfan

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 Astronomy and Astrophysics 171. Students cannot receive credit for both courses.) Prerequisite(s): course 105, 114B, and 110B. H. Haber

190. Special Topics. F,W,S
A formal lecture course on special topics of interest to undergraduates but which are not a permanent part of course offerings. With consent of instructor: May 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.) Prerequisite(s): upper-division standing; submission of a proposal supported by a faculty member willing to supervise. The Staff

195A. Senior Thesis Research (3 credits). F
A seminar course to help students explore their theses topics and plan, organize, and develop their theses. Choosing a thesis topic, preparing a work plan for the research, assembling an annotated bibliography, and writing a draft outline of the thesis. Students must complete 5 credits in the 195 series to satisfy the writing intensive (W) general education requirement. Prerequisite(s): satisfaction of Subject A and Composition requirements. Z. Schlesinger

195B. Senior Thesis Research (2 credits). W
Seminars to help students explore their theses topics and plan, organize, and develop their theses. Refining the thesis outline; preparing draft sections, preparing a written progress report; delivering an oral progress report. Students must complete 5 credits in the 195 series to satisfy the writing intensive (W) general education requirement. Prerequisite(s): satisfaction of the Subject A and Composition requirements. (General Education Code: W) Z. Schlesinger

199. Tutorial. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Graduate Courses

205. Introduction to Research in Physics (2 credits). W
Lectures by USCSC faculty on current areas of physics research being carried out locally. Topics of the presentations include elementary particle physics, condensed matter and solid state physics, fluids, waves in random media, nonlinear dynamics, biophysics, and cosmology. Enrollment restricted to graduate students only, except by permission of instructor. J. Primack

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. R. Johnson

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

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, Debye length, adiabatic invariants, wave propagation in plasmas, 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. O. Narayan

214. Electromagnetism II. W
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 radia tion damping. Prerequisite(s): course 212. Enrollment

*Not offered in 2003–04
restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. S. Shastry

215. Introduction to Non-Relativistic Quantum Mechanics. W
Mathematical introduction; fundamental postulates: time evolution operator, including the Heisenberg and Schroedinger 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. H. Haber

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 spaces/number representation, field operators and Green functions; applications: electron gas; quantization of the electromagnetic field and interaction of radiation with matter; absorption, emission, scattering, photoelectric effect, and lifetimes. Prerequisite(s): course 215. Enrollment restricted to graduate students only, except by permission of instructor. M. Dine

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. M. Dine

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. M. Dine

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. S
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. S. 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. A. Seldon

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 217 or concurrent enrollment. Enrollment restricted to graduate students only, except by permission of instructor. A. Seldon

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. (Formerly Weak Interactions) 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. S
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.) (Formerly The Very Early Universe) Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. J. Primack

226. General Relativity, W
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. Aguiche

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. F. Bridges

Magnetism (para, ferro, anti-ferro, ferrite), 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. A. Young

A special topics course which includes areas of current interest in condensed matter physics. Possible topics include superconductivity, phase transitions, renormalization group, disordered systems, surface phenomena, magnetic resonance, and spectroscopy. Prerequisite(s): course 231. Enrollment restricted to graduate students only, except by permission of instructor. Offered in alternate academic years. T. Staff

240. Polymer Physics. W

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): courses 101B, 105, 114A, and 114B or equivalent; 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

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. H. Haber

290. Special Topics.
A series of lectures on various topics of current interest in physics at UC 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. M. Dinten, H. Haber

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. D. Dorfan

297. Independent Study. F,W,S
Enrollment restricted to graduate students only, except by permission of instructor. T. Staff

*Not offered in 2003-04
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

M. K. BROWN, Chair
American politics and public policy, the political development of welfare states, political economy, African American politics since the New Deal

J. PETER EUBEN, Emeritus

ISEBILL V. GRIEH, Emerita

BRUCE D. LARKIN
Global politics, disarmament, theory of war, Chinese politics and society

RONNIE D. LIPSCHUTZ
International relations, international political economy, foreign policy, resource/environment politics, global political networks, global civil society, film, fiction, and politics, technology and society

JOHN A. MARCU, Emeritus

ROBERT L. MEISTER
Political and moral philosophy, law and social theory, Marxist theory, institutional analysis, antidiscrimination law

JOHN H. SCHAAR, Emeritus

DAVID J. THOMAS, Emeritus

MICHAEL E. URBAN
Russian politics, postcommunist transitions, U.S.-Russian relations, political language and ideology, revolution

GEORGE E. VON DER MULLH, Emeritus

DANIEL J. WIRLS
American politics, including national political institutions (Congress and the President; public policy (military and foreign policy) and political history

**Assistant Professor**

ANETTE CLEAR
Southeast Asian politics, global organizations, international comparative democratization, transnational social movements

VANTA SETH
Modern political theory, political movements, feminist theory, history, and practice

MEGAN THOMAS
Political theory, culture and identity, comparative nationalism and colonialism, Orientalism, Southeast Asia

**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

DEAN MATHEWETZ
Political theory, philosophy of language, political economy, American political thought, public and constitutional law

ELEONORA PASOTTI
European politics, comparative politics, democratization, public policy, political economy, methodology

**Lecturer**

JEREMY ELKINS
Jurisprudence, moral and political philosophy, administrative law and regulation, law and politics

**Affiliated Graduate Faculty**

**Professor**

EDMUND BURKE III (History)

BARBARA EPSTEIN (History of Consciousness)

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)

CRAG REINARMAN (Sociology)

ALAN RICHARDS (Environmental Studies)

DAVID WELLMAN (Community Studies)

DONALD A. WITTEN (Economics)

**Associate Professor**

ANDREW SZEZ (Sociology)

**Lecturer**

SUZANNE JONAS (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 happens 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 problem 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 270, 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.

Many 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.

**BA and MA Program**

The bachelor’s degree is awarded to students who have demonstrated proficiency in the study of politics. The program of study requires the completion of 120 semester units, of which 24 units in politics and 24 units in the major’s cognate area are required. The major requires a thesis, as specified by the department.

**PhD Program**

The doctoral program in politics is designed to prepare students for careers in academia, government, and the private sector. The program requires a broad range of courses in political science and related fields, as well as a thesis in a field of specialization. The program is designed to provide students with a deep understanding of political theory and the ability to conduct original research.

**Admissions Requirements**

Students interested in the politics major should consult with an instructor or advisor in the department to determine their eligibility and to plan their course of study.

**Courses in History, Literature, Philosophy, and the Social Sciences**

Students should take courses in history, literature, philosophy, and the social sciences, as well as in political science, to prepare for the politics major.
Major Requirements

One lower-division politics course. All students are required to take one course from those numbered 1 through 79, except for student-directed seminars (numbered 42), as a prerequisite to upper-division courses in politics. (These have an IG general education code.) This course is normally taken during the first year.

One core seminar, Politics 100. This seminar exposes students to central problems and debates in 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 seminars. 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. The following four groups of courses constitute 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.

Theory

105A Classical Political Theory
105B Modern Political Theory
105C Recent and Contemporary Political Theory

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

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.

Four upper-division politics electives. Four additional politics courses are to be selected from courses numbered 101–199.

Comprehensive Requirements

The comprehensive requirement in the Politics Department can be satisfied in any of the following methods:

• 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 50 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 course in any of the department's 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);

• pasing a one-hour 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 summary 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 deadline 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);

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 subfield (groups listed above) and two from another subfield. 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

Law in the politics major. Students interested in the law and legal issues may pursue the pathway in law and government as part of a politics major. The 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 264).
Courses taken at 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 subject field 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 overcomes the conventional boundaries of the discipline's subject fields, 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 non-political 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 always 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 the 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 specializations 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.ucsd.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 colloquia; (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 curricular 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 successfully 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 statement. Students will be advanced to candidacy only upon successful completion of the qualifying examination.

**Lower-Division Courses**

1. **Politics: Power and Principle. F**

   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, laws, and societies at the national and international levels. (General Education Code: IS.) D. Witels

2. **Citizenship and Action. W**

   What does a citizen do? We read, discuss, and write about the words of political thinkers and actors to develop answers to this question of political identity. Readings include Socrates, Machiavelli, Rousseau, Locke, and Arendt. (General Education Code: IS.) D. Mathiowetz

3. **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: IS.) T he Staff

4. **Politics of Pleasure.**

   Explores topics such as ethical and psychological hedonism and their critics, sexuality, consumerism, the work ethic and the nature of modern jobs, utopian socialism, racial politics, and social welfare retreatment through readings drawn from classic texts in political theory and essays about recent political struggles over criminalization of particular types of pleasures, the manipulation of pleasure for the sake of corporate profit, the absence of pleasure in our working lives, and the regulation of personal lives of welfare recipients. (General Education Code: IS.) T he Staff

5. **Women and Politics.**

   Introduces the politics of gender in advanced capitalist and "developing" nations. Uses materials from political theory, comparative, and American politics. Examines the role of gender, gender-based movements, and sexual politics in political development and in contemporary political affairs. (Formerly Gender and Politics) (General Education Code: IS.) S. Alvarez

6. **Democracy and Liberalism in American Politics.**

   Analysis of the development and operation of American political institutions, focusing on the constitutional powers of the Congress, presidency, and Supreme Court; and the evolution of the American system of political parties. Topics include the changing balance of power between the executive and legislative branches, the expansion of the national government in the twentieth century, and the changing character of the party system. Satisfies American History and Institutions Requirement. (General Education Code: IS.) M. Brown

7. **Eurasian Politics. F**

   Following a survey of the development of the former USSR that emphasizes those factors responsible for its dissolution, focuses on the politics of nation building and international reintegration, and the prospects of democracies or authoritarian futures. (Formerly USSR/CIS.) (General Education Code: IS.) M. Ullman

8. **Global Politics.**

   Intensive study of one or more of the following topics in international politics: nuclear arms control, wars of

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*Not offered in 2003–04*
intervention, environment (acid rain, global warming, chemical pollution, nuclear winter), and Law of the Sea. Can common interest prevail against particular sovereign interests? Global interest, sovereignty, international agreement, self-help, self-determination, treaty, pacific settlement, international organization. (General Education Code: IS) R. Lipschutz

*72. Politics of War on Terrorism.
From September 2001 the U.S. committed to a “War on Terrorism.” What are its political sources? Objectives? Effects on internal politics, external alliances, and civil liberties? Military implications? Costs? How is political discourse deployed? How can it be assessed? (General Education Code: IS) B. Latkin

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 dise/interests behind military, economic, humanitarian and cultural interventions, their un/intended consequences, and their ethical controverses. (General Education Code: IS) A. Cifar

*80T. 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: T3- Social Sciences.) R. Lipschutz

Upper-Division Courses

100. Core Seminar in Politics. F,W,S
Focuses on the diverse 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 limited to 20. Enrollment restricted to sophomores, juniors, and senior legal studies, politics, and Latin American and Latino studies/politics combined majors; major restrictions will be lifted during open enrollment. (General Education Code: WC) The Staff

Focus on various conceptions of political power, on powerlessness and empowerment, total institutions and emancipatory movements; and on the idea of theoretical power, the claims on behalf of or presupposed by a theory. Readings include Thucydides and Plato, Machiavelli and Hobbes, Arendt and Foucault. The Staff

*102. Politics of Morality.
Examines relationship between morality and power, violence, agency, and corruption. Though most of the readings are theoretical, the relevant points are the recent controversies over the influence of money and the dominance of image consultants in the personnel/political conduct of former President Clinton. The Staff

103. Founding Fathers and Feminist Interventions: Society and State. F
Situates ongoing debates around feminism and practice within the context of political theory, the role of the state, and the position of women in contemporary (predominantly 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-*B. American Political Thought. W
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. Classical Political Theory. F
A study of the cultural context of the Greek polis and the origins of political theory and philosophy. Authors studied include Aeschylus, Sophocles, Thucydides, Plato, and Aristotle. Among themes considered are the relation of public and private life, morality and politics, theory and practice, political participation and community, and justice and equality. (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. Michalowicz

105B. Modern Political Theory. S
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. (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. Recent and Contemporary Political Theory. W
Studies in nineteenth- and twentieth-century theory, centering on the themes of revolution, equality, community, liberty, and authority. Authors studied include J. S. Mill, Tocqueville, Marx, Nietzsche, Freud, Weber. (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-So- viet 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. M. Eletar

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.). J. Elkins

111. Problems of Constitutional Law. W
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
Using case law, examines how the law structures and changes women’s rights, gendered hierarchies, and sexualized power relations in both public and intimate life. Considers constitutional citizenship; sex, gender, and family rights; welfare rights; and the law’s response to sex- and gender-based discrimination and violence. (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. The Staff

*114. Thinking Green: Politics, Ethics, Political Economy.
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.
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. Wilf

120B. Society and Democracy in American Political Development. F
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 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. 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 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

*Not offered in 2003-04
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. M. Brown

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. (General Education Code: E.) M. Brown

Examines evolution of policy and politics of American national security, especially following WWII. 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. Wirfs

140A. Politics of Advanced Industrialized Societies. F
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. E. Pasotti

140B. Comparative Post-Communist Politics. S
Comparative study of revolutionary transformations of East European, Soviet, and former Soviet nations to post-Communist political orders. Focus on resurgence 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 strategies of resistance 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: E.) S. Alvarez

*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: E.) The Staff

141. China. F
Politics and foreign policy of the People’s Republic of China since 1949. Emphasis on unification, political movements, and decision; social policy; collectivization, de-collectivization, 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: E.) B. Larkin

142. Russian Politics. W
Historical-political survey of Russia within the U.S.S.R. is followed by examination of the 1991 revolution, the attempt to recover a national identity and establish a unified Russian state. Topics familiar in the study of politics—movements, parties, institutions, processes—are featured. M. Urban

*150. Democratization, Citizenship, and Human Rights in South America. F
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, citizens’ movements (especially feminisms), changing dynamics of civil society, and contemporary efforts to deepen democracy and extend meaningful citizenship to subaltern social groups and classes. Prerequisite(s): course 140C or permission of instructor. S. Alvarez

154. Brazilian Politics. S
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 twentieth-century authoritarian regimes. Special attention to problems and prospects for furthering democratization in the twenty-first century. Prerequisite(s): course 140C. Enrollment limited to 25. Enrollment restricted to senior politics, Latin American and Latino studies, and combined politics/Latin American and Latino studies majors. S. Alvarez

*156. Asian Women in Politics. S
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 politics in that particular country and how women challenge theories about Asian politics, integrating other countries and topics into current discussions. (General Education Code: 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

*160E. Postcolonial States and Societies.
Examines causes and consequences of both public and economic change in Europe including emergence of European Community as new world power; end of cold war, breakup 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

160B. Global Organization. W
Addresses organization of changing international/global system and impacts on domestic politics and foreign policies of states. Role of regional and global interstate institutions (including UN) and non-state institutions (corporations, non-governmental organizations), transnational networks, communication, international law, global political economy, diplomacy, negotiations, intervention, peacekeeping. Formerly course 162, Global Governance. 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. Non-violent conflict as a normal part of politics; violent conflict as anti-political; transformation of conflict into social and interstate violence. Interrelations among both conduct of war, attainment of political objectives, and the end of hostilities. Civil and ethnic wars. Political economy of violence and war. (Formerly WGR, course 161.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

172. Politics of the Internet. W
Takes the Internet to be a community of culture, practices, relationships, economies, governance, rules, claims, arguments, and decisions. It is a novel form of polity which is explored from two directions. How are the new issues similar to, and different from, those which have been studied hitherto? And does the Internet lead to insights into politics as we have known it in the past? B. Larkin

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 majors during priority enrollment period. The Staff

174. Global Environment Politics. W
Focus on global environmental “problematics” and how it is being played out in a variety of political arenas. Includes technical overview of global environmental movement; 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. W
Examines causes and consequences of both public and economic change in Europe including emergence of European Community as new world 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

*Not offered in 2003–04
issue areas (international monetary systems, organization of international trade, regulation of foreign direct investment, development policies, etc.). (Formerly course 164.) Enrollment restricted to politics and Latin American and Latino studies/politics combined majors during priority enrollment only. The Staff

177. The United States and the World. S
Examines political, economic, and cultural relationship 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. Lipschutz

*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. R. Lipschutz

190. Senior Comprehensive Seminar.
Seminar required of all senior politics majors. 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 those 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.

*A. State and Revolution.
Examines the processes of rapid and fundamental political change from the standpoint of both the structures of states in which revolutions have occurred and the structures 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 limited to 20. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors; major restrictions lifted during open enrollment. M. Urban

B. 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 limited to 20. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors during priority enrollment only; students who do not meet the restrictions and prerequisites may contact the instructor; major restrictions will be lifted during open enrollment. B. Larkin

*C. 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 limited to 20. 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 enrollment. M. Brown

D. European Integration.
Focuses on the origins and development of the European Union. Addresses historical and contemporary issues, including the political, economic, social, and cultural dimensions of European integration and the impending expansion to the East. Prerequisite(s): course 100 or 100A. Enrollment limited to 20. 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 enrollment. The Staff

E. Orientalism.
Studies "Orientalism" as a concept of political theory and intellectual, and aesthetic projects of eighteenth- and nineteenth-century Orientalists. Considers contemporary themes of Orientalism and uses these concepts to examine current political discourse. Prerequisite(s): course 100. Enrollment limited to 20. Enrollment restricted to senior politics and combined politics/Latin American and Latino studies majors. M. Thomas

F. Issues in International Law.
Explores theory and reality of international law; how it determines or governs or modifies policies of government. Emphasis on contemporary political and economic forces and international law in nuclear age, competing areas for new law, law of seas, human rights, new international economic issues, the environment. Prerequisite(s): course 100 or 100A. Enrollment limited to 20. 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. I. Grunfeld

G. The Substance of Democracy.
What is democracy? Why do we care about it? How can we identify it? Through political science, law, and philosophy, the course explores these questions and the issues of patronage, media manipulation, lobbying, campaign finance reform, and voter turnout. Prerequisite(s): course 100. Enrollment limited to 20. Enrollment restricted to senior politics and combined politics/Latin American and Latino studies majors. E. Pagetti

H. Politics and Inequality.
Considers causes and consequences of inequality in modern societies. Emphasizes empirical analysis of contemporary forms of class, racial, and gender inequality and examination of normative theories of distributive justice. Major restrictions lifted during open enrollment. Prerequisite(s): course 100 or 100A. Enrollment limited to 20. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors during priority enrollment only. M. Brown

I. Political Economy of Welfare States.
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 impact of policy. Prerequisite(s): course 100 or 100A and one of the following courses: 104A, 104B, 120A, 120B, or 120C. Enrollment limited to 20. 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 enrollment. M. Brown

J. American and Latino studies/politics combined majors during priority enrollment only; major restrictions will be lifted during open enrollment. M. Brown

L. Welfare Policy and Politics.
Examines theoretical, historical, and contemporary empirical materials about the structure and impact of welfare policy and the politics of welfare reform. Prerequisite(s): course 100. Enrollment limited to 20. (Formerly course 132.) 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 enrollment. E. Betram

*M. American Politics Through American Literature.
Most major American writers offer perspectives outside "official" mainstream political culture; the raising of countervoices; concern about common, public lives, not just personal experience; exploring persistent tensions (dualisms) and deeper meanings, how we really live, how it is concealed from understanding, and political/moral costs. Prerequisite(s): course 100 or 100A, and one of the following courses: 101, 105A, 105B, 109C, 120B, or 120C. Enrollment limited to 20. 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 enrollment. J. Schaar

Examines the U.S. Congress in theoretical, comparative, and historical perspective. Topics include tension between representative and legislative processes, parliamentary versus presidential systems, party organization versus the new entrepreneurialism. Special attention given to nature and consequences of bicameralism. Prerequisite(s): courses 100 or 100A, and 120A. Enrollment limited to 20. 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. D. Wirfs

*P. Race: History of a Concept.
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, explores historical shifts that informed Europe's representation of cultural difference from the writings of ancient Greeks to the social Darwinism of nineteenth-century Britain. Prerequisite(s): course 100 or 100A. Enrollment limited to 20. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors during priority enrollment only; major restrictions lifted during open enrollment. V. Seth

*S. International Relations and World Politics.
Examines the problematic of world politics as focused through the lens of classical, modern, contemporary, and critical international relations theory. Prerequisite(s): course 100 or 100A, and one of the following: 160, 160A, 160B, 162, or 173. Enrollment limited to 20. Enrollment restricted to senior politics and Latin American and Latino studies/politics combined majors during priority enrollment; major restrictions will be lifted during open enrollment. R. Lipschutz

*T. Feminism, Trans/national Cultural Politics, and Gender Policy.
Comparative analyses of feminist movements and their relationship to other local and global social movements, national/civil society, political parties, states, and inter-governmental organizations in a wide range of empirical cases. Emphasis on changing feminist discourses and practices over the past three-plus years.
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 limited to 20. (Formerly Feminism, Women's Movements, and The State: Comparative Perspectives.) Enrollment restricted to senior Latin American and Latino studies, politics, women's studies, and Latin American and Latino studies/politics combined majors during priority enrollment only; major restrictions will be lifted during open enrollment. S. Alvarez

*VI. 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, citizenship and cultural politics in Latin/o America, comparative perspectives on democratization, politics and culture in Brazil, feminisms and women's movements in Latin America, the politics of race and ethnicity in the American, and human rights and social justice in a neoliberal era. Prerequisite(s): course 100 or 100A. Enrollment limited to 20. 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 enrollment. S. Alvarez

VI. Living in the Aftermath of Evil.
Draws on a variety of sources to understand metaphors of war and peace as potentially appropriate attitudes toward 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 prepare and transcend the identities of the victims and perpetrators of past atrocities while creating a new identity based on their common survivorship; explores the constraints placed on "nation in recovery" by the public commitment to create an official version of a past that must be remembered 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 limited to 20. 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 enrollment. R. M. Estor

X. Global Civil Society—Theories, Debates, Practices.
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 coalitions. Prerequisite(s): course 100 or 100A, and one of course 160, 160A, 160B, 162, or 173. Enrollment limited to 20. 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 enrollment. R. Lipschutz

Y. The Language of Interest.
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 as us the subjects of that study? Prerequisite(s): course 100. Enrollment limited to 20.

Enrollment restricted to senior politics and combined politics/Latin American and Latino studies majors. D. M. Abowd

192. Directed Student Teaching, F, W, S
Teaching of a lower-division seminar. (See course 42.) Prerequisite(s): petition on file with sponsoring agency. T. Staff

193. Field Study in Politics, F, W, S
Individual studies undertaken off campus with direct faculty supervision. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. Staff

195A-B-C. 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. Prerequisite(s): interview only: petition on file with sponsoring agency. T. 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). Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. Staff

Graduate Courses

200A. Political and Social Thought Core Seminar: Politics of Recognition, F
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 power, power, resistance, lib- eration, 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 limited to 15. Enrollment restricted to graduate students. R. M. Estor, D. Hoy

200B. Social Forces and Political Change Core Seminar.
Concerns transformation of social forces into political ones. Focuses on formation, articulation, mobilization, and organ- ization of political interests and identities, their mutual in- teraction, 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 dimensions of social di- vision and political identity and 2) relevant forms of political agency and action, including development of political con- sciousness and representation of interests and identities in the public sphere. Enrollment limited to 15. Enrollment re- stricted to graduate students. M. Urban

200C. States, Political Institutions, and Global Political Economics Core Seminar. S
Introduces study of political institutions as instruments of collective decision making and action. Emphasizes study of state responses to domestic conflict and changing con- texts of international political economy. Explores alter- native theoretical approaches to development of political institutions, state and political economy, and security dilemmas. Enrollment limited to 15. Enrollment re- stricted to graduate students. D. Wirfs

200D. Political Economy Core Seminar.
Introduction to the theories and methodologies of politi- cal 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 develop- ment of market and capitalism; historical evolution of states and their economies; relationship between labor, capital, production, and consumption; regulation of pro- duction; macroeconomics and management of economies; and issues of national and global social welfare. Enroll- ment limited to 15. Enrollment restricted to graduate stu- dents. R. Lipschutz, M. Brown

202. Power and Authority: Might and Right.
Explores the relations and tensions among various modes, forms, and conceptions of power and authority. Major texts include the Bible, Marx, Nietzsche, Weber, Arends and Zeit. Enrollment limited to 15. Enrollment restricted to graduate students. J. Schaar

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 conclu- sions. Enrollment limited to 15. Enrollment restricted to graduate students. R. M. Estor

214. Thinking Green: Politics, Ethics, Political Economy, W
Green political thought, philosophy, debates, and prac- tices; history of ecological thought and comparative study of competing ideas and proposals. Critical examination of neo-liberal environmentalism. Enrollment limited to 15. Enrollment restricted to graduate students. R. Lipschutz

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, in- cluding the role of war. Enrollment limited to 15. Enroll- ment restricted to graduate students. D. Wirfs

233. Interrogating Race, S
Critically examines alternative theoretical and methodolog- ical approaches to study of race and racism. Considers alter- native explanations for origins and persistence of racism and racial inequality and suggests the relevance of a socio-po- litical understanding. Enrollment limited to 15. Enrollment restricted to graduate students. M. Brown, D. Widman

241. Culture and Politics in Latin America, W
Interdisciplinary analysis of the relationship between cul- ture and politics in Latin America, drawing on current critical debates in anthropology, history, cultural studies, feminism and poststructuralist theories, as well as political

*Not offered in 2003–04
science. Students cannot receive credit for this course and course 140C. Enrollment limited to 15. Enrollment restricted to graduate politics majors. S. Alvarez

251. Discourse. F
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 limited to 15. Enrollment restricted to graduate students. M. Urban

*271. Global Domestic Nexus.
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. Enrollment limited to 15. Enrollment restricted to graduate students. 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 limited to 15. Enrollment restricted to graduate students. R. Liphshutz

291. Teaching Assistant Seminar (2 credits), F, W, S
Two-hour weekly seminar required of teaching assistants in which pedagogical and substantive issues will be considered. The experience of performing teaching assistant duties constitutes subject matter for discussion. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to graduate students. T The Staff

293. Field Study, F, W, S
Individual study undertaken off campus with direct faculty supervision. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to graduate students. T 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. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. T The Staff

299. Thesis Research, F, W, S
Prerequisite(s): permission of instructor: petition on file with sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit. T 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 Later 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: Macrosociological 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 course 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

Study of vocal techniques in the context of ensemble rehearsals, often culminating in public performance. Familiarity with musical notation recommended. Prerequisite(s): permission of instructor: audition by invitation. May be repeated for credit. (General Education Code: A.) T The Staff

20. Dance/Theater Practicum.
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.

A. Filipino Dance Practicum (2 credits). W
Students are introduced to the different folk dances of the Philippine Islands. 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 25. May be repeated for credit. (General Education Code: A.) W. Manuntag

*C. 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. May be repeated for credit. (General Education Code: A.) W. M anuntag

*B. Giges


A. 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. May be repeated for credit. (General Education Code: A.) T The Staff

22. Art Practicum.
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.

A. Day of the Dead (2 credits). F
Day of the Dead: Creating an Exhibition—an exploration of art created to celebrate death in Mexican, Chicano, and American culture. Culminates in the creation of a Day of the Dead ceremony and community altar including students’ individual art pieces. Enrollment limited to 20. (General Education Code: A.) R. Apodaca

*B. Vietnamese Festivals (2 credits).
Vietnamese festivals and the arts they generate, from carving to water puppetry, will be explored for cultural, aesthetic, and iconicographic principles, though viewing, discussion and a creative project. Enrollment limited to 20. (General Education Code: A.) T The Staff

23. Film/Theater Practicum.
The practice of film/theater from the perspective of a particular culture, genre, or technical approach.

A. Film Practicum: Taking in Pictures (2 credits).
Introductory survey of the language of film and television. Considers the roles these media play in the shaping of cultural identity. Creative projects in the conceptual preparation for the making of films and videos. Enrollment limited to 25. (General Education Code: A.) T The Staff

B. Personal Narratives in Theater and Film (2 credits).
Focuses on filmmakers and monologue performers (e.g. Spalding Gray, Brenda Wong Aoki, Russ McEwane) as they come to terms with their identity in autobiographical works. Students write critical responses to texts and create their own brief personal narratives. Enrollment limited to 30. (General Education Code: A.) B. Giges

C. Documentary/Mockumentary Films (2 credits).
W
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: A.) B. Giges

*25. Introduction to the Theory and Practice of Musical Criticism (2 credits).
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. Hush

28. Sound Art (2 credits). S
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. May be repeated for credit. (General Education Code: A.) T The Staff

*Not offered in 2003-04
*30. A Traveling Feast: Arts and Artists of the Bay Area (3 credits).
Combines critical readings with studio visits, gallery shows, or attendance at performances in the Bay Area. Critical and historical study of issues arising from artists’ work are discussed followed by studio and gallery visits or attendance at performances. Enrollment limited to 25. May be repeated for credit. (General Education Code: A.) The Staff

*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. May be repeated for credit. (General Education Code: 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: 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 essays or art projects. Enrollment limited to 25. (General Education Code: A.) R. Abraham

*35. Experiencing Live Theater (2 credits).
Attendence at live regional theater events includes artists’ talks, class lectures, and readings. Students participate in informal theater workshops and write short critical essays. Enrollment limited to 30. (Formerly Viewing Performance in the Bay Area.) May be repeated for credit. (General Education Code: A.) The Staff

38. Working in . . . Series.
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.

B. Working in TV and Film (2 credits). W
Writers, directors, and technical workers in areas of TV and film discuss current work, paths that led to their creative endeavors, and constraints of working in the industry. Students research aspects of film and TV professional work. (General Education Code: A.) L. Steck

*39. Jewish Personal Narratives on Film (2 credits).
Examines documentaries made by Jewish filmmakers who integrate themselves as characters into their films. Students investigate this unique documentary form, while studying the practice of music 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: A.) The Staff

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: A.) The Staff

121. Advanced Music Practicum.
The practice of music in a particular area of the world at an advanced level. Students learn the music of one world area or culture over the quarter and study the associated cultural background. Enrollment limited. Prerequisite(s): audition; students should have prior training in the discipline. May be repeated for credit.

80B. Ways of Knowing. W
Creativity in different disciplines is developed via different ways of knowing. Musical, visual, scientific, and spatial literacy understanding which is not primarily logocentric. Explores how practitioners of arts and science develop their work and conceptualize its execution. (General Education Code: T6-Natural Sciences or 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: A.) The Staff

99F. Tutorial (2 credits).
Various topics to be arranged. Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

180. Arts in a Multicultural Society: Pedagogical Practicum. F
Upper-division students participate in Porter core course, joining in seminars and leading small group sections exploring issues of creativity, multiculturalism, and heritage. Participate in weekly seminar dealing with pedagogical practice preparing students to raise issues related to texts, critical thinking, writing, and the artistic process. Prerequisite(s): see the enrollment conditions section of the quarterly Schedule of Classes. Enrollment limited to 16. The Staff

A program of independent study arranged between a group of students and a faculty instructor. The Staff

199F. Tutorial (2 credits). F,W,S
Individual projects carried out under the supervision of a Porter faculty member. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Portuguese

Language Program
239 Cowell College
(831) 459-2054
http://lang.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-quarter sequence for students with no previous experience with the Romance languages; courses 60A-B are a two-quarter 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 262, 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 42). For information on credit applied to a major, contact the appropriate department.
Lower-Division Courses

1A-B. Intensive Elementary Portuguese, F,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): 1B course 1A. Enrollment limited to 24. The Staff

60A-B. Advanced Beginning and Intermediate Portuguese, F,W
This sequence is designed for students with an equivalent of two years 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. (General Education Code: HJ for course 60A.) Prerequisite(s): 60A: Spanish 4 or Spanish for Spanish Speakers 64 or French 4 or Italian 4 or placement by examination; 60B: course 60A or placement by examination. The Staff

65A-B. Intermediate Portuguese, S,F
A systematic grammar review is combined with literacy 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. Course 65A offered in spring, 65B in fall. Prerequisite(s): 65A: course 1B or 60B, or by instructor approval; 65B: course 65A or by instructor approval. (General Education Code: IH.) The Staff

99. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

199. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits), F,W,S
Prerequisite(s): petition on file with 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 BRIDGEMAN
Physiological 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. CHEMERS
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. GIERDE
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

ARTURO HURTADO
Social identity, feminist theory, social psychology of education, political consciousness, 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 schools, images of gender in the media

DOMINIC W. MASSARO
Understanding language, speech perception and reading, language learning and speech technology, pattern recognition, concept learning, decision making, development of perception and cognition, 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; varying forms of participation in problem solving; cognitive development, especially problem solving, planning, and attention

JOHN B. SIMPSON
Neurobiology and neuroendocrinology, ingestion and regulatory behavior, central autonomic regulation, circumventricular organs

Associate Professor

NAMEERA AIKHAR
Cognitive and social cognitive processes in early language development, infant’s social understanding

JEAN FOX TREE
Psycholinguistics: production and comprehension of spontaneous speech, disfluency 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

AURIL THORNE
Identity development through personal memory telling, development of meaning in adolescents self-defining memory narratives, family storytelling and the development of a sense of self, narrative co-construction of identity and intimacy

MARY SUSAN WELDON
Human learning and memory, collective memory and group remembering, dissociations among expressions of knowledge

STEPHEN C. WRIGHT
Intergroup relations: social identity, discrimination, and disadvantaged group behavior; minority language and heritage culture maintenance

Assistant Professor

HEATHER BULLOCK
Poverty and economic inequality, welfare policy, feminist psychology, discrimination

COLIN W. LEACH
Social comparison in self-evaluation, emotion, and well-being; the content, structure, and function of political attitudes, especially racism, sexism, prejudice and group identity and the political psychology of intergroup relations

MARA MATHER
Memory and decision making, impact of emotional processing on memory, aging and memory

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. VEEVA
Applied statistics, item response theory, mathematical models for bias in memory, statistical methods for meta-analysis

Acting Assistant Professor

SUE-HUA WANG
Knowledge acquisition in infancy with an emphasis on the role that experience and context play in the process; cross-cultural perspectives on parental beliefs about early-childhood development

MARGARET L. WILSON
Mental representations, sensorn information in working memory and long-term memory, comparisons between auditory and visual representations, sign language

EILEEN L. ZUBRIGGEN
Sexual aggression; long-term effects of childhood sexual abuse victimization; sexual decision-making; quantitative models of social cognitive processes; motivation, especially power and affiliation-intimacy motives

Lecturer

RALPH H. QUINN
Clinical psychology, moral development, psychology and religion, existential-humanistic psychology
Donald T. Saposnek
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 Domhoff, 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

Dane 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, Philosophy
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 one of the psychology majors should declare the psychology 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 junior 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 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, but no later than the end of the junior 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
4. Introduction to Developmental Psychology

Mathematics

1. Pre-calculus (or equivalent)

Courses 20, 40, and 60 are highly 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)
Social (courses numbered 140–159)
Personality (courses numbered 160–179)

Upper-division courses and their catalog descriptions are grouped within each of the subfields. At least one upper-division seminar course must be completed; these courses are identified within their description by the phrase "satisfies seminar requirement." No more than one course numbered 193, 194, and 195 may be used toward the upper-division requirements. At least six of the eight courses must be taken through the psychology program at UCSC, not transferred from elsewhere; this requirement occasionally affects the plans of transfer students arriving at UCSC with many psychology courses on their transcript.

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.
Plan One

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<td>1st</td>
<td>Math 3</td>
<td>Psyc 2</td>
<td>Psyc 3</td>
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<tr>
<td>2nd</td>
<td>Psyc 10 (Psyc 40 recommended)</td>
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<td>(Begin upper-division course work)</td>
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Plan Two

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<td>(soph)</td>
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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 students 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.

Requirements for the Intensive Major

**Lower-Division Requirements**

- Psychology 1, Introduction to Psychology
- Psychology 2, Introduction to Psychological Statistics
- Psychology 3, Research Methods in Psychology
- Psychology 10, Introduction to Developmental Psychology
- Mathematics 3, Precalculus (or equivalent)

Once these lower-division courses have been completed, a student may petition to declare the psychology major.

**Upper-Division Requirements**

- Thirteen upper-division courses are required for the intensive major. These courses must include the following:
  - 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 must 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 arriving at UCSC with many psychology courses on their transcript.

**Comprehensive Requirement**

Students in either the general psychology major or the intensive major may select one of two options to satisfy the comprehensive requirement:

- Department Comprehensive Examination. Students must receive a passing score on the psychology comprehensive examination, administered by the Psychology Department each quarter.
- The Graduate Record Examination (GRE) Psychology Subject Test. Students must receive a score at or above the 50th percentile to satisfy the requirement. Reports of GRE scores must be submitted to the Psychology Department Office before the last day of the graduating quarter.

**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 petitions, course planning, substitution of transfer courses for advance enrollment, careers, and graduate schools. Students can also get advice about examinations (the comprehensive examination and the Graduate Record Examination) and assistance in initiating a senior thesis and independent studies. Students are encouraged to take advantage of the advising office throughout their college career.

**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 mentor during the last quarter of the junior year before enrolling in course 195, Senior Thesis. Most faculty prefer to sponsor senior theses 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 consistently 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, 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 their 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 agencies. 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. Applicants for a master’s degree are not accepted in the Ph.D. program may obtain an M.S. degree by fulfilling specific requirements.

Graduate work in cognitive psychology focuses on training students in the traditional methods of experimental psychology and in mastering contemporary knowledge in the broad areas of cognitive science and psychobiology. The cognitive faculty members 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 psychophysiology.

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 the 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 the psychological 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 as 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 study 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: IS) (F) H. Boulouc; (W) T. Seymour, (S) F. Croyb

2. Introduction to Psychological Statistics, 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: Q) (W) J. Vreba; (S) M. Mather

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 F, S. Enrollment limited to 150. Enrollment restricted to prepsychology majors; minors by permission of instructor. (F) M. Wilson, (S) N. Akhtar

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) B. Rogoff

20. Introduction to Cognitive Psychology, W,S
   Introduces basic concepts in cognitive psychology. Topics include thinking, consciousness, perceiving, language, remembering, reasoning, problem solving, and decision-making. Prerequisite(s): course I, A. Kawamoto

40. Introduction to Social Psychology, F,W
   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, (W) The Staff

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: IS) (W) V. Tönay

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-enrichment 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: 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, self and community. (General Education Code: 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: T3-Social Sciences.) V. Tönay

80E. Language, Communication, and Gender.
   Explores how gender is negotiated and defined through verbal and nonverbal forms of communication. Topics include sexism in language, images of gender in the media, the socialization of gender through language, gender bias in schools, gender-related variations in communication, and dominance and equality in relationships. (General Education Code: T3-Social Sciences.) The Staff

**Upper-Division Courses**

**Developmental**

100. Topics in Developmental Psychology.
   These topics, offered at different times by different instructors, examine selected topics in developmental psychology.

*C. 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 limited to 30. Enrollment restricted to senior psychology majors or permission of instructor. (General Education Code: W) M. Azmitia

D. Cultural Psychology.
   Critically analyzes relations among culture, ethnicity, identity, and the nation-state in a world characterized by globalization, migration, and social change. Examines the relevance of these features for the development of children and youth through examples from both Western and non-Western "cultures." Course satisfies seminar requirement. Enrollment limited to 30. Enrollment restricted to senior psychology and anthropology majors. (General Education Code: E) P. Gjerde

G. 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 is 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. Enrollment limited to 45. (General Education Code: E) The Staff

J. 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.

*Not offered in 2003–04
113. Culture and Human Development. W
Examines the dynamics of cross-cultural relations and how these relationships change. Prerequisite(s): courses 10 and 107.

114. Social and Emotional Development. F
Examines the social and emotional development of young children. Prerequisite(s): courses 10 and 107.

115. Current Topics in Personality and Developmental Psychology. W
Explores current topics in personality and developmental psychology. Prerequisite(s): courses 10 and 107. Enrollment restricted to psychology majors.

116. Advanced Topics in Personality and Developmental Psychology. W
Explores advanced topics in personality and developmental psychology. Prerequisite(s): courses 10 and 107. Enrollment restricted to psychology majors.

117. Children's Thinking. F
Examines current theories of children's thinking. Prerequisite(s): courses 10 and 107.

118. Lifespan Developmental Psychopathology. W
Examines the development of psychological problems and their impact on children and adolescents. Prerequisite(s): courses 10 and 107.

120. Affective Science and Sign Language. W
Explores the affective science of sign language and its impact on cognitive development. Prerequisite(s): courses 10 and 107.

121. Perception. S
Focuses on the development of perception in early childhood. Prerequisite(s): courses 10 and 107.

122. Behavioral Neuroscience. S
Explores the development of sensory and motor functions. Prerequisite(s): courses 10 and 107.

123. The Psychology of Lying and Deception. F
Explores the development of lying and deception in children. Prerequisite(s): courses 10 and 107.

124. Psychology of Reading. F
Focuses on the development of reading skills in children. Prerequisite(s): courses 10 and 107.

125. The Psychology of Language. F
Explores the development of language in children. Prerequisite(s): courses 10 and 107.

126. Mind and Culture. F
Focuses on the development of cultural and social cognition. Prerequisite(s): courses 10 and 107.

Explores the development of computer-mediated communication in children. Prerequisite(s): courses 10 and 107.

128. Human Learning and Memory. W
Explores the development of learning and memory in children. Prerequisite(s): courses 10 and 107.

*Not offered in 2003-04

**K. Development of Thought and Language:**
Explores the development of thought and language in children. Prerequisite(s): courses 10 and 107.

*L. Development as a Sociocultural Process:**
Examines the development of thought and language in cultural and social contexts. Prerequisite(s): courses 10 and 107.

**N. Special Topics in Narrative Development:**
Explores the development of narrative skills in children. Prerequisite(s): courses 10 and 107.

102. Adolescent Development: Adolescence into Young Adulthood. S
Focuses on the development of adolescence into young adulthood. Prerequisite(s): courses 10 and 107.

103. Language Development. W
Explores the development of language in children. Prerequisite(s): courses 10 and 107.

104. Social and Emotional Development. S
Explores the development of social and emotional behaviors in children. Prerequisite(s): courses 10 and 107.

105. Dementia and Sign Language. W
Explores the development of dementia and sign language in children. Prerequisite(s): courses 10 and 107.

106. Adult Development and Aging. W
Explores the development of adult and aging processes in children. Prerequisite(s): courses 10 and 107.
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. Prerequisite(s): course 20 or 120A or 121 or 125 or 135. Enrollment limited to 30. Enrollment restricted to senior psychology majors. M. Mather

130C. Using Vision to Think. F
What makes maps, charts, graphs, diagrams, and illustrations effective as cognitive tools? Visual graphics can engender new insights or outright mislead. Topics include principles of cognition as they relate to information graphics, historical background, case studies, human factors, contemporary issues, and practices. Course satisfies seminar requirement. Enrollment limited to 30. Enrollment restricted to junior and senior psychology majors. M. Weldon

133. Psychology and Evolutionary Theory. W
Human psychology is examined from the viewpoint of evolutionary theory, including perspectives from ethology, anthropology, and neuropsychology. Upper-division students from diverse backgrounds are encouraged to enroll. Course satisfies seminar requirement. Enrollment limited to 30. Enrollment restricted to junior and senior psychology, anthropology, biology, philosophy, sociology, and women's studies majors or permission of instructor. 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 anthropology majors. R. Gibbs Jr.

136. Conversations. S
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 pragmatic expressions (words like "um," "uh," and "you know"). Course satisfies seminar requirement. Enrollment limited to 30. Enrollment restricted to psychology and linguistics majors. J. Fox Tree

137. Mind, Body, and World. F
Psychologists 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 external world and the role of human embodiment in language use and everyday cognition. Enrollment restricted to psychology, linguistics, philosophy, and anthropology majors. R. Gibbs Jr.

138. Psychology of Interactive Media. W
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. Empirical 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. S
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. D. Massaro

Social

140. Topics in Social Psychology. C
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, health beliefs, and the healing relationship. Prerequisite(s): courses 3 and 40. B. Robinson

*D. 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 Fanon's "psycho-existential" perspective developed in relation to decolonization movements, Hegel, Sartre, Gandhi, and personality and social psychology. Satisfies seminar requirement. Prerequisite(s): courses 3 and 40. Enrollment limited to 30. Enrollment restricted to senior psychology majors. C. Leach

*G. Psychology of Women.
Research seminar on theory and data on the psychological development of females, their attitudes, values, behaviors, and self-image. Surveys sex differences and the influence of socialization, culture, and personality variables on women. Examines relationship between psychology of women and the principles of feminism. Satisfies seminar requirement. Students cannot receive credit for this course and course 41. Prerequisite(s): course 3. Enrollment limited to 30. The Staff

*J. 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. Zurbriggen

*M. Research Seminar in Crime and Media.
Empirically examines several aspects of the criminal justice system (in particular, jury decision making and media effects on juror fairness and impartiality). In addition to extensive reading, students participate in 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 limited to 30. Enrollment restricted to psychology and legal studies majors. C. Haney

P. Psychology of Sexual Aggression. F
An overview of psychological theory and research related to sexual aggression, focusing on both perpetration 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 limited to 30. Enrollment restricted to senior psychology or women's studies majors or permission of instructor. E. Zurbriggen

Q. Social Psychology of Sex and Gender. W
Considers ways people's gender-stereotyped expectations bias their perceptions and self-fulfilling prophecies. Also examines power and status inequalities between women and men and institutional forms of discrimination. Prerequisite(s): courses 3 and 40. The Staff

T. Psychology of Trauma. S
Overview of psychological theory and research on trauma and traumatic stress, including responses to childhood trauma (especially sexual abuse), combat, and natural disasters. Variety of theoretical frameworks presented, including developmental, cognitive, neuropsychological, clinical, and social/contextual. Prerequisite(s): course 3 or permission of instructor. E. Zurbriggen

141. 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 limited to 30. Enrollment restricted to senior psychology and business management economics majors. A. Pratkanis

143. 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: E.) The Staff

145. 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. A. Pratkanis

146. The Social Context. F
A systematic analysis of the social and contextual determinants of human behavior, with special attention given to concepts of situational control, social comparison, role and attribution theories, as well as the macrodeterminants of behavior: cultural, historical, and sociopolitical context. Prerequisite(s): courses 3 and 40 or Sociology 136. The Staff

147A. Psychology and Law. W
Current and future relationships between law and psychology; paying special attention to gaps between legal fictions 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. Enrollment restricted to psychology, pre-psychology, legal studies, legal studies/political science, and law schools/economics majors. C. Haney

147B. 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

150. Social Psychology of Film/Flam. W
Why do we believe strange things? This course investigates such flimflams as beliefs in the Loch Ness Monster, quack health care, and racial superiority to illustrate the underlying
153. The 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 classist discrimination and improving inter-class relations are discussed. Enrollment restricted to anthropology, community studies, economics, legal studies, politics, psychology, sociology, or women's studies majors. H. Bullock

153A. Psychology of Poverty and Social Class Community Practicum (2 credits). W
Provides a link between course 153 and community organizations with an antipoverty mission. Students complete internships with nonprofit agencies and participate in seminar meetings. Prerequisite(s): concurrent enrollment in course 153. Enrollment limited to 20. H. Bullock

Why do some situations seem fair and others unfair? Are all people concerned with justice or are some scoundrels? This course looks at the principles of distributive and procedural justice and at a real world application. Course satisfies seminar requirement. Prerequisite(s): course 3. Enrollment limited to 30. Enrollment restricted to senior psychology majors. F. Crosby

*158. Latinos in the Media.
Introduces portrayals of Latinos in the U.S. media including magazines, films, 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: E) A. Hurtado

159. Organizational Psychology. F
The psychology of organized 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. W
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 60. 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 limited to 30. Enrollment restricted to psychology majors. D. Harrington

163. Freud. S
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. Nau

*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): courses 3 and 60. Enrollment limited to 30. Enrollment restricted to psychology or prepsychology majors. May be repeated for credit. D. Harrington, The Staff

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. S
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 recommended as preparation. (Formerly Psychological Assessment) A. H. Torrance

167. Clinical Psychology, W
Serves as an in-depth introduction to the field of clinical psychology. Covers issues of clinical assessment, interview, testing, and a range of therapeutic modalities. Prerequisite(s): courses 3, and 60 or 65; course 170 recommended as preparation. R. Quinlin

*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. Domhoff

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 and 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. Gjörde

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. Saposnik

172. Theories of Moral Psychology. W
A seminar course 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 pro-social behavior. Course satisfies seminar requirement. Prerequisite(s): essay required on a moral issue or dilemma relevant to the student’s life. Enrollment limited to 25. R. Quinn

*175. Personality, Relationships, and Emotions.
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. B. Robinson

General, Statistics, and Research Methods

181. Psychological Data Analysis. S
Intermediate statistical methods widely used in psychology (e.g., n-way, ANOVA, ANCOVA, multiple-comparison, repeated-measures, nested-designs, correlational analysis, bivariate regression), corresponding SAS programs, and elements of measurement theory. Prerequisite(s): course 3. Enrollment limited to 45. (General Education Code: Q) J. Vevea

Senior Seminars and Independent Study

190. Senior Seminars.
Special topics with a format varying each quarter. The Staff

191. Teaching College Psychology. F, W, S
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 discussion groups and provide one-to-one tutoring for course 1. Prerequisite(s): 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 limited to 20. Enrollment restricted to psychology majors. (F) H. Bullock, (W) T. Seymour, (S) F. Crosby

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. Prerequisite(s): petition on file with faculty member; completion of some upper-division seminar (course 42) under faculty supervision. Enrollment restricted to psychology majors. The Staff

193. Field Study, F, W, S
Provides psychology majors an opportunity to apply what has been 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 on

*Not offered in 2003–04
site. Faculty also supervise the student's field study, providing guidance and helping them integrate psychological theories with their hands-on experience. Two-quarter commitment required. Prerequisite(s): completion of lower-division psychology major requirements; petition on file with 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

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.

A. Advanced Developmental Research, F, W, S
Provides students with intensive experience conducting current research in developmental psychology. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. M. Azmitia

B. Advanced Cognitive Research, F, W, S
Provides students with intensive experience conducting current research in cognitive psychology. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. B. Bridgeman

C. Advanced Social Research, F, W, S
Provides students with intensive experience conducting current research in social psychology. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. F. Crosby

195A-B-C. 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. Prerequisite(s): see 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 supervise the students' field study, providing guidance and help integrating psychological theories with their hands-on experience. Two-quarter commitment required. Prerequisite(s): completion of lower-division psychology major requirements; petition on file with 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-, n-way, ANOVA, ANCOVA, multiple-comparisons, repeated-measures, nested-designs, correlational analyses, bivariate regression), corresponding SAS programs, and elements of measurement theory. Enrollment limited to 20. Enrollment restricted to graduate students. J. Vogt

210. The Experimental Method in Social Psychology, S
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, W
Provides an introduction to social psychology, focusing on various micro-social topics, including the self, social comparison, person perception, attitudes, attribution, and interpersonal relations. Enrollment limited to 20. Enrollment restricted to psychology graduate students; undergraduates planning graduate work in social psychology may enroll with permission of instructor. E. Zurbriggen

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 limited to 20. Enrollment restricted to graduate students. H. Bullock

214A. Multivariate Techniques for Psychology, W
A review of some fundamental statistical techniques, emphasizing multivariate data analysis, and the statistical aspects of multivariate data analysis. Prerequisite(s): course 214A-B, M. Mather

214B. Advanced Multivariate Techniques for Psychology, S
Explores advanced topics in multivariate statistical analysis including cluster analysis, multi-dimensional scaling, and structural equation modeling. Procedures for implementing these techniques on the computer emphasized. Prerequisite(s): course 214A. Offered in alternate academic years. E. Zurbriggen

221. Visual Perception.
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 limited to 15. Enrollment restricted to graduate students. 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 limited to 10. Enrollment restricted to psychology graduate students; undergraduates who have completed course 124 may enroll with permission of instructor. 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 10. (Formerly course 224A-B, M. Mather

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 10. (Formerly course 224A-B, M. Mather

225A. Introduction to Developmental Research, S
Surveys the rationale and techniques of research in developmental psychology. Students build skills in evaluating published research, in translating theoretical ideas into researchable 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. D. Harrington

225B. Introduction to Developmental Research, 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 graduate psychology majors. M. Azmitia

227. Contemporary Issues in Psychology of Language, F
Special topics in thought 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 Jr.

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 132 may enroll with permission of instructor. Offered in alternate academic years. A. Kawamoto

230. Research in Cognitive Psychology Seminar, F, W, S
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. M. Mather, D. Massaro, J. Fox Tree

*Not offered in 2003–04
Seminar to study, critique and develop research in social psychology. Enrollment restricted to psychology graduate students. May be repeated for credit. F. Crepaz, H. Bullock.

Explores current research on evolution of human cognition, drawing on 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, F
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 way that emotion affects memory and decision making. Enrollment restricted to graduate students. M. Mather

242. Research in Developmental Psychology Seminar, F,W,S
Seminar to study, critique, and develop research in developmental psychology. Enrollment restricted to psychology graduate students. May be repeated for credit. M. Azmihta, C. Cooper

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. A. Thorne

246. Cultural Diversity in Human Development, S
Focuses on issues of culture and ethnicity in our theoretical and empirical understanding of human development. Particular attention paid to issues of language, culture, and socialization as they relate to social institutions, such as education, that affect children and families. Enrollment limited to 20. Enrollment restricted to graduate students. P. Geerde

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 limited to 15. Enrollment restricted to graduate students. May be repeated for credit. N. Akhtar

Practicum to give students hands-on experience with survey methods by conducting their own survey on the topic of their choice. Enrollment limited to 10. Enrollment restricted to graduate students. A. Hurtado

249. Field Methodologies and Social Ethnography, F
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 limited to 10. Enrollment restricted to graduate students. 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 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. Lench

*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. Students cannot receive credit for both courses.) Enrollment restricted to graduate students. A. Hurtado

*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 limited to 12. Enrollment restricted to psychology graduate students; undergraduates considering graduate work in social psychology are encouraged to enroll with permission of instructor. Offered in alternate academic years. S. Wright

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 classist discrimination and improving interclass relations are discussed. Enrollment limited to 10. Enrollment restricted to graduate students. H. Bullock

259. Social Psychology of Justice, S
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. Examines in depth one application of justice: affirmative action. Enrollment limited to 12. Enrollment restricted to psychology graduate students; undergraduates planning graduate work in social psychology may enroll with permission of instructor. F. Crepaz

290. Proseminar.
Various topics to be offered throughout the year.

B. 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. 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 the preceding quarter. Enrollment restricted to advanced psychology graduate students. C. Cooper

*E. Grant Writing for Psychologists.
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 predissertation, dissertation, summer, or postdoctoral funding sources. Enrollment restricted to graduate psychology students. J. Fox Tree

293. Field Study, F,W,S
Student-designed and -conducted research carried out in field settings. The Staff

297. Independent Study, F,W,S
Independent study and research under faculty supervision. The Staff

299. Thesis Research, F,W,S
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 concentration in religion and visual culture (see page 247), and the Philosophy Department offers a philosophy major with concentration in religious thought (see page 311). Students interested in the possibility of working on religion-related topics using any one of these majors as a base should contact the appropriate department office and one or more of the following faculty advisors: Murray Baumgarten (literature), Ransel Bernbaum (history of art and visual culture), Robert Goff (philosophy), Gildas Hamel (French language), Susan Harding (anthropology), Gary Leach (history of consciousness), John Lynch (classics/literature), Ralph Quinn (psychology), Triloki N. Pandey (anthropology), and Cynthia Polcicruti and Marilyn Westerkamp (history).

Russian
Language Program
239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/ndae2.html

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 (page 341).

Campus Language Laboratories and Placement Exams
Information on these topics can be found on page 262, under Language Program.

Lower-Division Courses
Aural comprehension, speaking, reading, and writing. Recitation and laboratory. Sequence begins in the 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): 2; course 1; 3: course 2; or placement by examination. The Staff

4-5-6. Intermediate Russian. F,W,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): 4: course 3; 5: course 4; 6: course 5, or permission of instructor. (General Education Code: H1.) 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses
Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial. F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

199F. Tutorial (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. 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 Kenez (history), William Nickell (Russian literature and language), Gretha Slobin (Russian literature), and Michael Urban (politics).

Science Communication
460 Kerr Hall
(831) 459-4475
http://sci.com.ucsc.edu

Faculty
R. Ann Caudle, Lecturer in Science Illustration
Glennda Chui, Lecturer in Science Writing
Jenny Keller, Lecturer in Science Illustration
Larry Lavendel, Lecturer in Science Illustration
John McNicholas, Lecturer in Science Writing
Peter Steinhart, Lecturer in Science Writing
John Wilkes, Senior Lecturer in Science Writing, Program Director

Program Description
The Science Communication Program is primarily a graduate program composed of two separate tracks: science illustration and science writing. Students in both programs combine a love of science with a desire to communicate science to the general public.

The writing track, which is a graduate program only, is designed to bring individuals with a solid science background into the field of science writing for the public. The writing program focuses on the theory and practice of conceiving, writing, and editing articles on scientific, medical, environmental, and technological subjects for newspapers, magazines, and special publications directed at non-technical readers.

The illustration track has both graduate and undergraduate components. Hands-on illustration techniques and preparation for a career in science illustration are key elements of the program. Keen observational skills, understanding of the scientific concepts, as well as communication of accurate information through illustration are stressed throughout the course work.

Graduate Programs
Each track accepts 10 students per year, and enrollment in science writing and science illustration classes is strictly limited. Both programs consist 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, Graduate study applications and instructions can be found at http://gradstudies.ucsc.edu.

Graduate Certificate in Science Writing
The 12-month program (that is a nine-month academic year plus summer internship) in science writing offers intensive training in science reporting and writing for general audiences. News, features, essays, and editorials are covered, but science feature writing is stressed.

At least a bachelor’s degree in science and additional full-time research experience are required for admission. Students who have 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 many of the program graduates.

Graduate Certificate in Science Illustration
The science illustration program specializes in training students who have a background in science, artistic talent, and a strong desire to combine both qualifications in a craft that brings scientific concepts to a wide audience. Careful observational skills are crucial whether the artist is cataloging new species, creating a field guide, or reconstructing a dinosaur. Applicants are often scientists with a strong visual background or artists who turn to nature and science for inspiration and wish to learn to communicate science, both natural and theoretical.

The courses offer intensive training in black-and-white, color, and computer-based illustration techniques. Special techniques, portfolio development, and business aspects of the science illustration profession are also covered.

A bachelor’s degree in science is preferred for admission, although other majors are accepted if there is evidence of serious interest and supplementary course work in science. All applicants must submit a portfolio with a minimum of eight samples of their artwork in addition to the UCSC Graduate Study Application for admission. See the program’s web site for application procedures, or contact the program office for information.

Undergraduate Program
The science illustration program offers both studio and computer classes that are open to undergraduates. Undergraduates are allowed to enroll in the courses designated as lower division, 80A, 107, 109, 110, 120, and so on. Field Sketching and Introduction to Natural Science Illustration are suitable for students with little or no drawing experience. Some drawing ability is recommended, but not required for the other courses. All courses are intensive and require substantial amounts of both materials and time. Most of the classes have undergraduates and graduates working side by side, which adds to the learning experience for the undergraduates.

Further Information
Details about the science writing and science illustration graduate certificate programs or information on the undergraduate courses may be obtained from the Science Communication Program Office, the UCSC online science magazine, or by sending e-mail to sci@ucsc.edu.

Lower-Division Courses
42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) The Staff

80A. History of Scientific Illustration
Explores the role illustration has played in science, from the fifteenth century to the present. Using works such as da Vinci’s drawings, sketches by explorers, and computer-generated images, the course examines how illustrations...
have conveyed—and sometimes influenced—scientific thought. (General Education Codes: T2-Natural Sciences, A.J.) J. Keller

Upper-Division Courses

104A. Field Sketching. F

Beginning with exercises to sharpen visual perception and basic drawing skills, progresses to realistic renderings of plant, animal, and other subjects. Field trips to forest, grassland, riparian, ocean shore, and other environments provide varied subject matter from which to draw. In addition to in-class assignments, students produce a field sketchbook and a final project. Appropriate for students with a demonstrated interest in science illustration through previous course work in science and art, or through extracurricular activity in the field, or a strong desire to learn the skills of the field. Enrollment process differs for Summer Session. Enrollment limited to 18. May be repeated for credit. (General Education Code: A.J.) J. Keller

120A. Information Graphics. F

Basics of computerized illustration and print graphics, introduction and exploration of principles of information graphics. Explores roots, theory, principles, current practices, and future directions in computer-based information graphics. Covers basic graphic programs: Painter, Photoshop, Illustrator. Suitable for students with or without computer graphic experience. Enrollment limited to 18. May be repeated for credit. L. Lavendel

120B. Design of Information Graphics (3 credits). W

Design theory and techniques for the production of information graphics. Topics include information layout, grid system, use of type, use and development of illustrative components, and integration in multi-element documents. Concentration on computer-based skills and the use of page layout programs (PageMaker, QuarkXPress). Prerequisite(s): course 120A or permission of instructor. Enrollment limited to 18. May be repeated for credit. L. Lavendel

120C. Interactivity Information Graphics (3 credits). S

Theory and techniques in the design and production of computer-based interactive information. Topics include multi-threaded information, user interface design and production, usability, platform compatibility issues, authoring, prototyping, Internet publishing, and some basic multimedia. Concentration on computer-based skills for publishing on the Web. Prerequisite(s): course 120A or permission of instructor; course 120B recommended. Enrollment limited to 18. May be repeated for credit. L. Lavendel

192. Directed Student Teaching. F,W,S

Teaching a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial. F,W,S

Prerequisite(s): petition on file with sponsoring agency. The Staff

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 limited to 10. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. 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. 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 illustrations. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. 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 specialized publications directed at non-technical readers. Enrollment limited to 10. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program. May be repeated for credit. J. Wilkes

204. Field Sketching. F

Sharpens visual perception, drawing, and design skills through extensive sketching practice. Field trips to forest, grassland, riparian, ocean shore, and other environments provide varied subject matter from which to draw. Basic morphol- ogy of commonly illustrated organisms, methods of collecting visual information, and design experimentation are discussed. Enrollment limited to 10. Enrollment restricted to graduate students formally accepted into the illustration track of the Science Communication Program. J. Keller

207. Applied Techniques in Science Illustration. W

Focuses on increasing professionalism in all areas of illustration skills. Topics include portfolio development, preparation of artwork for display, freelance practices, integration of images with text, and the illustrator/art director relationship. Strong emphasis on conceptual illustration—how to convey an idea, process, sequence of events, etc., through visual means. Enrollment limited to 10. Enrollment restricted to graduate students formally accepted into the illustration track of the Science Communication Program. (Formerly Advanced Techniques in Natural Science Illustration.) J. Keller

208A-B. Advanced Techniques in Color Science Illustration (3 credits). W,S

Taught over two quarters with a total of 6 units. Includes an intensive investigation of advanced color techniques, including gouache, mixed media, and acrylic. Emphasis on design, idea generation, and visual storytelling. In addition to in-class assignments, students produce several choice portfolio pieces. Prerequisite(s): 208B: course 208A. (Formerly 204A-204B.) Enrollment restricted to graduate students formally accepted into the illustration track of the Science Communication Program. A. Caudle

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. Prerequisite(s): petition on file with sponsoring agency. The Staff

Social Sciences

2101 College Nine Apartments, Building Two
(831) 59-3212
http://zzys.ucsc.edu

The Division of Social Sciences curriculum ranges from global issues of social and economic relations between the U.S. and other nations, the social impacts of technological and environmental change, sustainability of human and ecological systems, human development, and social justice to issues of culture and power.

Academic credit for experiential learning through field studies is a specialty of the social sciences. By applying theoretical and technical classroom information to
defined projects in a field placement, students integrate theory with experience, earn academic credit, develop new life skills, and test drive new careers. Field placements are available locally, nationally, and internationally. Placement focus is dependent on each student’s major and may include natural history, ecology, agroecology, public policy, private enterprise, banking, education, or social service.

Students in the social sciences have the unique opportunity for media training and equipment access at the Social Sciences Media Laboratory. Some of the services the Media Laboratory offers are media training, equipment loans, darkroom facilities, video production facilities, and technical consultation and support.

The departments and programs affiliated with the Division of Social Sciences are anthropology, business management economics, community studies, economics, education, environmental studies, global economics, Latin American and Latino studies, legal studies, politics, psychology, and sociology.

UCDC Courses

194A-B. UCDC Internship and Internship Seminar. F, W, S
A 20- to 25-hour per week internship in a Washington, D.C. government, non-profit, or private institution, consistent with availability and student's interests. In addition, weekly attendance at required seminar which stresses institutional analysis, development of bibliographic material using Washington resources, and participant-observer skills. Required for participants in the UCDC program. Prerequisite(s): permission of instructor; for students participating in the UCDC Program. Enrollment limited to 20. The Staff

199. Tutorial. F, W, S
A program of directed study arranged with a Social Sciences Division faculty member. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to participants in the UCDC program. The Staff

199F. Tutorial (2 credits). F, W, S
A program of directed study arranged with participating faculty. Class time is proportionally less than a 5-credit course. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to participants in the UCDC program. The Staff

Sociology

235 College Eight
(831) 459-4306
http://sociology.ucsc.edu

Faculty and Professional Interests

Professor

DAN ARCHER
Violence, war and peace, verbal and nonverbal communication, applied research and public policy, cross-national and cross-cultural research, social psychology, crime and law

JOHN BROWN CHILDS
Sociology of knowledge, religion and social action, elitist and populist social movements

WILLIAM H. FRIEDLAND, Emeritus
WALTER L. GOLDFRANK
Social change, historical sociology, world systems, modern Mexican society, social movements and revolution, development, theories, policies and outcomes
HELMER S. GRAY
Cultural studies, media studies
JOHN I. KITUSE, Emeritus
PAUL M. LUBECK
Political sociology, political economy of development, globalization, labor and work, logic of methodology, religion and social movements, Islamic society and identities, information and networks
DENNIS C. McELRATH, Emeritus
MARCA MILMAN
Social psychology, fieldwork methods, sociology of emotions, sociology of medicine, deviance, the family
JAMES R. O'CONNOR, Emeritus
CRAG REINARMA
Political sociology, law, crime, and social justice: drugs and society
PAMELA ANN ROBY
Sociology of learning, leadership and social change, sociology of emotions, feminist research, women and work, inequality and social policy
DANA Y. TAKAGI
Methodology, stratification, race relations, social theory, Asian Americans and higher education, identity politics
CANDACE WEST
Language and social interaction, sociology of gender, conversation analysis, microanalysis and medicine

Associate Professor

JULIE BETTIE
Feminist studies, cultural studies, race/ethnic studies, identity, popular culture, educational inequality, critical ethnography
MONICA J. CASPER
Medical sociology, science and technology studies, gender/feminist theory, cultural studies, qualitative research, women’s health, and environmental health
BEN CROW
International development, sociology of water and markets, agriculture and famine, South Asia, political economy
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

HIROSHI FUKUI
Law and society, jurisprudence of American juries, white collar crimes including governmental crimes, law and politics in Japan and East Asia, advanced quantitative 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

Lecturer

WENDY MARTYNA
Death and dying, gender, social change

Professor

BARBARA L. EPSHTEIN (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

MARK TRAUGOTT (History)
Social and economic history, 19th-century France, French revolutions, European working class, historical methods, workers’ 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

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; 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’ 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.

Requirements for the Major

For more details, students may consult the sociology handbook, available from the department office, 253 College Eight.

Sociology majors are required to take a total of 13 courses (three prescribed lower-division preparation courses, 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 three sociology courses or their equivalents. Students must successfully complete course 1, Introduction to Sociology, or its equivalent prior to declaring the sociology major.

1. Introduction to Sociology
2. Contemporary American Society
3. World Society

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 careers.

4. Introduction to Sociology
5. Contemporary American Society
6. World Society

7. Statistical Methods
8. Classical 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 at the 60th percentile 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 is course 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.

Sociology Major Planner One

The following is a recommended academic plan for students to begin the sociology major.

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<th>Year</th>
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Sociology Major Planner Two

The following is a recommended academic plan for transfer students entering the sociology major as juniors. It is assumed that Sociology 1 and 10 equivalents were completed at the previous college.

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<thead>
<tr>
<th>Students Beginning in Fall Quarter</th>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<td>1st</td>
<td>Socy 1</td>
<td>Socy 10</td>
<td>Socy 10</td>
<td>Socy 10</td>
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<tr>
<td>2nd</td>
<td>Socy 103A</td>
<td>Socy 103B</td>
<td>Socy 105B</td>
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<th>Students Beginning in Winter Quarter</th>
<th>Year</th>
<th>Fall</th>
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<tbody>
<tr>
<td>3rd</td>
<td>Socy 103A</td>
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<td>Socy 105B</td>
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<tr>
<td>4th</td>
<td>Socy 105A</td>
<td>Socy 103A</td>
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</tbody>
</table>

All majors must complete the remaining six upper-division courses in their junior and senior years.

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 thesis honors separately.

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-B.

For Spanish language instruction information, see Spanish and Spanish for Spanish Speakers, page 351. For Portuguese language instruction information, see page 331.

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 replace the lower-division class with an appropriate course from another institution. Students are assigned a faculty adviser 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 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 adviser from each department, complete 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: at least one of courses 1, 10, and 15; at least two of courses 103B, 105A, and 105B; and at least four other upper-division sociology courses.

Major Disqualification Policy

Students who receive a D, F, NP, 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, contact the Sociology Department.

Declaring the Major

Students who wish to declare the major are strongly encouraged to do so by the first quarter of the junior year. Junior transfer students should meet with the Sociology Department adviser when they arrive on campus to determine their status and begin the declaration of major process. Interested students should go to the department office after initiating a Proposed Study Plan and Declaration of Major/Minor petition at their college. The undergraduate adviser will go over the major requirements, complete the study plan section of the petition, and refer the student to a faculty adviser. The student's Proposed Study Plan and Declaration of Major/Minor petition must be approved and signed by the faculty adviser and the undergraduate adviser prior to filing the petition with the Office of the Registrar.

UC Education Abroad Program Students

Academic year programs. Students must declare the major and pass the three lower-division course requirements (1, 10, 15) and three of the upper-division courses...
“(103B, 105A, 105B) prior to study abroad. The student's sociology faculty adviser 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 three lower-division course requirements (courses 1, 10, and 15) and one upper-division core course (105A) prior to fall semester study abroad. Spring semester: students must declare the major and pass the three lower-division course requirements (courses 1, 10, and 15) 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 most 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 specialities include comparative and historical sociology; criminology; cultural sociology; development; drug policy, deviant behavior; economy 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; and social inequality; sociology of knowledge; and visual sociology.

After 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 interpretive 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 papers 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, 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 material 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.

**Degree Requirements**

The core curriculum is divided into two parts, (1) basic grounding in theory and methods and (2) exposure to research in the three areas of concentration: (a) economy, development, and environment; (b) inequality and identity; and (c) culture, knowledge, and power.

In addition to the course requirements specified below, all first-year students are expected to attend the graduate colloquium series on a regular basis. The colloquium series, featuring UCSC faculty, advanced sociology graduate students, and visiting scholars, is an essential part of the curriculum and a valuable professional experience.

**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

- Three area foundation courses:
  - 220. Global Transformation: Macrosociological Perspectives
  - 240. Inequality and Identity
  - 260. Culture, Knowledge, Power

- At least one writing course (208 or 250)

- A minimum of three elective seminar courses from any area or, with approval, from outside the sociology program.

Students with no background in statistics are required to obtain a parenthetical notation on the sociology Ph.D. program for transfer students. Declaring sociology early in the academic career is advisable. After completing a group of required courses, students are expected to take an oral qualifying exam at the end of the second year.

**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 required at the end of the second year.
- Students are expected to take an oral qualifying exam at the end of the third 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 graduate standing and of the requirements for the Ph.D. degree, as well as the program brochure, application, and information on financial support opportunities, are available from the Division of Graduate Studies. For more information, refer to the Graduate Studies section.

**Lower-Division Courses**

1. **Introduction to Sociology, F,S**

A systematic study of social groups ranging in size from small to social institutions to entire societies. Organized around the themes of social interaction, social inequality, and social change. Fulfills lower-division major requirement. (General Education Code: IS.) C. Reinarman, J. Battie

2. **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. Fulfills lower-division major requirement. (General Education Code: IS) J. Childs, H. Gray

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. Fulfills lower-division major requirement. (General Education Codes: IS, E.) P. Luback, W. Goldfrank

Provides a solid conceptual foundation for undergraduates interested in pursuing the study of race and ethnic issues in advanced upper-level classes. (General Education Codes: IS, E.) The Staff

30A-B-C. Information Methods for Global Information Internships (3 credits), F-W-S
Introduction to information technology and communication networks using the Internet to reduce global inequality and bridge the "digital divide." Prepares 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. Luback

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.
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: 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 Codes: T3-Social Sciences, E.) The Staff

80Z. Youth and Crime. S
Addresses foundations of development of our juvenile justice system and its adaptation (or failure to adapt) to changing youth crime and socioeconomic patterns at beginning of the millennium, with special emphasis on California. (General Education Code: 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. Prerequisite(s); petition on file with sponsoring agency. The Staff

Ordinarily call numbers for this course will not be issued after the first week of instruction. Prerequisite(s); petition on file with sponsoring agency. The Staff

Upper-Division Courses

Core Courses

103A. Statistical Methods (7 credits), F
An introduction to the use of statistical methods in sociological research. The use of statistics to describe or characterize data and information is an inescapable part of sociological research and writing. Statistical measures and statistical inference are the basis for quantitative work. Surveys, demography, secondary data analysis—and is used in some qualitative methods as well, e.g., content analysis. Students must be concurrently enrolled in lab sections. (Formerly course 104.) Enrollment restricted to sociology majors and proposed majors. (General Education Code: Q; W) H. Fukutani

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 appropriate to actual research. Prerequisite(s); satisfaction of the Subject A and Composition requirements. Course 103A, Statistical Methods strongly recommended prior to taking course. (Formerly course 103.) Enrollment restricted to sociology majors and proposed majors. (General Education Codes: Q, W;) 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 all 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 majors and proposed majors. E. Dulpits

105B. Contemporary Sociological Theory. S
Surveys major theoretical perspectives currently available in the discipline including functionalism, symbolic interactionism, ethnomethodology, conflict theory, critical theory, neo-Marxism, feminist theory. Enrollment restricted to sociology majors and proposed majors. A. Szasz

Cluster I: Institutional Analysis
Courses in this cluster address the issues of how major social institutions are organized, the relationship between their technologies and social relations, the subcultures that develop around them, the problems they both solve and create, and the ways they change over time.

110. Violence in the Family, W
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. The Staff

111. Family and Society. S
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. 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. 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. Goldfrank

*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

116. Communication and Mass Media. F
Examines media institutions, communication technologies, and their related cultural expressions. Focuses on specific ways the media—including media studies and criticism—operates as social and cultural factor. Contemporary theory or equivalent in related fields recommended. Enrollment restricted to upper-division students. The Staff

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/reality of youth crime, violence, suicide, drug abuse, school failure, and other social issues. Course 1 or course 10 recommended but not required. The Staff

Considers the role of popular music as a site of contemporary social practices 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. The Staff

119. Sociology of Knowledge. S
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. Childs

120. Feminisms and Cultural Politics. W
Examines the role various feminist discourses play in contemporary cultural politics. Considers (mis)representations of feminisms in 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. Betitie
121. Sociology of Health and Medicine. Analysis of the current health care “crisis” 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. H. Fukurai

122. The Sociology of Law. W Explores the social forces that shape legal outcomes and the ways 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 Legal Studies 172. Students cannot receive credit for both courses.) H. Fukurai

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. 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.) The Staff

125. Society and Nature. F 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 lifetime. The Staff

126. Sociology of Sex. F 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 limited to 90. Enrollment restricted to upper-division students. 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. C. Reinaman

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 Haydon legislation that allows war victims to sue Japanese government and corporations in California. H. Fukurai

129. Popular Culture. W 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 limited to 40. Enrollment restricted to juniors and seniors. The Staff

130. Sociology of Food. S 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 contested categories at either “end” of this system. E. DuPuis

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, lab 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: E) H. Gray

134. Television and the Nation. W The role of American network television in the production of the post-war 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: W) H. Gray

135. Nonverbal Communication. W Examines the role of nonverbal communication as a primary means of constructing social identities, including 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. F 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. Millman

137. Deviance and Conformity. W 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. M. Millman

141. Group Process. F 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 sociological literature in alternate academic years. Enrollment limited to 15. Enrollment restricted to senior sociology majors. M. Millman

142. Language and Social Interaction. W 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. Emphasis 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. Enrollment restricted to sophomores, juniors, and seniors. The Staff

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 limited to 20. Enrollment restricted to juniors and seniors. C. West

144. Sociology of Women. W 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. An introductory sociology course is recommended. Enrollment restricted to juniors and seniors. C. West

145. Sociology of Men. S 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. The Staff

146. Sociology of Violence, War, and Peace. W 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

147. Research Seminar on Violence. W Features social science evidence on the nature, distribution, and causes of different forms of interpersonal violence. Content includes marital violence, child abuse, homicide, assault, and rape. Evidence is examined from several social sciences and also from several cultures. Students should provide evidence of preparation for the research project required in class. Enrollment limited to 15. D. Archer

148. Sociology of Learning. F 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. F
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. S
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. Arnta

151. Research Seminar on Human Communication. S
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 literature in many social science 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 relationships 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. The Staff

153. Sociology of Emotions. W
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. The Staff

*154. Cross-National and Cross-Cultural Research. S
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. S
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. DuPuis

Cluster III: Inequality and Social Change
Courses in this cluster address the issues raised by unequal distribution of wealth, power, privilege, and cultural control. Principal axes of inequality are class, race and ethnicity, and gender. Consequences of inequality for social organization and personal life are examined. Also covered in this cluster are courses that examine the momentous transformation that preoccupied the founders of sociology and ongoing changes in the contemporary world: the rise and spread of capitalism, the scientific and technological revolutions, the emergence of mass politics, large-scale urbanization, shifts in family life, the growing predominance of bureaucracy, and social movements and revolutions. Specialization in one geographical area—East, South, or Southeast Asia; the Middle East; Africa; Europe; Latin America—may be pursued. Courses in this cluster develop the student's ability to conduct social research and analyze policy issues. Also considered are the social definition of social problems and the process of policy formation. Emphasis is on applied research on topics which are currently attracting public attention.

162. Twentieth-Century Revolutions. W
Treatment of twentieth-century Latin American revolts from Zapata 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.) Formerly Sociology of Revolution. (General Education Code: E.) W. Goldfrank

163. Global Corporations and National States. W
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. S
Seminar on the intellectual origins and contemporary exponents of the world-systems perspective in the social sciences: Marx, Braudel, Polanyi, Amin, Schurmann, Wallerstein. Prerequisite(s): courses 105A and 105B or permission of instructor. W. Goldfrank

166. Economics for Non-Economists. F
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 limited to 40. Enrollment restricted to juniors and seniors. 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. The Staff

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: E.) The Staff

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. Satisfies American history and institutions requirement. An introductory course in ethnicity and race is recommended as preparation. Satisfies American History and Institutions Requirement. (General Education Code: E.) J. Childs

172. Sociology of Social Movements. W
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 limited to 40. Enrollment restricted to upper-division students. 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 black Americans. Prerequisite(s): course 10 or 20. (General Education Code: E.) The Staff

175. Social History of Asian Americans. S
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: E.) D. Taka

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. The Staff

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

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 limited to 45. Enrollment restricted to juniors and seniors. M. Becker

184. Hunger and Famine. F
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. The Staff

*186. Globalization, Information, and Social Change.\nReviews 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 or grant proposal using Internet resources. P. Lubbeck

*187. Feminist Theory.\nExamination 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 55. J. Battle

*188. Religion and Social Change.\nUses 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: E.) P. Lubbeck

*189. Gender and Development: Analysis and Practice.\nOne 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, F,W,S
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 core courses in the major. Enrollment restricted to senior sociology majors. The Staff

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): petition on file with 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. May not be counted toward major requirements. Prerequisite(s): petition on file with sponsoring agency. Enrollment restricted to junior and senior sociology majors. 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. Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 10. May be repeated for credit. The Staff

194F. Group Tutorial (2 credits), F,W,S
Small group study of a particular topic in consultation with a faculty sponsor. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

195A-B-C. 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 thesis research and writing. Courses may be taken consecutively or concurrently. Only completion of course 195C (completion of the thesis) satisfies the W general education requirement. Prerequisite(s): course 103B, satisfaction of the Subject A and Composition requirements, petition on file with sponsoring agency. (General Education Code: W.) The Staff

198. Independent Field Study, F,W,S
Provides for (department-sponsored) individual study program off campus for which faculty supervision is not in person (e.g., supervision 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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with 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 theoretical canon in sociology. Enrollment limited to 20. Enrollment restricted to graduate students in sociology and by permission code. E. DuPuis

202. Contemporary Sociological Theory. W
Intensive survey of major tendencies in modern social thought, including functionalism, symbolic interactionism, ethnomethodology, critical theory, structuralism, phenomenology, neo-Marxism, and feminist theory. Enrollment restricted to graduate students in sociology and by permission code. C. Rennaman

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 social sciences; to key issues in “technique,” particularly control, reliability, and validity; and to good examples of social research. Enrollment restricted to graduate students in sociology and by permission code. C. Wett

204. Methods of Quantitative Analysis. F
Students are provided with intuitive explanation of fundamental concepts in statistics and learn how to use statistics to answer sociological questions. Experience and guidance in using computers to efficiently analyze data are provided. Enrollment limited to 20. Enrollment restricted to graduate students in sociology and by permission code. D. Takagi

205. Field Research Methods. W
Provides students first-hand experience doing fieldwork with an emphasis on participant observation and some interview-viewing. Students submit weekly field notes and a final project analysis. At seminar meetings, field experiences and relevant literature are examined. Enrollment limited to 10. Enrollment restricted to graduate students in sociology and by permission code. Offered in alternate academic years. M. Millman

*206. Comparative Historical Methods.\nOverview of research strategies and methods used in historiography and social sciences. Students read works exemplifying a variety of analytical approaches. Written assignments cultivate critical skills, weighing of tradeoffs inherent in all methodological choices, and elaboration of hypothetical research designs. Enrollment limited to 20. Enrollment restricted to graduate students. E. DuPuis

208. Writing Practicum. S
Writing intensive course designed to facilitate the completion of the student’s thesis, oral defense, 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 expected to produce and present drafts of work completed in the seminar. Enrollment limited to 12. Enrollment restricted to sociology graduate students and by permission code. J. Battle

*209. The Analysis of Cultural Forms.\nExamines material and symbolic forms such as media products, cultural artifacts, language, nonverbal communication and social practices using discourse, textual, content, 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 ethnomethodology. Enrollment restricted to sociology graduate students. D. Archer

220. Global Transformation: Macrosociological Perspectives. S
Classical concepts and contemporary approaches in macrosociology, the study of large-scale, long term social change. Readings drawn primarily from the Marxist and Weberian traditions (new institutionalism, varieties of neo-Marxism, environmental history, state centricism) as they focus on agrarian and industrial structures and commodity chains; household, village, and neighborhood organization; social movements and revolutions; culture, ideology, and consciousness; policy analysis; comparative urban, national, and civilizational development. Enrollment limited to 15. Enrollment restricted to graduate students in sociology. B. Crow

*222. Political Sociology.\nA survey of major works and themes in the relationship of politics and society, with primary emphasis on the comparabilities and contradictions of pluralist, elite, and class perspectives on the state. Enrollment restricted to graduate students. E. DuPuis

*223. Sociology of the Environment.\nAdvanced treatment of the dominant ideas of nature and the environment in the West and their relationship to the development of Western capitalism. Leading Western theories of environmental crisis and their relation with ideologies of environmentalism and environmental movements. Enrollment limited to 20. Enrollment restricted to graduate students. May be repeated for credit. E. DuPuis

Not offered in 2003–04

*187. Feminist Theory.
*188. Religion and Social Change.
*189. Gender and Development: Analysis and Practice.
224. Globalization: Theories and Social Movements. Examines the structures, processes, and movements associated with globalization processes. Reviews political economy theories, cultural theories systems, state industrial policies, and popular responses to globalization. Also assesses contribution of resistance movements informed by class, ethnic-nationalism, religion, or gender. Enrollment limited to 25. (Formerly Global Development Theory.) Enrollment restricted to graduate students. Offered in alternate academic years. May be repeated for credit. P. López

225. Political Economy for Sociologists. F Examines rudiments of historical materialism in light of advances in cultural and ecological Marxism. Basic categories of Marxist political economy. Thematic focus on the “first” and “second” contradictions of capitalism in world economy today. Enrollment limited to 15. Enrollment restricted to graduate students. H. Shapiro

*228. The State, Capitalism, and Democracy. Examines 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 responsive to a broader set of interests? Explores how various authors have attempted to answer that question, with the goal of envisioning state institutions that are truly democratic. Enrollment limited to 12. Enrollment restricted to graduate students. E. DuPuis

240. Inequality and Identity. S Explores recent theoretical and empirical studies of race, class, gender, and sexuality with an emphasis on the production of identities and their relationship to processes and structures of power in a postcolonial context. Enrollment restricted to graduate students. D. Takagi

*241. Cross-National and Cross-Cultural Research. Seminar examining theoretical and methodological issues in doing cross-national and cross-cultural research. In addition to a consideration of different research paradigms and approaches, representative works from each comparative tradition are examined. Enrollment limited to 15. Enrollment restricted to graduate students. D. Archer

244. Race and Ethnicity. S A critical survey of the theoretical issues of persistence and change, public policy, and recent empirical studies in the field of race and ethnic relations. Readings introduce comparative race relations and a historical background of major theoretical paradigms in the field which purport to explain race and ethnic relations in general and race relations in America specifically. Enrollment limited to 15. Enrollment restricted to graduate students. Offered in alternate academic years. J. Childs

*245. Feminist Theory. Examination of shifts in twentieth- and twenty-first-century feminist theory and epistemology. Explores the decentering of universalist feminist theories and asks what constitutes feminist theory after gender has been decentered. Considers various deconstructive challenges to second-wave feminist theory based on the politics of race, ethnicity, nation, sexuality, and class. Focus changes regularly. Enrollment limited to 12. Enrollment restricted to sociology graduate students. J. Battle

*247. Race and Class. Introduces the student to the recent literature on race and class. Covers several different theoretical perspectives including internal colonialism, labor market segmentation theories, racial formation, and neo-gramscian cultural analyses. In addition to study of theory, also compares theoretical perspectives to the historical experience of minority groups, in particular, blacks, Hispanics, and Asians. Enrollment restricted to graduate students. 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. Enrollment limited to 15. Enrollment restricted to graduate students. D. Takagi

250. Course Design and Grant-Writing Seminar. W A professional training seminar devoted to the philosophical, conceptual, and practical issues of course design, pedagogy, and grant writing. Topics covered: institutional contexts; curriculum (including syllabi, course content, assignments, evaluation); pedagogy; teaching as work/labor process; grant writing; budgets. Enrollment limited to 15. Enrollment restricted to sociology graduate students. J. Battle

253. Race, Crime, and Justice. W An introduction to comparative and historical analyses of relations between the race and the criminal justice system. Specific topics include differential sentencing disparities, jury nullification, jury selection and decisions, prosecutorial misconduct, government’s charging and investigative discretion, and other racially biased law enforcement 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 limited to 15. Enrollment restricted to graduate students. H. Fukurai

*255. Engaging Cultural Studies. Examines feminist and ethnic studies production, appropriation, and transformation of cultural studies theories and methodologies. Considers the utility of various theoretical apparatuses and methodological strategies employed in the interdisciplinary site that combines feminist, ethnic, and cultural studies. Enrollment limited to 15. Enrollment restricted to graduate students. J. Battle

260. Culture, Knowledge, Power. W 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 knowledges, 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 culture as specific forms of power and sites of political struggle. Enrollment limited to 15. Enrollment restricted to sociology graduate students. H. Gay

261. Sociology of Knowledge. F Explores three main issues: the social determination of knowledge, including natural science; the character of intellectual labor and intellectus as a social group; the role of organized knowledge and “knowledge industries” in contemporary social change. Texts examined include class-based theories (Lukacs, Mannheim, Gramsci), feminist standpoint analysis (Smith, Harding, etc.), and theories of postmodern culture (Lyotard, Harvey, etc.). Enrollment limited to 20. Enrollment restricted to graduate students. B. Crow

*262. Cultural Practice and Everyday Life. Examines contemporary debates about the role of mass produced expressive symbols in modern industrial societies, 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 limited to 10. Enrollment restricted to graduate students. H. Gray

*264. Science, Technology, and Medicine. Explores social and cultural perspectives on science, technology, 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. Enrollment restricted to graduate students. M. Millman

*282. Social Policy Research. 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 limited to 10. Enrollment restricted to graduate students. Offered in alternate academic years. E. DuPuis

*290. Advanced Topics in Sociological Analysis. The topics to be analyzed each year vary with the instructor but focus upon a specific research area. T. Staff

*293. Going on the Job Market. F A seminar devoted to the practical problems of securing a job as a professional sociologist. Topics covered: researching colleges, universities, and public and private organizations that employ sociologists; designing a curriculum vitae; writing an application letter; preparing a “job talk;” handling questions during the interview process; the etiquette 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 students. 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 articles. Enrollment limited to 10. Enrollment restricted to graduate students. M. Millman

297. Independent Study. F,W,S Prerequisite(s): petition on file with sponsoring agency. T. Staff

299. Thesis Research. F,W,S Prerequisite(s): petition on file with sponsoring agency. T. Staff

South and Southeast Asian Studies

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 coursework and research on Bangladesh, Nepal, Pakistan, and Sri Lanka are also encouraged. The Southeast Asian studies major has as its focus the nations of insular Southeast Asia (Indonesia, Malaysia, and the Philippines), but course work and

*Not offered in 2003-04
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 traditional 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 Talat and Kamil Hasan Endowed Chair in Classical Indian Music. Hindi/Urdu is offered as part of the core curriculum.

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, sociology, 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 Southeast Asian studies. Students must complete Anthropology 130E, Ethnic/Regional Area Studies Culture and Politics of Iran, Southeast Asia, and three upper-division courses from lists maintained by the coordinator. 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 undertaken by UC 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 Cowell College Office for more information on this program.

Spanish and Spanish for Spanish Speakers

Language Program
239 Cowell College
(831) 459-2054
http://lang.ucsc.edu/language_program/index2.html

Faculty and Professional Interests

Professor

JULIANNE BURTON-CARVAJAL (Literature)
Twentieth- and 21st-century Latin American visual media, particularly film; melodrama as a transnational form; gender and authorship; history, culture, and representations of California, particularly the Central Coast

NORMA KLAHN (Literature)
Latin American literary and cultural studies (specialization: Mexico, Chicano/a). Culture and culture in a cross-cultural perspective; popular culture and the novel; politics and fiction; history, nation and narrativization, 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 MARTÍNEZ-ECHEAZABAL (Literature)
Latin American and Caribbean literatures, Afro-Latin American literatures, cultures, and societies found in national narratives, Brazilian literature, literatures 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, Hispanic linguistics

CARLOS CALIENRO
Latin American culture, history, literature, cinema, music, art, economics, and politics

VERÓNICA FELIU
Latin American literature of the 20th century and colonial period, cultural studies, studies on testimony, popular culture and performance

MARÍA VICTORIA GONZÁLEZ-PAGANI
Language teaching methodology, Spanish syntax, computer-assisted foreign language learning, Latin American cultural studies, especially women's contributions

MARÍA MORRIS
Language learning styles and strategies, culture and technology in language training

MARÍA NAVARRO
Latin American literature, Mexican Chicano culture, Latina/Chicana issues

ARIEL PEREZ
Language acquisition and teaching methodology, computer-assisted language learning, teaching theory for proficiency, oral proficiency assessment; Latin American current affairs

FRANK A. (Paco) RAMÍREZ
Second-language acquisition, bilingual education, Siglo de Oro Theater, Peninsular medieval literature, Spanish language 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 262), a minor in literature with an emphasis in Spanish/Latin American/Latino literatures (279), or a major in Latin American and Latino studies (264), or a major in global economics (173).

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 262, under Language Program.

Study Abroad

The UC Education Abroad Program (EAP) offers programs ranging from one quarter to one year in Santiago, Chile; San José and Monterrey, Mexico; and Cordoba, Madrid, Alcala, Barcelona, and Granada, Spain. Generally, students must have completed Spanish for Spanish Speakers 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 62). For information on credit applied to a major, contact the appropriate department.

Spanish

Lower-Division Courses


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): 2 course 1; 3 course 2, 2X, or placement by examination. Enrollment limited to 26. The Staff


Includes comprehensive grammar review, composition, readings, and discussion. Reading and audiovisual material is available in several areas. These include the study of Spanish language and literature. Classes are conducted in Spanish. Prerequisite(s): course 3, 3T, or 3X or placement by examination. (General Education Code: EL) The Staff
5. Intermediate Spanish, F,W,S
Includes comprehensive grammar review, composition, readings, and discussion. Reading and audiovisual material deals with various socio-political and cultural issues in the Spanish speaking world. Classes are conducted in Spanish. Prerequisite(s): course 4, 4X, or Spanish for Spanish Speakers 61; or placement by examination. (General Education Code: IH.) 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 or Spanish for Spanish Speakers 61; or placement by examination. (General Education Code: IH.) 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 Spanish-speaking world. Prerequisite(s): course 5 or 5M or 5X or Spanish for Spanish Speakers 62. Enrollment limited to 24. (General Education Code: IH.) 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. Prerequisite(s): course 5 or 5M or 5X or Spanish for Spanish Speakers 62. (General Education Code: IH.) The Staff

63. Spanish for Spanish Speakers, S
Provides for individual study program off-campus for which faculty supervision is not in person (e.g., supervision by correspondence.) Prerequisite(s): petition on file with sponsoring agency. (General Education Code: IH.) The Staff

65. Spanish for the Professions, S
The Staff

66. Spanish for the Professions, S
The Staff

67. Spanish for the Professions, S
The Staff

68. Spanish for the Professions, S
The Staff

69. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

99F. Tutorial. (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

99G. Tutorial. (2 credits). F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Upp-er-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, 56, or Spanish for Spanish Speakers 63. The Staff

156. Topics in Hispanic Language and Culture, W
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.

A. Hispanic Culture through Film, F
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 or 56, or Spanish for Spanish Speakers 63, or placement by examination. F. Ramírez

E. Spanish Culture, W
A broad survey of Spanish cultural topics, including history, politics, religions, art forms, music, and films. It is based on extensive conversations, discussion, and composition. Particular emphasis is placed on key changes that have occurred during the twentieth century in Spain. Classes conducted through commentary on texts read (or viewed), oral presentations, and debate. Recommended for students preparing to go to Spain with EAP. Prerequisite(s): course 6 or 56, or Spanish for Spanish Speakers 63, or interview with instructor. Enrollment restricted to language studies, Latin American and Latino studies, and literature majors. The Staff

6. Intermediate Spanish, F,W,S
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 or 56, or Spanish for Spanish Speakers 63, or placement by examination. F. Ramírez

93. Field Study, F,W,S
Provides for individual study program off-campus for which faculty supervision is not in person (e.g., supervision by correspondence.) Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

999. Tutorial. (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Spanish for Spanish Speakers

Lower-Division Courses

61. Spanish for Spanish Speakers, F
This course deals with orthography (syllabification, accentedulation, etc.), basic grammatical features, verbal structures, and development of conversation skills and confidence in spoken Spanish. Focus on development of writing skills: description, dialogue, expository, 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: IH.) The Staff

62. Spanish for Spanish Speakers, W
Comprehensive review of the subjunctive, the passive voice, different uses of “se,” 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 61 or placement exam. (General Education Code: 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 62 or placement exam. (General Education Code: IH.) The Staff

93. Field Study, F,W,S
Provides for individual study program off-campus for which faculty supervision is not in person (e.g., supervision by correspondence.) Prerequisite(s): petition on file with sponsoring agency. The Staff

99. Tutorial, F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

999. Tutorial. (2 credits), F,W,S
Prerequisite(s): petition on file with sponsoring agency. The Staff

Upper-Division Courses

125. Mexico and the Southwest, S
An interdisciplinary survey of the cultural history of the Mexican people in both Mexico and the U.S. Southwest. Topics include literature, art, folklore, oral tradition, music, politics, as well as ‘everyday’ cultural manifestations. Conducted in Spanish. May be counted toward fulfillment of upper-division major requirements for Latin American and Latino studies and language studies. Prerequisite(s): course 63 or Spanish 6 or 56. Enrollment limited to 25. The Staff

193. Field Study, F,W,S
Provides for individual study program off-campus for which faculty supervision is not in person (e.g., supervision by correspondence.) Ordinarily, students cannot enroll in this course after the first week of instruction. Prerequisite(s): petition on file with sponsoring agency. The Staff

198. Independent Field Study, F,W,S
Provides for individual study program off-campus for which faculty supervision is not in person (e.g., supervision by correspondence.) Ordinarily, students cannot enroll in this course after the first week of instruction. Prerequisite(s): petition on file with sponsoring agency. The Staff

*Not offered in 2003-04
The Staff

D. Williams

RUTH L. SOLOMON, Emerita

MLEE Y. KOIKE, Professor

Professor

JAMES H. BURMAN

Playwriting, theater history and literary, classical and Renaissance drama, Chicano theater, digital media

M. KATHLEEN FOLEY

Acting and directing, dramatic literature (English and Spanish Renaissance), translating dramatic literature

199F. Tutorial. (2 credits). F,W,S

Prerequisite(s): petition on file with sponsoring agency.

199T. 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 Codes: T5-Humanities and Arts or Social Sciences, W, E) T The Staff

Upper-Division Courses

120. Self and Society: Teaching Practicum. W,S

Each student facilitates one of the discussion sections of Stevenson 80B or 80C, attends lectures, and meets with staff for practicum on the teaching process. Prerequisite(s): qualifications as determined by instructor at first class meeting. Enrollment limited to 5. T The Staff

192. Directed Student Teaching. F,W,S

Teaching of a lower-division seminar under faculty supervision (see course 42). Prerequisite(s): upper-division standing and a proposal supported by a faculty member willing to supervise. T 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. Prerequisite(s): approval of student’s adviser and the academic preceptor, and, in the case of full-time study, the board of studies supervising the major. May be repeated for credit. T The Staff


A program of independent study arranged between a group of students and a faculty instructor. Enrollment limited to 12. Enrollment restricted to members of Stevenson College. T 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. Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 10. May be repeated for credit. T 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(s): approval of student’s adviser, certification of adequate preparation, and approval by the academic preceptor. May be repeated for credit. T 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. Prerequisite(s): petition on file with sponsoring agency. Requires approval of student adviser and academic preceptor. May be repeated for credit. T The Staff

199. Tutorial. F,W,S

Individual projects carried out under the supervision of a Stevenson faculty member. Prerequisite(s): petition on file with sponsoring agency. T The Staff

199F. Tutorial (2 credits). F,W,S

Individual projects carried out under the supervision of a Stevenson faculty member. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T The Staff

Stevenson College

College Office
(831) 459-4930
http://www2.ucsc.edu/stevenson

For college description and list of faculty, see page 77.

Lower-Division Courses

15. Latina Identity (2 credits). F

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. T The Staff

42. Student-Directed Seminar. F,W,S

Seminars taught by upper-division students under faculty supervision (see course 192). T The Staff

80A-B-C. 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, Malcolm X, Sor Juana, Woolf, Marx, and Freud and such works as the Bible and Koran. When all three quarters are passed, satisfies the following general education requirements: E, T3-Social Sciences, T4-Humanities and Arts, and C for designated sections. Prerequisite(s): satisfaction of the Subject A requirement for C sections. (General Education Codes: T3-Social Sciences, T4-Humanities and Arts, C, E.) T The Staff

80F. Self and Society/Films (2 credits). F,W,S

Designed to complement the readings and discussions of the core course. Films depicting various cultures and social settings or discussing topics of relevance to the readings of the core course such as Plato, Shakespeare, Gandhi, Malcolm X, Sor Juana, Woolf, Marx, and Freud and such works as the Bible and Koran will be shown on a weekly basis. Attendance at each film viewing will be required. Students will write one essay paper at the end of the quarter. Enrollment restricted to members of Stevenson College. May be repeated for credit. T 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 Codes: 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 Codes: T5-Humanities and Arts or Social Sciences, W, E) T The Staff

Subject A

(English Composition)

See pages 27 and 363.
or choreographed by students, and faculty-directed workshops. Undergraduate students are also given the opportunity to see their own writing, choreography, or intermedia concepts put into production in annual festivals of student work. Although majors are given preference in studio courses, most courses and productions welcome nonmajors as well. Opportunities to study and perform non-Western as well as Euro-American traditions are also a significant part of the program.

The stage and studio spaces available to students of theater arts allow for this breadth of training and performance opportunities. The Theater Arts Center contains a 500-seat thrust stage, a state-of-the-art experimental theater, and a 200-seat proscenium theater; acting, directing, and dance studios; costume, scenic, and properties shops; a sound recording room; and a metal shop. Elsewhere on campus are additional dance studio facilities, the open-air Quarry Theater seating 3,000, the Shakespeare Santa Cruz Festival Glen, and the 150-seat Barn Theater. Library holdings in theater literature and history are extensive, including a large slide collection; journals in current theater, dance, and design; 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 thematic context with 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 theater professionals 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 (during spring quarter) for audiences throughout Santa Cruz County and beyond.

Majors who wish to intensify their study of one particular theater arts area before seeking admission to graduate 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 Theory, 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 residence, 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

60A-B-C Development of Theater Arts Theory, 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

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 Theories
- 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 considered 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 preparation 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

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Plan Two

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Comprehensive Requirement

Theater arts majors are responsible for successfully completing 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 creative 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 directorial 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 practice of the theater arts as well as a focus on either drama, dance, or theater design. The course requirements are listed below. There is no comprehensive requirement for the minor.

- Two courses in the literature/history/theory of the theater arts, chosen from the following: 60A-B-C, 160, or the 161 series
- 2 credits of course 50, rather than 6 credits
- One of the following courses, in the student's area of focus: 10, 20, or 30
- Three upper-division electives, one of which must be a studio or faculty production course

Fifth-Year Certificate Program

The Theater Arts Department offers a graduate certificate program that allows a limited number of students to refocus or intensify their skills, concentrating on performance reinforced by scholarship. The program provides 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 dance, drama, design and technology, playwriting, Asian theater, or dramatic literature.

Students in the graduate certificate program are expected to complete one year as a full-time resident student, passing eight 5-credit theater arts courses. Of those eight courses, two are graduate seminars; and one must be in the history, criticism, or theory of theater 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 studies 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 framework of theater production, students explore the process of translating a script into a performance. Topics include visual literacy, creative problem solving, establishing effective working teams, rear sheets, storyboarding, drawing, sound and color theory. This course is a prerequisite for all upper-division design courses. (General Education Code: A.) E. Roos

12. Production Management, W
Designed to acquaint students with the complexities of staging productions from the audition process to final performance. Directing, lighting, scenic production, sound, costumes, and personnel management are aspects that will be touched upon in class. Students are billed for a materials fee. (General Education Code: 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: A.) The Staff

17. Costume Construction, W
The process of interpreting a costume designer's sketch into a finished theatrical costume. Some techniques include 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: A.) E. Roos

18. Drafting for Theatrical Production, F
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 drafting, perspective, and rendering techniques. Students are billed for a materials fee. Enrollment limited to 20. (General Education Code: A.) The Staff

19. Design Studio: Lighting Studio A, F
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: IH, A.) The Staff

Introduction to basic acting skills 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: IH, A.) The Staff

Studio course involves acting exercises based on the Stanislavsky 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: A.) G. Frisch

22. Indonesian Dance and Drama, S
Students learn the basic movement repertoire of the specific characters of the Indonesian dance-drama/puppetry tradition over the quarter with explication of how these types operate in their own cultural context. The course culminates in an open showing of scenework. May be repeated for credit. (General Education Code: A.) E. Roos

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: A.) P. Whitworth

*31. Experimental Form.
Works toward integration of the creative processes of visual arts, music, and dance. Students explore a variety of media (painting, sculpture, dance, etc.) and work toward syntheses that result in new approaches to creating performances in site specific locations. (General Education Code: A.) M. Wong

32. Introduction to Ballet, F,W
Introduction to ballet basics such as healthy alignment, anatomical sound articulation of hips and feet, balance control, moving through space harmoniously, and development of technical strength and combinatory capacity in a classical, but fluid, aesthetic. Enrollment limited to 35. May be repeated for credit. (General Education Code: IH, A.) M. Franko

33. Advanced Introduction to Modern Dance, W
Intensive instruction in developing the dancer's physical instrument. Intended for students who have a previous fundamental knowledge of the basics of classic dance, combined with movement theory. Prerequisite(s): course 30. Enrollment limited to 30. May be repeated for credit. (General Education Code: IH, A.) C. Kraname

36. Introduction to Dance Composition, F
Composing solo dances using a variety of approaches for developing movement combinations. Observation and recognition of personal movement patterns and discovering new sources for creative material. May be repeated for credit. (General Education Code: IH, A.) K. Jannarone

An experience designed to develop an active and creative vision leading to a concept that takes an audience on a memorable journey with lives that are created on the stage. Students direct a monologue, a dual scene, and a final project which represents the collaborative nature of the art of directing. Topics include blocking techniques, history of directing, how to work with designers, rehearsal techniques, and strategies for actor coaching. Enrollment limited to 16. (General Education Code: IH, A.) The Staff

45. Student Directed Production, F,W,S
Participation in a student-directed play or student-choreographed dance concert under faculty supervision. (See course 192). Rehearsals culminate in public performances. Prerequisite(s): admission by audition; see department office for more information. May be repeated for credit. The Staff

50. Fundamentals of Theater Production (2 credits), F,W,S
Work is on various aspects of theatrical production, including scenery, lighting, costumes, sound, stage management, and video documentation. Satisfies the department's technical experience requirement. May be repeated for credit. (General Education Code: A.) E. Roos D. Scheie, The Staff

*Not offered in 2003–04
60A-B-C. Development of Theater Arts: Theory, Literature, and Practice. F-W-S
The performance practice, history, and theory of drama, dance, and film and video in the modern period are studied in their historical and cultural framework. Particular emphasis given to selected periods from the Greeks to the present. Major theoretical treatises, scripts, scenarios, background readings, and other documents are discussed in relation to the actual performance and staging practices of the period. A: Greek to the sixteenth century (theater, drama, dance); B: seventeenth to nineteenth century (theater, drama, dance); C: twentieth century (theater, drama, dance, film, and video). (General Education Codes: IH, A.) (F) P. Mostkoff, (W) J. Bierman, (S) P. M. Mostkoff

*70. Working in Theater and the Performing Arts (2 credits)
Creative artists, technicians, and designers discuss 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

80B. Rock 'n Roll Design. W
Examination of the genesis, history, and development of 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 these venues. (General Education Codes: T4-Humanities and Arts, A.) The Staff

80E. Stand-Up Comedy. F
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 performance weekly. (General Education Codes: T4-Humanities and Arts, A.) D. M. Osborne

*80G. Creative Process/Dance. W
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 Codes: T4-Humanities and Arts, A.) T. Beal

80H. Hamlet Conundrums. F, W, S
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 will receive e-mail through their CATS accounts; course password given out at the beginning of the quarter. (General Education Codes: T4-Humanities and Arts, A.) J. Bierman

*80L. Muppet Magic: Jim Henson's Art.
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 Codes: T4-Humanities and Arts, A.) M. Foley

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 Codes: T4-Humanities and Arts, E, A.) T. Beal Staff

*80N. Walt Disney. W
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 Codes: T4-Humanities and Arts, A.) J. Bierman

*80O. Comedy: Saturday Night Live, Second City, and Comic Improvisation 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 Codes: 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 Codes: T4-Humanities and Arts, A.) T. Beal Staff

80T. Queer Theater. S
The course examines the history of the queer perspective in dramatic literature from the Greeks to Marlowe and Shakespeare through the calcification of homosexuality in the era of Freud; it then traces theater stewardship by gay and lesbian artists from within the closet and without. (General Education Codes: T4-Humanities and Arts, A.) T. Beal Staff

80U. Socks, Drugs, and Rock and Roll: American Costume since 1950. S
This course is an introduction to American fashion and fashion designers from the 1950's 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 Codes: 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 Codes: T4-Humanities and Arts, A.) T. Beal

*80W. The Way Things Work and the Theater.
Explores basics of mechanics and movement as applied to theatrical and non-theatrical realms. Utilizes textual materials as well as interaction with technology. Topics include structural elements, motion, energy, sound/light, their physical properties and how they interface with pre- and post-modern theater. (General Education Codes: T4-Humanities and Arts, A.) T. Beal Staff

80X. The Performance of Story in Theater and Film. S
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 Codes: T4-Humanities and Arts, A.) T. Beal Staff

80Y. The Broadway Musical. F
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. (Formerly Musical Comedy in America: Theater and Film.) (General Education Codes: T4-Humanities and Arts, A.) D. Scheib

80Z. Indian Dance. S
Classical Indian dance will be studied as a performance practice. Understanding of drum syllables and associated steps, religious and sociological context, and mimesis (abhinaya) as well as introduction to epic stories (Ramayana, Mahabharata, Bhagavata Purana) and classical song. Culminates in performance demonstration. (General Education Codes: T4-Humanities and Arts, A.) M. Foley

Students must file their petitions for this course with the department office by the end of the fifth day of instruction in the quarter in which they would like to take the tutorial. (Formerly: petition required, approved by instructor and department. May be repeated for credit. T. Beal Staff

Upper-Division Courses

104. Multimedia Authoring. W
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. With this in mind, students design and create computer puzzles and games. Enrollment limited to 25. (General Education Code: A.) T. Beal Staff

*107. Design Studio: Masks and Makeup.
Advanced work in the design and techniques of stage make-up and masks. Students are billed for materials fee. Prerequisite(s): course 10. Enrollment limited to 20. (Formerly Masks and Make-up.) Enrollment restricted to theater arts majors; open at the end of priority enrollment if space permits. Offered in alternate academic years. E. Roos

*110. Advanced Stage Technology. F
An investigation into the intricacies of production, focusing on structural, spatial, and visual concepts, invention 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. Prerequisite(s): course 10. (General Education Code: A.) T. Beal Staff

113. The History of Design for Theater. F
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: A.) T. Beal Staff

114. Design Studio: Sound. W
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. Prerequisite(s): course 10. (General Education Code: A.) The Staff

115. Design Studio: Scenic Design. S
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. Prerequisite(s): course 10. (Formerly Advanced Production Design.) (General Education Code: A.) The Staff

116A. History of Clothing and Costume. F
Survey of clothing and theatrical costumes; emphasis on dress of the audience and actor in historical periods of theatrical activity. Students are billed for a materials fee. (General Education Code: A.) The Staff

116B. American Costume Since 1950: Socks, Drugs, and Rock ‘n’ Roll. S
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: E.) Roos

117. Design Studio: Costume. S
Advanced principles and theory of costume design for theatrical productions. Students are billed for a materials fee. Prerequisite(s): course 10. May be repeated for credit. (General Education Code: A.) The Staff

*118. Design Studio: Scene Painting.
Emphasis on techniques used in painting scenery for the theater. Students are billed for a materials fee. Prerequisite(s): course 10. (General Education Code: A.) The Staff

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: 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. See department office for more information. Course 21 recommended as preparation. (General Education Code: 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, relationships to religious practice devoted to Rama, Siva, and Krishna, political implications and intercultural experimentation. (General Education Codes: H.I, A.) The Staff

124. Movement for Performers. W
Awareness and extension of personal movement repertoire, through observation, movement experience, and exploration. (General Education Code: A.) The Staff

126. Acting Studio III. W,S
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: A.) M. Taylor

A progression from the simple phrasing and articulation of beginning technique class to more complex material requiring more acute perceptive skills and richer dynamic range. Emphasis is on both alignment and maintaining the kinetic integrity of the body while moving through space. Prerequisite(s): course 30 or 31 or permission of instructor. May be repeated for credit. (General Education Code: A.) The Staff

Advanced instruction in developing the dancer’s physical instrument, combined with movement theory. Prerequisite(s): course 30 or 31 or permission of instructor. May be repeated for credit. (General Education Code: A.) M. Wong, T. Scheibe, C. Kremer

*132. Modern Dance Studio (2 credits).
Instruction in developing the dancer’s physical instrument, combined with movement theory. Prerequisite(s): course 30 or 31 or permission of instructor. May be repeated for credit. (General Education Code: A.) The Staff

133. Issues in Dance History and Theory. W
A seminar research. 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: A.) M. Franko

133A. Public Art and Cultural Politics in the WPA. F
During the Depression, the Works Progress Administration (WPA) established a set of arts projects involving visual art, photography, writing, music, theater, and dance. The goal was to put artists back to work. This opened dialogue over public art, censorship, and national identity. Students have the opportunity to engage in primary research in the WPA archives. (General Education Code: 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, “natural” dance, Orientalism, Ausdruckstanz, “industrial” dance, American modern dance and neo-classicism, chance procedure, postmodernism, and the avant-garde commodity marketplace. (General Education Code: A.) The Staff

135. Dance Improvisation and Theory. W
Exploring sources for movement: gaining facility in a wide range of movement elements; working in ensemble and solos. (General Education Code: A.) M. Wong

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 review writing. Prerequisite(s): course 32 or permission of instructor. Enrollment limited to 30. May be repeated for credit. (General Education Code: H.I, A.) M. Franko

137. Studies in Performance (Dance). S
Studies in dance, taken in connection with performance in a major dance concert. Students are required to work on all aspects of the production. Students work with guest and faculty choreographers. May be repeated for credit with consent of instructor. Prerequisite(s): admission by audition held late winter quarter; see department office for more information. May be repeated for credit. (General Education Code: A.) M. Wong, M. Franko

*138. Choreographic Process: From Concept to Performance (2 credits).
Students assist in the collaborative development of a dance piece that will be performed as a part of the spring dance concert. Source materials are read and discussed and students improvise with the choreographer on themes and issues that emerge. Prerequisite(s): audition at first class meeting. (General Education Code: A.) M. Franko

139. Random: With a Purpose. W
Participation in a student-choreographed and directed dance concert under faculty supervision. Rehearsals culminate in public performances. Prerequisite(s): auditions to be held on the first day of class. May be repeated for credit. (General Education Code: A.) The Staff

141. Play Direction Studio I. F
Basic studio exploration through scene problems and exercises of the development of directing principles. Intensive work on the director’s pre-rehearsal work from text selection, analysis, and casting. Prerequisite(s): audition at first class. Enrollment limited to 20. The Staff

142. Play Direction Studio II. F
Intensive studio exploration of the art and craft of directing. Primary focus on text analysis, collaboration with designers, developing a point of view and visual/auditory language for the play, staging techniques, and communication techniques with actors. Prerequisite(s): course 40, 141, or permission of instructor. Enrollment limited to 15. May be repeated for credit. (General Education Code: A.) The Staff

151. Studies in Performance (Drama). F,W
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. Prerequisite(s): admission by audition; audition schedule to be announced at first class meeting. May be repeated for credit. (General Education Code: A.) The Staff, D. Scheibe

155. Workshop Experiments in Performance. W
A process-oriented investigation of specific playwrights or theatrical styles consisting of work which may culminate in a final production. Prerequisite(s): admission by audition at first class meeting; see department office for more information. May be repeated for credit. (General Education Code: A.) D. Scheibe

156. Play Development Workshop. W
“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. G. Frithz

157. Playwriting. S
Students are given the opportunity to write their own scripts and refine them as the result of class discussion and workshop with actors. Work is on specific problems involving such elements as the structuring of a plot or the development of character. Prerequisite(s): satisfaction of the Subject A and Composition requirements. May be repeated for credit. (General Education Codes: W, A.) J. Bieman
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 taking the course as directors are required to obtain consent of the instructor. Other students may enroll as usual. May be repeated for credit. The Staff

159. Advanced Playwriting. F
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. Enrollment limited to 25. May be repeated for credit. (General Education Codes: W, A) J. Blerum

160. Dramatic Theories. W
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 twenty-first-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: A) P. Mokhoff

161. Theater, Literature and History.
* C. The Theater and Drama of Renaissance Europe.
An examination of selected plays from Renaissance Europe (1580-1680, Italy, Spain, and France) from an explicitly theatrical viewpoint which will include practical scene study. Covers Renaissance theater buildings and some related critical materials. Offered in alternate academic years. (General Education Code: A) P. Whitworth

Art serves simultaneously to educate its audience to the group's traditional values and to test new ideas. Indian, Indonesian, and Japanese 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: A, E) T. Staff

M. 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: A) P. Gallagher

Q. 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 forms. Students cannot receive credit for this course and course 80T. (General Education Code: A) D. Hidaka

R. Theater of American Cultures. S
Interrelationship of ethnicity and the rise of significant American theater groups including the black theater movement, Chicano Teatro, and Asian American theater will be shared via lecture, viewing, and discussion. (Formerly Theater of Diversity) (General Education Codes: A, E) M. Martinez

*S. American Drama: Politics and Theater.
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. (Formerly American Theater: Group Performance (1930-1990)) (General Education Code: A) T. Staff

*T. Women in Theater.
Explores twentieth-century American female playwrights from textual, historical, and multicultural perspectives. The course progresses from Trillis (1916) through the Harlem Renaissance, Broadway's Lillian Hellman, and today's post-Feminist theatrical explosion in lectures, films, dramatizations, and award-winning playwrights' visits. (General Education Code: A) T. Staff

U. Performance of Story in Theater and Film. S
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 80X. (General Education Code: A) P. Mokhoff

V. The Broadway Musical. F
Musical comedy as a distinctly American contribution to theater and film studied through scripts, scores, and film and video viewing. European backgrounds, the relationship 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. (General Education Code: A) D. Schi
e

163. Special Studies in Individual Playwrights.
A. Shakespeare, F
Focus is 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. May be repeated for credit. (General Education Code: A) D. Schi
e

E. Chekhov and H is Impact.
Delves into the work of Chekhov and the Moscow art theater. Through scene 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: A) T. Staff

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. D. Cuthbert

190. Group Projects. F,W,S
Prerequisite(s): petition required, approved by instructor and department. May be repeated for credit. T. Staff

192. Directed Student Teaching. F,W,S
Teaching a lower-division seminar under faculty supervision. (See courses 42 and 45.) Prerequisite(s): petition required, approved by instructor and department. T. Staff

193. Proseminar.
Exposes students to an aspect of the theory or practice of the theater arts. Visiting scholars share their area of expertise in lectures to a small group of students. Enrollment limited to 25. May be repeated for credit. (General Education Code: A) T. Staff

193F. Proseminar (2 credits). F
Exposes students to an aspect of the theory or practice of the theater arts. Visiting lecturers share their area of expertise in lectures to a small group of students. Enrollment limited to 25. May be repeated for credit. (General Education Code: A) T. Staff

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. Prerequisite(s); petition required, approved by instructor and department. T. Staff

198F. 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. Prerequisite(s); petition required, approved by instructor and department. T. Staff

199. Tutorial, F,W,S
Individual study in areas approved by sponsoring instructors. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. Staff

199F. Tutorial (2 credits). F,W,S
Individual study in areas approved by sponsoring instructors. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. T. Staff

Graduate Courses

290. Special Topics and Area Concentration, F,W
Study group meetings on a regular basis which involve either the study of shared texts or presentations by the group members and invited guests. Enrollment restricted to graduate students in theater arts. May be repeated for credit. (F) K. Jannarone, (W) W. Wong, M. Franko

291. Field Study, F,W,S
Student-designed and conducted research carried out in field settings. A brief prospectus must be filed with the department office before undertaking the research, and a brief final report of activities must be filed upon return. Course intended for students with graduate standing in theater arts. Prerequisite(s); petition required, approved by instructor and department. T. Staff

292. Teaching-Related Independent Study, F,W,S
Directed graduate research and writing coordinated with the teaching of undergraduates. Course intended for graduate students in theater arts. Prerequisite(s); petition required, approved by instructor and department. May be repeated for credit. T. Staff

297. Independent Study, F,W,S
Independent study or research for graduate students in theater arts. Prerequisite(s); petition required, approval by instructor and department. May be repeated for credit. T. Staff

*Not offered in 2003-04
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 103, Greek Drama
Music 80G, American Musical Theater
Music 160, University Opera Theater
Physical Education 20A, Dance: Ballet
Physical Education 20B, Dance: Folk
Physical Education 20C, Dance: Jazz
Physical Education 203, Dance Modern
Physical Education 30H, Fitness Activities T’ai Chi Chuan
Sociology 116, Communication and Mass Media
Sociology 129, Popular Culture
Sociology 135, Nonverbal Communication

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 279.

Women’s Studies

180 Kresge College
(831) 459-4324
wst@ucsc.edu
http://humwww.ucsc.edu/wst/

Faculty and Professional Interests

BETTINA APTEKER, 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

ANJALI ARONDEKAR, Assistant Professor of Women’s Studies
Feminist and postcolonial theory, critical queer/race studies, South Asia studies, and 19th-century studies

GINA DENT, Assistant Professor of Women’s Studies
African studies, popular culture and social problems, feminist legal theory, postcolonial and critical area studies

MARGARET M. DOWNES BASKIN, Research Associate in Women’s Studies
Presidential leadership styles, elections and the media, women’s political and corporate leadership style, intergenerational relations

MARGE FRANTZ, Emerita, Lecturer in American Studies and Women’s Studies

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 and Women’s Studies
Cultural studies, transcultural feminist theories, Chican@ and Latin@ cinema

JODY GREENE, Assistant Professor of Literature and Women’s Studies
Seventeenth- and 18th-century British and French literature and culture, pre- and early modern studies, early modern colonials, gay and lesbian cultural studies, gender studies, history of authorship, history of the book

DONNA J. HARAWAY, Professor of History of Consciousness and Women’s Studies
Gender sexuality and ideology in modern Chinese history, comparative labor history, Chican@ history, nationalism, and sexuality in the third world; oral history

ARASHA HULL, Emerita, Professor of Women’s Studies and Literature

HELENE MOGLIN, Professor of Literature and Women’s Studies
The English novel; feminist, cultural, and psychoanalytic theory

RADHIKA MONGIA, Assistant Professor of Women’s Studies
Feminist theory; critical race studies, Marxist, postcolonial, and poststructuralist theory, literary and cultural theory, history of migration law and the formations of the modern state, cultural studies

SONIA E. ALVAREZ, Professor of Politics
Latin American politics, the politics of gender, comparative political development, feminist theory and 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 BRODSKY, Professor of Art
Contemporary theory and criticism in the visual arts and in relationship to the practice of art in the 20th century

HEATHER BULLOCK, Assistant Professor of Psychology
Poverty and economic inequality, welfare policy, feminist psychology, discrimination

JULIANNE BURTON-CARRAJAL, Professor of Literature
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

MONICA J. CASPER, Associate Professor of Sociology
Methodology, science and technology studies, gender feminist theory, cultural studies, qualitative research, women’s health, and environmental health

NANCY N. CHEN, Associate Professor of Anthropology
Methodology, anthropology, urban anthropology, cultural 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

FAV J. CROSBY, Professor of Psychology
Gender, social identity, and social justice, especially affirmative action

ANGELA V. DAVIS, Professor of History of Consciousness
Feminist African American studies, critical theory, popular music culture and social consciousness, philosophy of punishment (women’s jails and prisons)

TERESA DE LAUERST, 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 GAITET, Professor of Literature and Language Studies
Nineteenth- and 20th-century French literature, sociolinguistics, political history, Celine, Genet

MARY-KAY GEMEL, Professor of Classics and Comparative Literature
Performance studies, ancient Mediterranean performance, Greek and Latin literature, film, feminist approaches to literature and performance

SUSAN GILLMAN, Professor of American Literature
Nineteenth-century American literature and culture, theories of culture, race, and gender, world literature and cultural studies

JENNIFER A. GONZÁLEZ, Associate 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

M. LISBETH HAAS, Associate Professor of History
U.S. social and cultural history, the Southwest, the colonial Americas, California, ethnic and women’s history, history and theory

AMELIE HAUST, Assistant Professor of Film and Digital Media
Film theory and history, feminist film and television studies, Chinese cinema, issues of authorship, interdisciplinary approaches

MARGO HENDRICKS, Associate Professor of Literature
Early modern English literature and culture, theories of culture, race, gender, and memory, women’s playwrights pre- and early modern studies
GAIL B. HERSHATTER, Professor of History
Modern Chinese social and cultural history; labor history; women's history; history of sexuality; feminist theory; history, memory, and nostalgia

JOCELYN HOY, Lecturer in Philosophy
Feminist philosophy; 19th- and 20th-century continental philosophy

A. YVETTE HUGGINS, Assistant Professor of American Studies
Race and class relations within 19th- and 20th-century western American history; U.S. labor and immigration history, and comparative ethnic 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 historical practice, portraiture

AIDA HURTADO, Professor of Psychology
Social identity, feminist theory, social psychology of education, political consciousness, survey methodology

VIRGINIA JANSEN, Professor of History of Art and Visual Culture
Medieval visual culture, urbanism, and secular building; Gothic architecture; campus planning and architecture

STACY KAMEHIBO, Assistant Professor of History of Art and Visual Culture
Visual cultures of the Pacific, 19th-century Hawaii, nationalism, cultural syncretism, textiles

L. S. KIM, Assistant Professor of Film and Digital Media
Television history and theory; racial discourse; feminist criticism and 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); Chican@/Latin@ literature and culture from a cross-border perspective, popular culture and the novel, poetic and political fiction and history; nation and narration, cultural and feminist theories

LORI G. KLEETZER, 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 LEAPER, 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; image of gender in the media

CAROLYN MARTIN SHAWE, Professor of Anthropology
African societies, colonial discourse, social theory, anthropology of women, sexuality

LOURDES MARTÍNEZ-ECHAZÁBAL, Associate Professor of Latin American Literature
Latin American and Caribbean literatures; Afro-Latin American literatures; cultures and societies; indigenous narratologies; Brazilian literature; literatures of Cuba and the Cuban diaspora; critical race theory

JENNIE LIND McCADDE, 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 culture, film history and theory, documentary and science fiction

PAMELA PERRY, Assistant Professor of Community Studies
Youth activism and empowerment, youth culture, educational inequalities, race and ethnic identities, and whiteness

CATHERINE RAMIREZ, Assistant Professor of American Studies
Chicana/o and U.S. Latina/o history, literature, and culture; popular and cultural studies; critical theory; postcolonial literature and theory; feminist theory; speculative fiction

PAMELA ANN ROBY, Professor of Sociology
Sociology of learning, leadership and social change; sociology of emotions; feminist research, women and work, inequality and social policy

LISA ROFEL, Associate Professor of Anthropology
Critical theory; anthropology of modernity; popular culture, gender, and sexuality; transnational political economy; postcolonial feminist anthropology; China

TRICIA ROSE, Professor of American Studies
African American culture, urban history, cultural politics, race and gender theory; popular culture and music

VANTSA SETHI, Assistant Professor of Politics
Modern political theory; political movements; feminist theory, history, and practice

MARY W. SILVER, Professor of Ocean Sciences
Biological oceanography; marine plankton, midwater ecology

GRETA SLOBIN, Emerita, Professor of Russian Literature
Film history; an introduction to Russian cinema

SHIELLY STAMP, Associate Professor of Film and Digital Media
Film history, theory, and criticism; silent cinema; women's filmmaking, film censorship; histories of moviemaking; feminist 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 medicine in prisons

NEFERTI TADHAR, Assistant Professor of History of Consciousness
Third World feminism; postcolonial theory; critical theories of race and subjectivity; social theory; cultural studies of the Asia Pacific region

AVRIL THORNE, Associate Professor of Psychology
Identity development through personal memory telling; development of meaning in adolescents' self-defining memory narratives; family storytelling and the development of a sense of self; narrative reconstruction of identity and intimacy

ANNE TSING, Professor of Anthropology
Cultural ecology; political ecology; gender in the U.S., social landscapes and tropical forest ethnobotanies; ethnicity, local power and relations to the state; in Indonesia, Southeast Asia, and the U.S.

CANDACE WEST, Professor of Sociology
Language and social interaction, sociology of gender, conversation analysis, microinteraction, and medicine

MARILYN J. WESTERKAMP, Professor of History
British colonial and revolutionary America, early modern cultural and religious history; U.S. religious history, women's history, gender

ALICE YANG MURRAY, Associate Professor of History
Historical memory, Asian American history, gender history, race and ethnicity, 20th-century U.S.; oral history

JUDY YUNG, Professor of American Studies
Asian American history, culture, women, and contemporary issues; 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 M e x i c a n/a workers and 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 processes; motivation, especially power and affiliation motive

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 multicultural, multiracial, and Third World feminisms. Likewise, issues in feminist theory, 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 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.); nations and cultures (outside the U.S. or comparative with the U.S.); movements, institutions, policy, and legal studies; or feminist theory. Courses appropriate for each concentration are listed in the Women's Studies Office at Kreges College. A proposal for an independent concentration will be approved only when a student presents a clear, coherent, and rigorous plan of study that does not fit the existing concentrations. Both the student's advisor and the Women's Studies Department chair must approve a proposal for an independent concentration.

Required courses include course 1A, Introduction to Feminisms, or 1B, Introduction to Third World Feminisms course 100, Feminist Theories (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 affiliate 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 WMST.

One internship or individual study (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 adviser's approval. Two EAP courses may count towards the major; three transfer courses may 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 affiliate 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.

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 advisers 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 degree-granting department. The Anthropology, History, History of Consciousness, Literature, Psychology, and Sociology Departments participate in this parenthetical notation program with the Women's Studies Department. Students in other departments wishing to pursue this option should consult with the chairs of their respective Ph.D. programs and of women's studies. A list, updated annually, of regularly offered approved graduate courses is available in the Women's Studies Department Office.

The following are required for the notation:

- **Committee composition.** The student must have a designated graduate adviser from women's studies core or affiliate 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 graduate offerings of any UCSC department, as long as they are taught by core or affiliated women's studies faculty. Additional requirements include:
  - **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 WMST) 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
- **History of Consciousness 210A-B. Cultural and Historical Studies of Race and Ethnicity.** A. Y. Davis
- **History of Consciousness 213A-B. Representation.** T. de Lauretis
- **History of Consciousness 215A-B-C. Critical Theory in the Matrix of Tradition.** A. Y. Davis
- **History of Consciousness 217A-B-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. Ruby

**Upper-Division Courses**

- **1A. Introduction to Feminisms.** F
- **1B. Introduction to Third World Feminisms.** W
- **2A. Historical Studies of Race and Ethnicity.** A. Y. Davis
- **2B. Introduction to Feminist Theories.** D. Haraway
- **2C. Historical Studies of Race and Ethnicity.** A. Y. Davis
- **2D. Introduction to Feminist Theories.** D. Haraway
- **2E. Historical Studies of Race and Ethnicity.** A. Y. Davis

**Lower-Division Courses**

- **100. Feminist Theories.** S
- **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 production and reproduction of race and racism in the U.S. Prerequisite(s): one course from Women's Studies. Enrollment limited to 40. R. Mongia

**103. Writing Women's Lives.** S

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. L. Detar

**110. Women Writers of the African Diaspora.** Advanced introduction to contemporary writings of black women in U.S., Africa, and the Caribbean, focusing on the relationship 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 issues of tradition and conflicts of contemporary black women in relation to gender, class, and national identity. Enrollment limited to 25. (Formerly African American Women Writers) (General Education Code: E) G. Dent

**112. Women and the Law.** F

Using case law, examines how the law structures and changes women's rights, gendered hierarchies, and sexualized power relations in both public and intimate life. Considers constitutional citizenship, sex, gender, and family rights; welfare rights; and the law's response to sex- and gender-based discrimination and violence. (Also offered as Politics 112. Students cannot receive credit for both courses.) (General Education Codes: T4-Humanities and Arts, A) L. Mitter

**80Y. Violence Against Women of Color.**

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/sxual violence, colonialism and violence, prisons/INS detention, police brutality, violence and the economy, religion/spirituality, and medical experimentation, attacks on the reproductive rights of women of color, and miltarism/border violence. Enrollment limited to 40. (General Education Codes: T4-Humanities and Arts or Social Sciences, E) T. Staff

**U p per-D i vi s i o n C our ses**

**100. Feminist Theories.** S

Core course for women's studies. Explores 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 feminisms reframe the change from the standpoints of race, gender, class, and sexuality? Focus will change each year. Enrollment restricted to sophomores, juniors, and senior students. (General Education Code: E) R. Mongia

**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 production and reproduction of race and racism in the U.S. Prerequisite(s): one course from Women's Studies. Enrollment limited to 40. L. Detar

**103. Writing Women's Lives.** S

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. L. Detar

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**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

*Not offered in 2003–04*
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): courses 1B and 100 or permission of instructor. Enrollment limited to 20. Enrollment restricted to juniors and seniors. (General Education Code: E.) R. Mongia

*138. Women of Color in and Performance. Centers on contemporary theater works by and about women of color. Interrogates social, political, and artistic concerns explored in and through theater by women of color using performance texts, dramatic literature, critical writings, and video recordings of performances. Explores ways in which racialized and gendered bodies resist, employ, and participate in the construction of "women of color" in contemporary American theater. Enrollment limited to 20. (General Education Codes: A, E.) L. San Pablo Burns

*139. African American Women's History. Considers African American women as central to understanding of U.S. history, focusing on everyday survival, resistance, and movements for social change. Discussion of critical theories for historical research, gender, and race. Emphasis on biography, cultural history, and documentary and archival research. Enrollment limited to 100. Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: E.) B. Athphekhar

145. Racial and Gender Formations in the U.S. W Provides an introduction to the defining issues surrounding "women of color" in the U.S. Examines 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. (Formerly Women of Color in the U.S.) (General Education Code: E.) G. Daet

*150. Women's Culture. 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; redefine 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. Athphekhar

*151A. Chicana Feminism. Students are introduced to the writings of Chicana feminists to identify the gender issues that produce conflict and cooperation in their communities; also makes linkages to gender issues in other U.S. communities of color and Latin America. (Also offered as Psychology 157A. Students cannot receive credit for both courses.) Prerequisite(s): course 1A or 1B or Psychology 3. (General Education Code: E.) A. Hurtado

*151B. Advanced Topics in Chicana Feminism. 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 Psychology 157B. Students cannot receive credit for both courses.) Prerequisite(s): course 151A or Psychology 157A. Enrollment limited to 30. A. Hurtado

*154. Revolutionary Tales: Women in Modern China. Focusing on autobiographical, fictitious, and filmic narratives of the Chinese revolution, this 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 limited to 20. Formerly course 194. Enrollment restricted to sophomore, junior, and senior students. Offered in alternate academic years. (General Education Code: E.) E. Honig

155. Women Workers in Transnational Context. F Examines women's work in context of globalization, i.e., creation of a division of labor extending beyond national borders, beginning in fifteenth century and manifesting itself more recently with proliferation of factories owned by multinational corporations largely dependent on labor of women in third-world countries. Focus on contemporary issues placed in historical context: Prerequisite(s): course 1A or 1B. Enrollment limited to 25. Enrollment restricted to sophomores, juniors, and seniors. (General Education Code: E.) E. Honig

168. Women: The Philosophical Issues. S 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.) J. Hoy

*185. Psychoanalysis and Feminism. Introduction to Freudian and Lacanian theories of sexual identity and the construction of the self as well as to 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 limited to 25. Enrollment restricted to junior and senior students. H. Moqjen

189. Advanced Topics in Feminist Theory. F Focus 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 limited to 20. Enrollment restricted to sophomore, junior, and senior students. May be repeated for credit. R. Mongia

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. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. The Staff

194. Senior Seminar. 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.

I. Women's Oral History and Memoir, W Designed to train students in oral history and memoir writing. Emphasizes the specialness of women's voices; race, class, and sexuality; women's silence, erasure, censorship, and marginalization are addressed. The politics of memory, narratives, storytelling, and editorial judgment are considered. Prerequisite(s): satisfaction of the Subject A and Composition requirements; course 1A or 1B, and 100. Enrollment limited to 22. Enrollment restricted to senior women's studies majors. (General Education Code: W.) B. Athphekhar

*J. Advanced Feminist Philosophy. Focuses on issues in epistemology and ontology: the construction of knowledge and objectivity; rationality and emotions; subjectivity and personal identity; the body and sexuality. (Also offered as Philosophy 190T. Students cannot receive credit for both courses.) Prerequisite(s): course 100 or 168. Enrollment limited to 20. J. Hoy

*L. Politics of Sexual Rights and Sexual Identity in the Third World. 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 1B or equivalent. Enrollment limited to 20. Enrollment restricted to junior and senior students. E. Honig

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, petition on file with sponsoring agency. (General Education Code: W.) The Staff

196. Feminist Methods of Teaching, F Practicum for undergraduates assisting in the teaching of course 1A, Introduction to Feminism, 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, violence against women. 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. Athphekhar

198. Independent Field Study, F,W,S Provides for individual study program off campus for which faculty supervision is not in person. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Independent Field Study (2 credits), F,W,S Provides for individual study program off campus for which faculty supervision is not in person. Prerequisite(s): petition on file with sponsoring agency. The Staff

199. Tutorial, F,W,S Individual directed study for upper-division undergraduates. Prerequisite(s): petition on file with 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 limited to 15. Enrollment restricted to graduate students. E. Hönig

*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 limited to 15. Enrollment restricted to graduate students or seniors with permission of instructor, based on narrative evaluations and sample essays. H. M. Oglet

*207. Queer Globalization and Racial Formations.*
Explores the interrelated epistemological frameworks of critical race studies and queer studies. Through a study of philosophical, scientific, and literary texts, we will historicize and theorize discourses of race and sexuality. Enrollment limited to 15. (Formerly Queer/Race Studies Interactions and Genealogies) Enrollment restricted to graduate students. A. Arondkar

*212. Feminist Theory and the Law.*
Interrogation of the relationship between law and its instantiating gendered categories, supported by feminist, queer, Marxist, critical race, and postcolonial theories. Topics include hypothesization of legal categories, the context between domestic and international human rights frameworks, overlapping civil and communal codes, cultural explanations in the law, the law as text and archive, overlapping civil and communal codes, cultural explanations in the law, the law as text and archive, and 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 offered as History of Consciousness 264. Students cannot receive credit for both courses.) Enrollment limited to 15. Enrollment restricted to graduate students. G. D. Brit

**Writing Program**

166 Kreege College
(831) 459-2431
http://humwwww.ucsz.edu/writing/index.html

**Faculty and Professional Interests**

**Senior Lecturer**
CAROL M. FREEMAN
History, theory, and practice of rhetoric/composition theory; the essay as genre

DONALD L. ROTTMAN, Director, Central California Writing Project
Literacy education and democracy; UC-DK-12 partnerships; writing, persuasion, and nonviolence; writing pedagogy; connections between beauty and justice

**Lecturer**
ELIZABETH ABRAMS
Composition and rhetoric; writing across the curriculum; 19th- and 20th-century American history and literature, especially concerning the Civil War

JEFFREY M. ARNETT
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 engagement; writing and social responsibility

VIRGINIA DRAPER
Writing pedagogies; writing and learning across the curriculum; the rhetorics of writing discussion, and reading; professional development for teachers; teaching assistants; and credential students

FARNAZ FATEMI
Media analysis; middle East issues and cross-cultural perspectives; visual culture

TIMOTHY FITZMAURICE
Poetry and politics; writing and publication

MARIA CECILIA FREEMAN, Coordinator, Subject A
Grammar, English as a second language (ESL), multicultural American literature, teacher training, educational partnerships

CONN HALLINAN
Journalism

ROSEANNE POWER HAMILTON
Poetry, writing and rhetoric; creative writing, feminist theory; queer studies; American literature

ELLEN LOUISE HART
Educational partnerships; literary culture, and social change; the American poet Emily Dickinson and the study of poetry

**Writing Program**

Robin King
Visual arts, media criticism, sociology of learning and emotions

Nancy Kruse
Postmodern writing practice, theory, and pedagogy; rhetoric and politics

Brij Lunine
Reception studies, cultural studies, literary theory, critical race and gender studies, postcolonial discourses

Patrick McKercher
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 Newbery
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, Chair
Coordinator, Journalism Minor
Journalism, media criticism, fiction, poetry, service-learning, educational partnerships, community studies

Judith Todd
Philosophies of nature, ecopsychology, Native American worldviews, visual arts, cross-cultural and interdisciplinary studies

Amy Weaver
Creative nonfiction, writing pedagogy

James Wilson, Coordinator, Communication and Rhetoric Minor
Medieval European literary, artichitectural, and political movements (especially of France, Italy, and Spain); poetry of Ezra Pound; Chinese poetry and philosophy; translation

**Professor**
Paul N. Skaggs (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 a range of introductory, intermediate, and advanced 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 of grammar and organization and strategies of invention, composition, and editing. The 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 both parts of the general education writing requirement—the “W” and “C” requirements—and tutorials that prepare students for the writing placement exam. Writing instructors in each college participate in that college’s core course and counsel its students about their writing.
The Writing Program offers two minors: a minor in journalism (see page 260) and a minor in communication and rhetoric (see page 154). It also offers instruction in the theory and practice of teaching writing for graduate students and peer tutors. A number of its courses are designed to meet the needs of various groups, including transfer students and students whose first language is not English.

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, through a broadly based consideration of the nature of language from a diversity of perspectives. Prerequisite(s): satisfaction of the Subject A requirement. Enrollment limited to 25. (General Education Code: C) The Staff

10A-B-C. Subject A Tutorial (2 credits per quarter). F-W-S
A tutorial designed to help students improve their ability to write coherent, accurate prose and to pass the Subject A examination. Counts for academic standing and financial aid purposes, but does not apply toward degree requirements. Prerequisite(s): approval of the Writing Program; only for students who have not satisfied the Subject A requirement. May be repeated for credit. The Staff

11A-B-C. Adjunct Tutorial in Writing (2 credits per quarter). F-W-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. The Staff

20. The Nature of Written Discourse. W
Explores the dynamics of written language; its relationships to speech, thought, and culture; its uses in different personal, academic, professional, and public contexts; its abuses in journalism and propaganda. Course work includes extensive practice in different kinds of writing. Enrollment limited to 22. Enrollment restricted to first-year students during priority enrollment; may be opened if space allows. 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 limited to 22. Enrollment restricted to first-year students during priority enrollment; may be opened if space allows. M. Freeman, The Staff

22A-B. 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. 22A: designed for entering first-year students; 22B: designed for continuing students who have already taken course 20 and/or 21. Enrollment limited to 22. M. Freeman

42. Student-Directed Seminar. F,W,S
Seminars taught by upper-division students under faculty supervision. (See course 192.) Prerequisite(s): petition on file with sponsoring agency. Enrollment limited to 20. 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: W) C. Hallinan

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 news-related 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. 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Individual, directed study for lower-division students in expository writing, editing, or journalism. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

99F. Tutorial (2 credits). F,W,S
Individual, directed study for lower-division students in expository writing, editing, or journalism. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Upper-Division Courses

101. Introduction to the History, Theory, and Practice of Rhetoric. F
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: 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: 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 the natural sciences, satisfaction of the Subject A and Composition requirements. Enrollment limited to 30. Enrollment restricted to juniors and seniors during priority enrollment. (General Education Code: W) S. Parminter

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: 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. The Staff

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. The Staff

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 their construction. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. J. Wilson

110A. Writing in the Professions.
Study of writing required in the selected professions, including law, politics, and government. Considers the rhetoric of each discipline and relevant texts. Includes lectures from visiting professionals and a series of writing assignments based on reading and research. Topic may vary from year to year, focusing on the rhetoric of other professional disciplines: medicine, engineering, economics, and so forth. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. (General Education Code: W) T. Fitzmaurice

120. Editing English Prose. S
This course offers extended, detailed instruction in editing one's own and other people's prose for accuracy, clarity, appropriateness, and effectiveness. It provides some history of theories of style and stylistic analysis, and instruction in prose variation according to social context. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. D. Scripture

*Not offered in 2003–04

*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 the natural sciences, satisfaction of the Subject A and Composition requirements. Enrollment limited to 30. Enrollment restricted to juniors and seniors during priority enrollment. (General Education Code: W) S. Parminter

*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: 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

*107. Technical and Business Writing: An Overview. 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. 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. 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 their construction. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. J. Wilson

*110A. Writing in the Professions. Study of writing required in the selected professions, including law, politics, and government. Considers the rhetoric of each discipline and relevant texts. Includes lectures from visiting professionals and a series of writing assignments based on reading and research. Topic may vary from year to year, focusing on the rhetoric of other professional disciplines: medicine, engineering, economics, and so forth. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. (General Education Code: W) T. Fitzmaurice

*120. Editing English Prose. S This course offers extended, detailed instruction in editing one's own and other people's prose for accuracy, clarity, appropriateness, and effectiveness. It provides some history of theories of style and stylistic analysis, and instruction in prose variation according to social context. Prerequisite(s): satisfaction of the Subject A and Composition requirements. Enrollment limited to 40. D. Scripture
128. Journalism and the Latino Community. F
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. (Also offered as Latin American and Latino Studies 128. Students cannot receive credit for both courses.) (The Staff)

*161. Academic Writing and Research Methods. T
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. (161A: A special section in fall designed specifically for re-entry women. Entry into this section requires instructor determination of qualifications at the first class meeting. 161C: A special section designed 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: W.) (The Staff)

*163. Advanced Workshop in Expository Writing. D
A composition course for students who, having mastered basic writing skills, wish to concentrate on increasing their effectiveness as rhetoricians, prose stylists, and editors. Assignments include writing 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 3. May be repeated for credit. (General Education Code: W.) (D. Arthür)

*165. Practicum in Reporting. D
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 limited to 22. Enrollment restricted to journalism minors during priority enrollment. (General Education Code: W.) (The Staff)

166. Topics in Journalism. D
Courses under this heading explore fields of newspaper and magazine journalism: feature writing, investigative reporting, and enrollment restricted to journalism minors during priority enrollment. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. (L. López)

167. Making the News. W
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. Enrollment limited to 43. (General Education Code: W.) (C. Hallinan, R. Spafford)

169. Theory and Practice of Tutoring Writing. F,W
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. (The Staff)

180. Seminar in Editing and Publishing. F,W,S
Newswriting 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. (C. Hallinan)

189. Methods of Teaching Writing, F,W,S
Supervised by a writing instructor, each students attends a weekly seminar on teaching writing and either assists in a class or serves as a facilitator of a small writing group in a course at USC or a public school. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. (The Staff)

191. Internships. F,W,S
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. (The Staff)

B. Internship in Writing, F,W,S
Regular writing for newspaper or magazine. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. (The Staff)

8. Investigative Reporting. D
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: W.) (The Staff)

D. 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: W.) (The Staff)

*J. 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. (The Staff)

*N. 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. (The Staff)

192. Directed Student Teaching, F,W,S
Teaching of a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): petition on file with 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. Prerequisite(s): satisfaction of Subject A requirement; petition on file with sponsoring agency. May be repeated for credit. (The Staff)

194. Group Tutorial, F,W,S
A writing, editing, or publishing project undertaken by a small group of students under the direct supervision of a writing instructor. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. (The Staff)

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; petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. (The Staff)

198H. 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. (The Staff)

199. Tutorial, F,W,S
Individual, directed study for upper-division students in expository writing, editing, or journalism. Prerequisite(s): petition on file with 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. Prerequisite(s): petition on file with sponsoring agency. May be repeated for credit. The Staff

Graduate Courses

202. Writing and Learning Seminar (3 credits). W,S
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 limited to 30. Enrollment restricted to graduate students. (W) The Staff, (S) 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 limited to 25. (Formerly Humanities 203.) Enrollment restricted to graduate students. E. Abrams

Additional Courses of Interest
Computer Engineering 185, Technical Writing for Computer Engineers
Teaching and Administrative Staff

Teaching Staff 369
University Administration 393
Teaching Staff

Faculty titles for 2003–04 were verified as of May 15, 2003, 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 2003–04 academic year. In addition, some faculty listed here as emeriti may be recalled to teach courses. The listing for most faculty includes college membership, year of arrival at UC Santa Cruz, academic title, degrees, and former affiliations.

MARTIN ABDI (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. ABRHAM, 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 ABRHAM, 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 Chicago; Ph.D., University of California, Berkeley.

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 AIZENMAN, 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.

Associate Professor, Psychology
B.S., M.S., Ph.D., Dalhousie University (Canada).

JORGE ALADRO FONT, Merrill College (1992)
Associate 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.A., M.A., San Francisco State University. Former affiliation: San Francisco Art Institute.

JENNIFER K. ANDERSON, College Eight/College Ten (1974)
Lecturer, Environmental Interpretation
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.

ROBERT S. ANDERSON, Stevenson College/Crown College (1988)
Professor, Earth Sciences
B.A., Williams College; M.S., Stanford University; Ph.D., University of Washington. Former affiliation: California Institute of Technology.

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 L. ANDRIS (1993)
Lecturer, Music (Cello)
B.M., Performer's Certificate, Eastman School of Music. Concurrent affiliations: Cabrillo College; Popper-Ketzer Summer Music Conservatory; Santa Cruz Chamber Players; Santa Cruz New Music Works; Monterey Symphony.

DANIEL ANTHONY III, Oakes College (1988)
Associate Professor, History

BETTINA APTEKER, Kresge College (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 AREAS 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.

S. E. ARNOFT (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.
ANJALI ARONDEKAR (2000)
Assistant Professor, Women's Studies
I.B., Armand Hammer United World College;
B.A., Cornell University; Grad. Cert., 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.

NORIKO ASO, Merrill College (1998)
Visiting Assistant Professor, 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, 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.

PAUL AVRIL (2001)
Lecturer, Music (French Horn)
B.M., Boston University; M.M., Catholic
University (Washington, D.C.). Concurrent affiliations:
Philharmonia Baroque Orchestra; Santa
Cruz County Symphony.

MARGARITA AZMITIA, Cowell College (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.

NEIL J. BALMFORTH (1999)
Professor, Engineering (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;
Altan Cultural 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.

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 (1996)
Professor, English and Comparative Literature
Assistant Professor, Hebrew 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.

JONATHAN F. BEECHER, Stevenson College (1970)
Professor, History
B.A., Ph.D., Harvard University. Former affiliations:
Harvard University; Ecole Normale
d'Instituteurs (France).

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. Former affiliations: Oxford
University; Purdue University.

DORIS B. ASH, Porter College (2000)
Assistant Professor Emeritus, Psychology
B.A., M.A., University of Wisconsin; Ph.D.,
University of California, Santa Barbara.

ILAN BENJAMIN, Stevenson College (1989)
Professor, Chemistry and Biochemistry
B.Sc., Ph.D., Hebrew University of Jerusalem.
Former affiliation: University of California, San
Diego.

HARRY BERGER JR., Cowell College (1965)
Professor Emeritus, History
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., Ph.D. (These d'Université), University of Paris.
Former affiliations: Institut Jacques Monod (Paris); Hopkins
Marine Station, Stanford University.

CLAude F. BERNASCONI, 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 affiliations: 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., M.Phil., 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.

GEORGE R. BLUMENTHAL, Oakes College (1972)
under Grand Master Liu, Yao Ting.
Certified master of Yung Style Tai Chi Chuan
Physical Education Instructor
University of California, Berkeley.
Diploma, University of Buenos Aires; Ph.D., Professor, Chemistry and Biochemistry
University of Augsburg.

ROBERT BOLTJE (1999)
Assistant Professor, Computer Science
B.S., M.S., University of Minnesota, Minneapolis; Ph.D., University of Colorado, Boulder.

ALEXANDRE BRANDWJIN (1985)
Professor, Computer Engineering

REBECCA BRASLAV, Stevenson College (1991)
Assistant Professor, Chemistry and Biochemistry
B.A., Reed College; Ph.D., University of Wisconsin-Madison. Former affiliation: Institut fér Organische Chemie (Basel, Switzerland).

DONALD BRENNIS, Cowell College/College Nine (1996)
Professor, Anthropology
B.A., Stanford University; Ph.D., Harvard University. Former affiliation: Pitier 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.

FRANK G. BRIDGES, Stevenson College (1970)
Professor, Physics
B.Sc., M.Sc., University of British Columbia; Ph.D., University of California, San Diego. Former affiliation: University of California, San Diego.

JEAN P. BRODIE, Cowell College (1987)
Professor, Astronomy and Astrophysics; Astronomer
U.C. Observatories/Lick Observatory
B.S., University of London; Ph.D., Cambridge University. Former affiliation: University of California, Berkeley.

JOYCE BRODSKY, Porter College (1992)
Professor, Art
B.A., Brooklyn College; M.A., New York University; Ph.D. cand., Yale University; Ecole du Louvre. Former affiliation: University of Connecticut.

EILEEN BROOKS, College Nine (2001)
Assistant Professor, Economics
B.S., Massachusetts Institute of Technology; M.Litt., Oxford University; A.M., Ph.D., Harvard University.

MARGARET R. BROSE, Cowell College (1978)
Professor, Italian and Comparative Literature
B.A., Wayne State University; M.A., Ph.D., Harvard University. Former affiliations: Yale University; University of Colorado.

GEORGE S. BROWN, Porter College (1990)
Professor, Physics
B.S., California Institute of Technology; M.S., Ph.D., Cornell University. Former affiliations: Cornell University; Bell Laboratories; Stanford University; Stanford Synchrotron Radiation Laboratory.

MICHAEL K. BROWN, Merrill College (1982)
Professor, Politics
B.A., University of Oregon; M.P.A., Ph.D., University of California, Los Angeles. Former affiliation: Virginia Polytechnic Institute and State University.

KENNETH W. BRULAND, Crown College (1974)
Professor, Ocean Sciences
B.A., Western Washington State College; Ph.D., Scripps Institution of Oceanography, University of California, San Diego.

WAYNE B. BRUMBACH, Merrill College (1969)
Professor Emeritus, Physical Education
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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).
RAYMIE STAFA (2002)
Assistant Professor, Computer Science
S.B., S.M., Ph.D., Massachusetts Institute of Technology. Former affiliation: Compaq Systems Research Center.

BRIAN J. STAUFENBIEL, Portier 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, Portier 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, Portier College (1994)
Associate Professor, Art
B.S., 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.

ELLEN KAPPY SUCKIEL, Cowell College (1973)
Professor, Philosophy
B.A., Douglass College; M.A., Ph.D., University of Wisconsin-Madison. Former affiliations: Florida State University; University of Wisconsin.

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, Portier College (1976)
Lecturer, Music (Gamelan)
Former affiliations: Akademi Seni Tari Indonesia and Konservatori Karawitan (Bandung, West Java); University of California, Berkeley and 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/Portier 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 SWEZZEY (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).

EUGENE SWEITZER, Crowne College (1971)
Professor, Chemistry and Biochemistry
B.A., Oberlin College; Ph.D., Harvard University. Former affiliations: Oberlin College; General Electric.

MARSHALL SYLVESTER, 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, Provost, College Eight
B.A., Harvard University; M.A., University of Chicago; Ph.D., University of Wisconsin-Madison. Former affiliation: Rutgers University.

NEFERTI TADJAR, Oakes College (1996)
Assistant 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.

DANA Y. TAKAGI, Stevenson College/College Ten (1987)
Professor, Sociology
B.A., M.A., Ph.D., University of California, Berkeley. Former affiliation: University of California, Irvine.

FRANK J. TALAMANTE, 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.

HIROTAKE TAMANOI, 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.

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-CHIWU 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, Cowell College (1971)
Professor, 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.

MARCIA TAYLOR (1985)
Lecturer, Theater Arts (Drama)
Neighborhood Playhouse School of the Theater; HB Studio; San Jose State University.

KIP TÉLLEZ, 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 TETDMAN, Kresge College (1987)
Professor, Literature
B.A., Amherst College; Ph.D., Yale University. Former affiliations: Swarthmore College; University of California, Berkeley; University of California, San Diego.

SUSANA TERRILL (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 (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 
B.A., 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) 
Associate 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. TOBISCH, 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 TODD, Porter College (1984) 
Lecturer, Writing 
B.A., Indiana University; M.L.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 affiliation: 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.

ANTHONY J. TROMBA, Cowell College (1970) 
Professor, Mathematics 
B.S., Cornell University; M.A., Ph.D., Princeton University. Former affiliation: Stanford University.

ANNA TSING, Krege College (1987) 
Professor, Anthropology 
B.A., Yale University; M.A., Ph.D., Stanford University. Former affiliations: University of Colorado; University of Massachusetts.

SLAWK M. TULACZYK (2000) 
Assistant Professor, Earth Sciences 
Magister, University of Wroclaw (Poland); Grad. Cert., 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/College Nine (1991) 
Professor, Politics 
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. VANDEBREGT (1972) 
Physical Education Instructor 
B.A., University of California, Santa Barbara.

ALLEN VAN GELDER, Porter College (1987) 
Professor, Computer Science 
B.S., Massachusetts Institute of Technology; Ph.D., Stanford University.

ANUJAN VARMA, College Eight (1991) 
Professor, Computer Engineering 
B.Sc., University of Calicut; M.E., Indian Institute of Science; Ph.D., University of Southern California. Former affiliation: IBM Thomas J. Watson Research Center.

GUSTAVO VAZQUEZ (1995) 
Assistant Professor, Film and Digital Media 
B.F.A., San Francisco Art Institute; M.A., San Francisco State University; Former affiliations: Exploratorium Museum of Art, Science, and Perception; Telesistema Miochacao de Radio y Television; Guadalupe Cultural Arts Center.

JOHN F. VESECKY, Crown College (1999) 
Professor, Electrical Engineering 
B.A., B.S., Rice University; M.S., Ph.D., Stanford University. Former affiliations: University of Michigan; Stanford University; University of Leicester (England); SRI International; Sylvia Electronic Defense Laboratories.

JACK L. VEVEA (2002) 
Assistant Professor, Psychology 
A.B., University of California, Berkeley; Ph.D., University of Chicago. Former affiliation: University of North Carolina at Chapel Hill.

LAURENCE R. VEYSEY (1966) 
Professor Emeritus, History 
B.A., Yale University; M.A., University of Chicago; Ph.D., University of California, Berkeley. Former affiliations: Harvard University; University of Wisconsin.

THOMAS A. VOGELER, Cowell College (1965) 
Professor Emeritus, English and Comparative Literature 
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STEVEN S. VOgtT, Crown College (1978) 
Professor, Astronomy and Astrophysics; Astronomer, UC Observatories/Lick Observatory 
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GEORGE E. VON DER MUHLL, Merrill College (1969) 
Professor Emeritus, Politics 
B.A., Oberlin College; M.Sc., 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; Yeke 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.

HONGJUN WANG (1999) 
Assistant Professor, Engineering (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) 
Acting Assistant Professor, Psychology 
M.S., National Taiwan University; Ph.D. cand., University of Illinois, Urbana-Champaign.

Professor, Computer Science 
Vordiplom in Informatik, Frederick 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); M.A., Dalhousie University (Canada); 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.

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 Company.

JONATHAN WELTMAN (1994)  
Associate Professor, Mathematics  
S.B., S.B., Massachusetts Institute of Technology; Ph.D., Harvard University. Former affiliation: Columbia University.

MARY SUSAN WELDON, Stevenson College (1988)  
Associate Professor, Psychology  
B.A., California State University, Northridge; M.S., Ph.D., Purdue University. Former affiliation: Purdue 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)  
Acting Professor, Education  
B.A., University of Cambridge; Dipl. Appl. Ling., University of Edinburgh; Ph.D., University of Bristol. Former affiliations: Ontario Institute for Studies in Education, 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, Stevenson College/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. WEYGANDT, Porter College (1967)  
Professor Emeritus, Art  
B.F.A., Washington 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)  
University 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.

ANN-MARIE WIESE (2001)  
Assistant Professor, Education  
B.A., University of California, Santa Cruz; M.A., Ph.D., University of California, Berkeley. Former affiliation: U.S. Department of Education.

JANE P. WILHELM, 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 California, 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; Ida Benson Lynn Professor, Ocean Health  
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  
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.

WILLIAM K. WINANT (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, Haverford 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 WOHLEIFEL, (1994)  
Lecturer, Art  
B.A., University of California, Los Angeles; Graduate Certificate, University of California, Santa Cruz.

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
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STEPHEN C. WRIGHT, Oakes College (1991)
Associate Professor, Psychology
B.A., University of Winnipeg; M.A., Ph.D., McGill University. Former affiliation: McGill University.

SHIRLEY S. WYNNE, Porter College (1974)
Professor Emerita, 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 TEE 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.

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, 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 S. ZAWALETA (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.

JOSEPH ZAVALETA (1969)
Professor Emeritus, Anthropology
B.A., University of California, Berkeley.

JONATHAN ZEHR (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)
Associate Professor, Chemistry and Biochemistry
B.S., Fudan University (Shanghai); Ph.D., University of Wisconsin-Madison.

ZHOU ZHU, Stevenson College (1997)
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. ZHILMAN, Oakes College (1967)
Professor, Anthropology
B.A., University of Colorado; Ph.D., University of California, Berkeley.

MARTHA C. ZÚÑIGA, Merrill College (1989)
Professor, Culture and Change
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, Psychology
B.A., La Salle College; M.A., University of Minnesota; Ph.D., University of California, Berkeley; (Hon.) Sc.D., La Salle College.

October 2002. NORMAN O. BROWN, Kresge College (1968)
Professor Emeritus, Humanities
B.A., Oxford University; Ph.D., University of Wisconsin.

November 2002. RAYMOND F. DASMANN, College Eight (1977)
Professor Emeritus, Ecology (Environmental Studies)
B.A., M.A., Ph.D., University of California, Berkeley.

Professor, Theater Arts (Dance)
B.A., San Francisco State University; M.F.A., Mills College.
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 (one position is currently vacant), 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**

Gray Davis
Governor of California
Cruz Bustamante
Lieutenant Governor
Herb J. Wesson Jr.
Speaker of the Assembly
Jack O’Connell
Superintendent of Public Instruction
Laurence Seigler
President of the Alumni Associations of the University of California
Barbara Bodine
Vice President of the Alumni Associations of the University of California
Richard C. Atkinson (through 10/1/03)
President of the University

**Appointed Regents**

Term expires on March 1 of year indicated)

Richard C. Blum (2014)
Ward Connerly (2005)
John C. Davies (2004)
Judith L. Hopkinson (2009)
Odessa Johnson (2012)
Joanne Kozberg (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)
Peter Preuss (2008)
Haim Saban (2013)
Tom Sayles (2006)

**Student Regent**
Matthew Murray (2003–04)
UC Berkeley

**Officers of the Regents**
Gray Davis
President of the Board
John J. Moores
Chair of the Board
Odessa Johnson
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**
Richard C. Atkinson (through 10/1/03)
Robert C. Dynes (beginning 10/2/03)

**Provost and Senior Vice President—Academic Affairs**
C. Judson King

**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**
John P. McTague

**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

**Chancellors**
UC Berkeley
Robert M. Berdahl
UC Davis
Larry N. Vanderhoef

UC Irvine
Ralph J. Cicerone
UCLA
Albert Carnesale
UC Merced
Carol Tomlinson-Keasy
UC Riverside
France A. Córdova
UC San Diego
Robert C. Dynes (through 10/1/03)
UC San Francisco
J. Michael Bishop, M.D.
UC Santa Barbara
Henry T. Yang
UC Santa Cruz
M.R.C. Greenwood

**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.

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
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Appendix A: California Residency and Nonresident Tuition Fee

If you have not been living in California with intent to make it 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 21 and 53). 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 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 are 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 indicia 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

(1) 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.

(3) Two-year care and control. You may be entitled to resident status if you are a U.S. citizen or eligible alien and 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 recipient. An undergraduate student under age 27 who is the recipient of the Congressional Medal of Honor or undergraduate student under age 27 who is the recipient of the Congressional Medal of Honor or the equivalent may be exempt from nonresident tuition.

(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 ballot.
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 resident, you are also subject to university discipline. Resident students who become nonresidents must immediately notify the campus residence deputv.

Inquiries and Appeals
Inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the residence deputv, 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 deputv, may appeal in writing to the Principal Legal Analyst within 45 days of notification of the residence deputv’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 responsibility, 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 posted 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 also 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: Smoke-Free Policy
To protect the rights of the nonsmoking campus community to breathe smoke-free air, UCSC has adopted a Policy for a Smoke-Free Environment. 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 under the building and in common areas such as lobbies, lounges, waiting areas, and rest rooms of residential buildings.

To receive more detailed information about the smoking policy, see the web: www.chs.ucsc.edu (under Environmental Health and Safety [EH&S] Administration, policies). Tobacco products will
not be sold on campus either through vending machines or campus establishments. UCSC supports and assists efforts to stop smoking by providing literature and referrals to community cessation programs. Students may obtain information about the programs from the Cowell Student Health Center, (831) 459-2211.

Appendix E: Policies and Regulations
A copy of the Student Policies and Regulations Handbook can be obtained at the Student Union, college offices, Office of the Vice Chancellor for Student Affairs, Office of Student Judicial Affairs, University Extension and Summer Session Offices, the Student Organization Advising and Resources Office, the Office of Student Development and Community Services, and the Division of Graduate Studies. Reference copies are available at McHenry Library. 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 Smokin Policy: Policy for a Smoke-Free Environment
- UCSC Public Nudity and Sexually Offensive Conduct Policy
- UCSC Hate/Bias Incident Policy

The Student Policies and Regulations Handbook and related appendices 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. For information, stop by 241 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 and goals.

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 20, Appendix E, and inside back cover.) Graduate students may be entitled to accommodations under the Americans with Disabilities Act. (See page 20, Appendix E, and inside back cover.) When concerns and conflicts arise, they should be raised and attended 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 20 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. Web site: www.graddiv.ucsc.edu/handbook/html.

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, we 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 us 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, we are 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 459-1652, or via e-mail at SJA@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.
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Key phone numbers, campus mailing and web addresses

Admissions, Undergraduate
Application 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
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Educational Opportunity Programs (EOP)
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Housing Services
Community Rentals Office ................................................................................ 459-4435
Family Student Housing ................................................................................... 459-2549
Single Student Housing on Campus ............................................................... 459-2394

Office of International Education .................................................................... 459-2858

Office of the Registrar ....................................................................................... 459-4412
Public Information Office ............................................................................... 459-2495

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

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UC Santa Cruz is the UC campus of Silicon Valley and California’s Central Coast. The main campus is located on the Monterey Bay, 75 miles south of San Francisco. The aerial photo below shows UC Santa Cruz in the foreground, with the city of Santa Cruz and Monterey Bay beyond.