While every effort has been made to ensure the accuracy of the information presented in this catalog, all courses, course descriptions, semesters in which courses are offered, teaching assignments, and degree requirements are subject to change without notice. Please consult with department offices for up-to-date information.

Biological Sciences Reorganization
In 1989 the biological sciences on the Berkeley campus were completely reorganized to reflect advances in modern biology. Changes to departments, programs, and courses resulting from this reorganization are reflected in this catalog and are described fully on page 89.

Cover
Sather Gate, busy gateway to the Berkeley campus. Photo by Bruce Cook.

All fees noted within are subject to change.
# Contents

## General Information

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Academic Calendar</td>
</tr>
<tr>
<td>5</td>
<td>Information Guide</td>
</tr>
<tr>
<td>5</td>
<td>Helpful Publications</td>
</tr>
<tr>
<td>11</td>
<td>About Berkeley</td>
</tr>
<tr>
<td>18</td>
<td>Student Life</td>
</tr>
<tr>
<td>25</td>
<td>Undergraduate Education</td>
</tr>
<tr>
<td>39</td>
<td>Graduate Education</td>
</tr>
<tr>
<td>53</td>
<td>Fees and Financial Aid</td>
</tr>
<tr>
<td>59</td>
<td>Academic Policies</td>
</tr>
<tr>
<td>69</td>
<td>Colleges and Schools</td>
</tr>
<tr>
<td>69</td>
<td>School of Business Administration</td>
</tr>
<tr>
<td>71</td>
<td>College of Chemistry</td>
</tr>
<tr>
<td>72</td>
<td>Graduate School of Education</td>
</tr>
<tr>
<td>72</td>
<td>College of Engineering</td>
</tr>
<tr>
<td>73</td>
<td>College of Environmental Design</td>
</tr>
</tbody>
</table>

## Courses and Curricula

Note: Departments, groups, and programs are listed alphabetically regardless of the college or school to which they belong.

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>Graduate School of Journalism</td>
</tr>
<tr>
<td>75</td>
<td>School of Law</td>
</tr>
<tr>
<td>76</td>
<td>College of Letters and Science (L&amp;S)</td>
</tr>
<tr>
<td>80</td>
<td>School of Library and Information Studies</td>
</tr>
<tr>
<td>80</td>
<td>College of Natural Resources</td>
</tr>
<tr>
<td>82</td>
<td>School of Optometry</td>
</tr>
<tr>
<td>83</td>
<td>School of Public Health</td>
</tr>
<tr>
<td>84</td>
<td>Graduate School of Public Policy</td>
</tr>
<tr>
<td>85</td>
<td>School of Social Welfare</td>
</tr>
<tr>
<td>87</td>
<td>Introduction to Courses and Curricula</td>
</tr>
<tr>
<td>89</td>
<td>Reorganization of the Biological Sciences</td>
</tr>
<tr>
<td>165</td>
<td>East European Studies</td>
</tr>
<tr>
<td>165</td>
<td>Economics</td>
</tr>
<tr>
<td>169</td>
<td>Education</td>
</tr>
<tr>
<td>178</td>
<td>Electrical Engineering and Computer Sciences</td>
</tr>
<tr>
<td>180</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>183</td>
<td>Computer Science</td>
</tr>
<tr>
<td>187</td>
<td>Endocrinology</td>
</tr>
<tr>
<td>187</td>
<td>Energy and Resources Group</td>
</tr>
<tr>
<td>189</td>
<td>Engineering</td>
</tr>
<tr>
<td>190</td>
<td>Engineering—Double Major Programs</td>
</tr>
<tr>
<td>190</td>
<td>Engineering—Interdisciplinary Studies</td>
</tr>
<tr>
<td>191</td>
<td>Engineering Science</td>
</tr>
<tr>
<td>191</td>
<td>English</td>
</tr>
<tr>
<td>197</td>
<td>Entomological Sciences</td>
</tr>
<tr>
<td>199</td>
<td>Environmental Design</td>
</tr>
<tr>
<td>200</td>
<td>Environmental Sciences</td>
</tr>
<tr>
<td>200</td>
<td>Ethnic Studies</td>
</tr>
<tr>
<td>202</td>
<td>Ethnic Studies Graduate Group</td>
</tr>
<tr>
<td>202</td>
<td>Film</td>
</tr>
<tr>
<td>203</td>
<td>Folklore</td>
</tr>
<tr>
<td>203</td>
<td>Forest Products</td>
</tr>
<tr>
<td>204</td>
<td>Forestry and Resource Management</td>
</tr>
<tr>
<td>207</td>
<td>French</td>
</tr>
<tr>
<td>210</td>
<td>Freshman and Sophomore Studies</td>
</tr>
<tr>
<td>210</td>
<td>Genetics</td>
</tr>
<tr>
<td>211</td>
<td>Geography</td>
</tr>
<tr>
<td>214</td>
<td>Geology and Geophysics</td>
</tr>
<tr>
<td>217</td>
<td>German</td>
</tr>
<tr>
<td>222</td>
<td>Health and Medical Sciences Program</td>
</tr>
<tr>
<td>223</td>
<td>History</td>
</tr>
<tr>
<td>227</td>
<td>Humanities</td>
</tr>
<tr>
<td>227</td>
<td>Industrial Engineering and Operations Research</td>
</tr>
<tr>
<td>229</td>
<td>Integrative Biology</td>
</tr>
<tr>
<td>236</td>
<td>Interdepartmental Studies</td>
</tr>
<tr>
<td>242</td>
<td>Italian</td>
</tr>
<tr>
<td>244</td>
<td>Journalism</td>
</tr>
<tr>
<td>245</td>
<td>Landscape Architecture</td>
</tr>
<tr>
<td>248</td>
<td>Latin American Studies</td>
</tr>
<tr>
<td>249</td>
<td>Law</td>
</tr>
<tr>
<td>251</td>
<td>Legal Studies</td>
</tr>
<tr>
<td>253</td>
<td>Library and Information Studies</td>
</tr>
<tr>
<td>255</td>
<td>Linguistics</td>
</tr>
<tr>
<td>257</td>
<td>Logic and the Methodology of Science</td>
</tr>
</tbody>
</table>
**Proposed Academic Calendar**

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer Session 1989</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eight-Week Session</td>
<td>June 26-August 18</td>
<td>Monday-Friday</td>
</tr>
<tr>
<td>Ten-Week Session</td>
<td>June 12-August 18</td>
<td>Monday-Friday</td>
</tr>
<tr>
<td>Independence Day Holiday</td>
<td>July 4</td>
<td>Tuesday</td>
</tr>
<tr>
<td>Fall Semester 1989</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advance Enrollment</td>
<td>April 17-May 5</td>
<td>Monday-Friday</td>
</tr>
<tr>
<td>Fee Payment by Mail</td>
<td>April 17-July 26</td>
<td>Monday-Wednesday</td>
</tr>
<tr>
<td>Fall Semester Begins</td>
<td>August 22</td>
<td>Tuesday</td>
</tr>
<tr>
<td>In-Person Registration</td>
<td>August 22, 23</td>
<td>Tuesday, Wednesday</td>
</tr>
<tr>
<td>Instruction Begins</td>
<td>August 28</td>
<td>Monday</td>
</tr>
<tr>
<td>Labor Day Holiday</td>
<td>September 4</td>
<td>Monday</td>
</tr>
<tr>
<td>Thanksgiving Holiday</td>
<td>November 23, 24</td>
<td>Thursday, Friday</td>
</tr>
<tr>
<td>Instruction Ends</td>
<td>December 9</td>
<td>Saturday</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>December 11-19</td>
<td>Monday-Tuesday</td>
</tr>
<tr>
<td>Fall Semester Ends</td>
<td>December 19</td>
<td>Tuesday</td>
</tr>
<tr>
<td>Winter Holiday</td>
<td>December 25, 26</td>
<td>Monday, Tuesday</td>
</tr>
<tr>
<td>New Year's Holiday</td>
<td>December 29-January 1</td>
<td>Friday-Monday</td>
</tr>
<tr>
<td>Spring Semester 1990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advance Enrollment</td>
<td>October 23-November 10</td>
<td>Monday-Friday</td>
</tr>
<tr>
<td>Fee Payment by Mail</td>
<td>October 23-December 8</td>
<td>Monday-Friday</td>
</tr>
<tr>
<td>Martin Luther King, Jr.,</td>
<td>January 15</td>
<td>Monday</td>
</tr>
<tr>
<td>Holiday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring Semester Begins</td>
<td>January 16</td>
<td>Tuesday</td>
</tr>
<tr>
<td>In-Person Registration</td>
<td>January 16, 17</td>
<td>Tuesday, Wednesday</td>
</tr>
<tr>
<td>Instruction Begins</td>
<td>January 22</td>
<td>Monday</td>
</tr>
<tr>
<td>Presidents' Day</td>
<td>February 16</td>
<td>Friday</td>
</tr>
<tr>
<td>Spring Recess</td>
<td>March 26-30</td>
<td>Monday-Friday</td>
</tr>
<tr>
<td>Spring Holiday</td>
<td>March 30</td>
<td>Friday</td>
</tr>
<tr>
<td>Instruction Ends</td>
<td>May 12</td>
<td>Saturday</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>May 14-22</td>
<td>Monday-Tuesday</td>
</tr>
<tr>
<td>Spring Semester Ends</td>
<td>May 22</td>
<td>Tuesday</td>
</tr>
<tr>
<td>Memorial Day Holiday</td>
<td>May 28</td>
<td>Monday</td>
</tr>
</tbody>
</table>

*Calendar dates for the 1989-90 academic year were still tentative at press time. Please contact the Office of Admissions and Records for current information.*
Contents

Courses and Curricula

258 Manufacturing Engineering 320 Physics
258 Mass Communications 324 Physiology-Anatomy
259 Materials Science and Mineral 324 Plant and Soil Biology
Engineering 327 Plant Biology
263 Mathematics 328 Plant Pathology
268 Mechanical Engineering 330 Political Economy of Industrial
272 Medieval Studies Societies
272 Microbiology and Immunology 331 Political Science
272 Middle Eastern Studies 337 Population Studies
274 Military Officers' Education 338 Psychology
Program (ROTC) 344 Public and Nonprofit Management
274 Military Affairs 344 Public Health
274 Aerospace Studies (Air Force ROTC) 345 Public Policy
275 Military Science (Army ROTC) 348 Range Management
275 Naval Science (Navy ROTC) 348 Religious Studies
276 Molecular and Cell Biology 349 Rhetoric
283 Molecular and Physiological Plant 351 Romance Philology
Biology 352 Scandinavian
288 Molecular Biology 354 Science and Mathematics
288 Molecular Plant Biology 355 Education
289 Music 358 Slavic Languages and Literatures
293 Native American Studies 358 Social and Administrative Health
295 Naval Architecture and Offshore Sciences
Engineering 362 Social Sciences
295 Near Eastern Studies 363 Social Welfare
301 Neurobiology 366 Sociology
302 Nuclear Engineering 369 Soil Science
303 Nutrition 369 South and Southeast Asian Studies
304 Nutritional Sciences 374 Spanish and Portuguese
306 Optometry 377 Special Programs
308 Physiological Optics 377 Statistics
309 Oriental Languages 380 Subject A: English Composition
312 Paleontology 380 Courses for Non-native Speakers of
312 Parasitology English
312 Peace and Conflict Studies 380 Undergraduate Interdisciplinary
Studies 380 California Residency and the Non-
315 Pest Management resident Tuition Fee
315 Petroleum Engineering 391 Organized Research Units
315 Philosophy 392 Officers of Administration
318 Physical Education 394 Index
320 Physical Science

Appendix and Index

Appendix 388
Criteria Used in Selecting Freshmen 388
Criteria Used in Selecting Advanced-
Standing Students 389
Personalized System of Instruction 390
Professional Development Program 390
University Research Expeditions 390
Program

General Catalog, University of California at Berkeley, Volume 83, April 1989
All qualified students—regardless of race, sex, color, creed, age, handicap, sexual orienta-
tion, or national origin—are welcome.
Price: $3. To obtain by mail, send check ($5 for return at book rate, $6.50 for first class)
made out to “ASUC Store” to: ASUC Store, Attn: Mail Order Department, University of
California at Berkeley; Berkeley, CA 94720.
Information Guide

University of California at Berkeley
Berkeley, CA 94720
Area Code 415

Admissions, Graduate
1 California Hall, 642-7405
Deaf and hearing impaired (TDD): 642-8396

Admissions, Undergraduate
120 Sproul Hall, 642-0200
Deaf and hearing impaired (TDD): 642-8396

Advising, Preprofessional and Pregraduate
2224 Piedmont, 642-5207

Alumni Association
Alumni House, 642-7026

Associated Students (ASUC)
300 Eshleman Hall, 642-1431

Athletics, Intercollegiate
Men: Harmon Gymnasium, 642-0580
Women: 177 Hearst Gymnasium, 642-2098

Botanical Garden
Strawberry Canyon, 642-3343

Career Planning and Placement
Building T-6, 642-1716
Deaf and hearing impaired (TDD): 642-0592, 642-5373

Child Care Services
2537 Haste Street, 642-1827

Counseling and Psychological Services
Building T-5, 642-2366

Disabled Students' Program
2515 Channing Way, 642-0518
Deaf and hearing impaired (TDD): 642-6376

Education Abroad Program
2538 Channing Way, 104 Building D, 642-1356

Educational Opportunity Program (EOP)
Building T-8, 642-7224

Escort Service
642-WALK

Financial Aid
201 Sproul Hall, 642-1455

Health Services
Cowell Hospital, 642-2000
642-755—Clinic A
642-5015—Clinic C

Vision Care
School of Optometry Clinic
642-5761—future appointments

Housing
2401 Bowditch Street, 642-3642

Interfraternity Council (Fraternities)
Sproul Hall, 642-5753

International Student Admissions, Graduate
1 California Hall, 642-7405

International Student Admissions, Undergraduate
120 Sproul Hall, 642-3246

International Student Advising
International House
2299 Piedmont Avenue, 642-2818102

Library Information
Main Library Reference Desk, 642-6657
Deaf and hearing impaired (TDD): 642-0704

National Pan Hellenic Council
(Predominantly black fraternities and sororities)
102 Sproul Hall, 642-9064

Pacific Film Archive
2625 Durant Avenue, 642-1124

Panhellenic Association (Sororities)
102 Sproul Hall, 642-5709

Personnel Office
2539 Channing Way
642-6079 (voice and hearing impaired)

Police
1 Sproul Hall, 642-6760
Emergency 9-911 (or 911 from noncampus extensions)

Rape Prevention Education Program
388 Cowell Hospital, 642-7310
Rape Counseling Center
Building T-5, 642-2366

Relations with Schools
103 Sproul Hall, 642-5135

Sports, Intramural and Recreational
193 Harmon Gymnasium, 642-8342

Strawberry Canyon Recreational Area
Strawberry Canyon, 642-5575

Student Activities and Services
102 Sproul Hall, 642-5171

Student Information Center
Martin Luther King, Jr., Student Union, 642-INFO

Student Learning Center
Building T-8, 642-7332

Summer Session
22 Wheeler Hall, 642-5611

Tours, Campus
Visitor Center, Student Union, 642-5215

University Art Museum
2625 Durant Avenue, 642-0808

University Extension
2223 Fulton Street, 642-4111

Visitor Center
Student Union, 642-5215

Women’s Center
112 Building T-9, 642-4786

Helpful Publications

General Catalog
by mail:
ASUC Textbook Store
University of California at Berkeley
Berkeley, CA 94720
Attn: Mail Order Dept.
by telephone:
call 642-0770

Schedule of Classes
ASUC Textbook Store, 642-0770

Student Activities and Services
102 Sproul Hall, 642-5171

The Handbook for New Graduate Students
Graduate Division
1 California Hall, 643-7358

College and School Announcements
(available at colleges or schools)

University of California, Berkeley Policies
Applying to Campus Activities, Organizations, and Students
Student Activities and Services
102 Sproul Hall, 642-5171
"If I were founding a university I would found first a smoking room; then when I had a little more money in hand I would found a dormitory; then after that...a decent reading room and a library. After that, if I still had more money that I couldn't use, I would hire a professor and get some textbooks."

Stephen Leacock (1869-1944)

With these words, Professor Leacock wryly outlined what he considered the most important elements of higher education. Barely finding room for his fellow teachers, he does not even mention such things as curricula, majors, prerequisites, examinations, theses, and degrees. While a complex and bustling campus of a large public university might find much wanting in his recommendations, there is still something of great value in a view of university life that places prime emphasis on human contact, academic freedom, and good books. For these, whatever else changes with time, remain the nucleus of higher education.

As you enter the Berkeley campus of the University of California—whether as a student, parent or visitor; whether through Sather Gate, Oxford Street, or this General Catalog—you may be overwhelmed by what you encounter. The modern public university has come a long way from Leacock's "smoking room." Instead of a handful of people gathered informally to discuss life, you will find thousands of students of all ages, from all backgrounds, pursuing all varieties of educational aims. Instead of "one decent reading room and a library," there are, in fact, 25 libraries and seven million books. The faculty, considerably more than a daydreamer's afterthought, is made up of some of the most distinguished teachers and scholars in the world. And, as might be expected, the Berkeley campus occupies a lively place in public life. Its research centers and institutes concern themselves with scientific, technical, and social problems that affect the daily lives of millions. The campus, situated within a large metropolitan area, maintains close communication with the social, economic, and cultural life of the surrounding community. Whatever Stephen Leacock had in mind, it was not the Berkeley campus. Or was it?

Have we, in truth, come very far from a concept of a university where human contact, academic freedom, and the availability of good books are given priority? The student who enters the Berkeley campus has an ample share of all three, and, indeed, may find that his or her entire educational experience is built on these vital elements. The abundant resources of this University make all the more attainable an ideal of academic life. Where there are more people of varied backgrounds and interests, the value of human contact increases. Where there are more books and more capable teachers and scholars to help those books come alive, the student's freedom to learn is enhanced—for there is more from which to grow and develop, more by which to measure progress.

The man who founds a university in his daydreams might add to his prescriptions for simplicity the following: room to grow and room to experiment. The Berkeley campus has undertaken broad reforms in its classes and programs, in its administration, and in the learning experience. More seminars and small classes, more creative challenges to the student, a greater service role in the community, and expanded educational innovation—these changes are made with the hope of keeping strong and vital the ideals of a university that people have cherished for centuries. Ultimately the university that seeks to provide a significant experience for its participants is the one that makes the most of what it has. And the Berkeley campus has a great deal.
**Your education should inspire questions:** What are the truths by which men and women have lived in various times and places and which may bear on your life today? What ethical obligations does a good person observe in a free society?

At Berkeley all faculty members are engaged in research. The “creation of knowledge” is an important part of the life of the Berkeley community, and the knowledge created here is a part of learning everywhere. Berkeley is, moreover, committed to the notion that research and teaching are not to be separated. Research enlivens teaching, and the life of the classroom provokes and deepens research. Faculty come to Berkeley because they want to deepen their understanding of physical and human nature and convey their discoveries to others. It is not surprising, then, that students who come to Berkeley find that teaching and learning are different from what they have experienced before. Students are expected to move from being sponges of knowledge toward being scholars who can pose scientific and philosophical questions, think critically and creatively about them, and communicate their ideas to others in a literate way. Students are expected to engage in the search for understanding and to come to enjoy the pleasure of independently exploring the paths of knowledge.

Upon coming to Berkeley, students should think about their intellectual interests and let them be a guide to particular fields of study. Berkeley provides an incredible opportunity to encounter diverse subject matters, approaches to knowledge, and philosophies. There is no one right way, no single definition of a good education, no single subject matter prescribed for everyone. All you need do is read through the descriptions of the multitude of programs in this catalog and you will quickly disabuse yourself of any assumption about a simple way of truth or to becoming an educated person.

What does unite the Berkeley community of faculty and students, however, is the genuine belief that curiosity is important, that the world is far harder to understand than it first appears, and that intellectual humility is a vital grace. The questions stimulated by your arrival at Berkeley are important, and you should insist on paying attention to them. Why are you here at Berkeley? What is the purpose of an education? What are your strengths and limitations, what subjects fascinate you, and what skills ought you to have the courage to improve? What are the truths by which men and women have lived in various times and places and which may bear on your life today? How have these truths been represented in literature and art, buildings, technologies, and social systems? What ethical obligations and limits does a good person observe in a free society such as ours? These questions are worth asking, and you will be the better for the very attempt to formulate your personal answers to them.
The rich diversity among the students of Berkeley goes beyond the ethnic and cultural differences reflected in the photographs opposite. Berkeley students boast a wide range of skills, interests, ages, and aspirations.

Most of the students are from California, but every state and 100 foreign countries are represented.

Berkeley has experienced the largest increase in minority representation of any of the campuses of the University of California in recent years. Black, Asian-American, Hispanic, Filipino, and American Indian students account for over half the total undergraduate enrollment. Women account for just under half the undergraduate enrollment.

Undergraduate enrollment is approximately 22,000 students; graduate student enrollment, approximately 9000.

History of the University

The roots of the University of California go back to the gold rush days of 1849, when the drafters of the State Constitution, a group of vigorous and farsighted people, required the legislature to “encourage by all suitable means the promotion of intellectual, scientific, moral and agricultural improvement” of the people of California. California had few families in 1849 and few children to educate, but these early planners dreamed of a university which eventually, “if properly organized and conducted, would contribute even more than California’s gold to the glory and happiness of advancing generations.”

The university that was born nearly 20 years later was the product of a merger between the College of California (a private institution) and the Agricultural, Mining, and Mechanical Arts College (a land grant institution). The College of California, founded by former Congregational minister Henry Durant from New England, was incorporated in 1855 in Oakland. Its curriculum was modeled after that of Yale and Harvard, with the addition of modern languages to the core courses in Latin, Greek, history, English, mathematics, and natural history. With an eye to future expansion, the board of trustees augmented the college’s Oakland holdings with the purchase of 160 acres of land four miles north, on a site they named Berkeley in 1866. This original tract was to be considerably expanded over the years.

While the College of California was in its infancy, efforts continued in the state legislature to create a public educational institution, and in 1866 the legislature took advantage of the federal Morrill Land Grant Act of 1862 to establish the Agricultural, Mining, and Mechanical Arts College. The college was to teach agricultural, mechanical arts, and military tactics “to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.” Scientific and classical studies were not to be excluded but were of secondary importance.

The boards of trustees of the College of California and the Agricultural, Mining, and Mechanical Arts College decided to merge the two schools to their mutual advantage— one had land but insufficient funds and the other had ample public funds but no land— on the condition that the curricula of both schools be blended to form “a complete university.” On March 23, 1868, the governor signed into law the Organic Act that created the University of California. The new university used the former College of California’s buildings in Oakland until South Hall and North Hall were completed on the Berkeley site (South Hall is still standing), and in September 1873 the University, with an enrollment of 191 students, moved to Berkeley.

Fiscal problems plagued the new University, and it was not until the 20-year presidency of Benjamin Ide Wheeler beginning in 1899 that finances stabilized, allowing the University to grow in size and distinction. Early in this period Phoebe Apperson Hearst, one of the University’s most generous benefactors, conceived of and financed an international competition for campus architectural plans that, she stipulated, “should be worthy of the great University whose material home they are to provide for.”

The competition, won by Emile Bénard of Paris, brought Berkeley not only a building plan but worldwide notoriety. The London Spectator wrote, “On the face of it this is a grand scheme, reminding one of those famous competitions in Italy in which Brunelleschi and Michael Angelo took part. The conception does honor to the nascent citizenship of the Pacific states...” At Oxford University, which at the time was strapped for funds, a Latin orator said, “There is brought a report that in California there is already established a university furnished with so great resources that even to the architects (a lavish kind of men) full permission has been given to spare no expense. Amidst the most pleasant hills on an elevated site, commanding a wide sea view, is to be placed a home of Universal Science and a seat of the muses.”

John Galen Howard, the supervising architect charged with implementing the Bénard plan, took advantage of his “permission to spare no expense” and developed a style of architecture that reinterpreted the grace, dignity, and austerity of classical lines to suit the California environment. Some of the
The Berkeley Campus

South Hall, the oaks along Strawberry Creek, and the eucalyptus grove link Berkeley to its beginnings over a century ago. While the campus has grown considerably since then, it has retained much of the tranquility of its rural past and is now a park-like oasis in an urban setting. Students study, work, and relax among Neoclassical buildings, wooded glens, and parklands spread across 1232 scenic acres overlooking the San Francisco Bay.

With 31,000 students, a distinguished faculty, nearly 300 degree programs, and alumni in positions of national and international leadership, Berkeley today is a large and complex institution, offering students a vast range of scholarly endeavor and a wide arena for personal growth.

The campus is surrounded by wooded, rolling hills and by the city of Berkeley (population 106,500), “the Athens of the 20th century.” Berkeley has a long history as one of America’s most lively, culturally diverse, and politically adventurous cities. The surrounding San Francisco Bay Area offers culture, entertainment, and natural beauty without rival, much of which is accessible by BART (Bay Area Rapid Transit).

All of Northern California, with its great variety of cultural and recreational opportunities, is within easy reach. San Francisco is just over the bridge; the wine country and the Point Reyes National Seashore are a short drive north; the Monterey Peninsula and Big Sur, a short drive south; and Lake Tahoe, the Sierra Nevada mountains, and Yosemite National Park are close enough for weekend skiing and backpacking trips.

Tradition of Excellence

Berkeley is internationally noted for its academic excellence. Its faculty includes 10 Nobel laureates, 96 members of the National Academy of Sciences, 56 members of the National Academy of Engineering, and more Guggenheim Fellows and Presidential Young Investigators than there are at any other university in the country. Berkeley also leads the nation in another category, with nine young faculty members named by Science Digest as among the 100 brightest American scientists under 40 years of age who are changing the course of science and technology. In a recent national survey, Berkeley was ranked the best overall graduate institution in the United States, with 30 of its 32 graduate departments ranked within the top 10.

By any standard, Berkeley ranks as one of the world’s leading intellectual centers, renowned for the size and quality of its libraries and laboratories, the scope of its research and publications, and the distinction of its faculty and students. More students who earn bachelor’s degrees at Berkeley complete Ph.D.’s than graduates of any other university in the country.

Superior Research

The range of research projects at Berkeley is varied, reflecting the diversity of disciplines represented. The campus provides a distinctive environment in which faculty and students seek to expand fundamental knowledge of human nature, society, and the natural world.

Research programs at Berkeley are conducted within teaching departments and organized research units (ORUs). The latter are established and administered separately from the teaching units. ORUs are interdis-
disciplinary in nature and are organized around the work of a group of faculty and graduate students whose research interests transcend traditional disciplinary boundaries. They do not offer courses of instruction or degrees, although several work in conjunction with interdepartmental instruction programs which lead to bachelor’s and/or advanced degrees. ORUs provide invaluable experience for graduate students in basic and applied research and greatly enhance Berkeley’s educational program and the overall academic quality of the University. Please see the Appendix for a listing of the campus ORUs.

Commitment to Teaching

Every year, the Berkeley campus honors several of its outstanding faculty members by presenting them with the Distinguished Teaching Award. Over 140 faculty members in more than 40 departments have been recognized in this way for their outstanding teaching. (Recipients of Distinguished Teaching Awards have daggers by their names in the “Courses and Curricula” section of this catalog.)

At a large institution often known more for its research, such recognition serves to remind us all of the importance of teaching and the value we place on it. Students who attend Berkeley have the benefit of learning from world-renowned theorists and researchers who are also often distinguished teachers. Recipients of past awards have pointed out that their research is often enhanced by the questions and responses of their students in the classroom, while at the same time, the excitement of generating new ideas and discoveries in research stimulates them to become better teachers.

Good teachers do more than convey knowledge in a field. They clarify for students the relationships between their subject and other fields of knowledge; they ignite in their students a desire to learn; and as a consequence they often have a life-long impact on their students’ lives and careers.

Good teaching is, of course, not limited to the people who have received Distinguished Teaching Awards. Every year, departments nominate many of their faculty as distinguished teachers. You will encounter excellent teachers in all departments, all disciplines, in large classes and in seminars. There is no one way to teach well; the styles you will encounter will be as varied as the courses you take, from eye-opening lectures to discussion sections in which you will clarify and define your own ideas. In teaching, as in every aspect of Berkeley, diversity is the key to a rich and challenging educational experience.

Student Diversity

The quality of Berkeley’s student body complements the stature of its faculty. Most students are Californians, but every state and 100 foreign countries are represented. The student body can best be characterized by its diversity; one third of the students are minorities, helping to produce the wide range of opinion and perspective essential to a great university. Many programs, such as Afro-American, Asian American, Chicano, and Native American Studies, reflect the diversity, as does the opportunity students have to design their own major if their interests do not match any of the 100 majors offered.

Organization and Administration

The University of California

The University of California comprises nine campuses, each with a distinctive character. The San Francisco Medical Center was added to the University in 1873, the Davis campus in 1905, Riverside in 1907, San Diego in 1912, Los Angeles in 1919, Santa Barbara in 1944, and Santa Cruz and Irvine in 1965. The campuses have five law schools, three medical schools, and schools of architecture, business administration, education, engineering, and many others.

The nine campuses have a full-time faculty of about 6000 and the total enrollment is about 144,600 students, most of them California residents. Nearly one third are graduate students. Some 150 laboratories, extension centers, and research and field stations strengthen teaching and research while providing public service to California and the country.

Administration

Under the State Constitution, the government of the University is entrusted to the Board of Regents. The regents appoint the president of the University, and with the president’s advice, appoint the chancellors, directors of major laboratories, provosts, and deans who administer the affairs of the individual campuses and other divisions of the University. Authority in academic matters is delegated by the regents to the Academic Senate, which determines academic policy for the University as a whole.

The Board of Regents includes seven ex officio board members and 22 members who are appointed by the governor for 12-year terms after consultation with an advisory committee. In addition, the regents appoint a student regent for a one-year term as a voting board member with full rights of participation. The chair and vice chair of the Academic Council serve as faculty representatives to the board and participate fully in all discussions. A constitutional amendment provides that “Regents shall be able persons broadly reflective of the economic, cultural, and social diversity of the State, including ethnic minorities and women.” They shall have “full powers of organization and government, subject only to such legislative controls as may be necessary to ensure compliance with the terms of the endowments of the University and the security of its funds.”

The president is executive head of the nine-campus University system. The Office of the President, located in Berkeley, is the Univer-
disciplinary courses and programs in the College of Letters and Science that do not develop and administer innovative and interdisciplinary programs of study at Berkeley:

Undergraduate Interdisciplinary Studies (Division of Undergraduate Studies, formerly Special Programs): The mission of Undergraduate Interdisciplinary Studies is to develop and administer innovative and interdisciplinary courses and programs in the College of Letters and Science that do not belong to a single department. At present it administers the field majors in the humanities and social sciences and the group majors in environmental sciences, film, genetics, mass communications, Middle Eastern studies, neurobiology, religious studies, and women's studies. For complete descriptions of the Undergraduate Interdisciplinary Studies majors and major courses, please see the entries listed alphabetically by major. In addition to these majors, it offers special interdisciplinary courses such as Topics in Western Civilization. Minor programs are offered in Celtic studies, religious studies, and women's studies.

Interdepartmental Studies Courses: Courses that are sponsored by two or more departments are considered interdepartmental studies because the content of each course transcends the boundaries of individual departments. Each class is taught by one or more instructors who represent the departments sponsoring the class. There is no central information point for these courses; for further information, please contact the departments sponsoring the class. (This information appears at the end of each course description in the Interdepartmental Studies section of this catalog.) The courses are subject to change each year.

Special Studies: There are several innovative and interdisciplinary programs of study not within the colleges and schools. Special Studies courses provide credits directly applicable to a University degree and are established through interrelationships among colleges, schools, and departments, and, in certain cases, in conjunction with community groups, other UC campuses, and other universities. The following are designated as Special Studies programs (see individual listings for details): programs in Asian American Studies, Chicano Studies, and Native American Studies in the Ethnic Studies Department; Energy and Resources Group; International Education; and the Military Officers' Education Program (ROTC), which includes Military Affairs courses and programs in Aerospace Studies (Air Force ROTC), Military Science (Army ROTC), and Naval Science (Navy ROTC).

Academic Resources

The University Library

Berkeley's library system contains one of the best research collections in the country. The system consists of the Main Library, the Moffitt Undergraduate Library, the Bancroft Library, 23 branch libraries, and many special libraries. The combined holdings of the libraries total more than 7,000,000 volumes, 100,000 current serial publications, 55,000,000 manuscripts, more than 3,900,000 microform items, 370,000 maps, and 60,000 sound recordings.

Most of the Berkeley humanities and social sciences materials are located in the Main Library. In addition, an open stack collection of 170,000 volumes and 500 serial titles, designed to provide a convenient entry into the library system for Berkeley's 21,000 undergraduate students, is available in the Moffitt Undergraduate Library. Special collections in Moffitt include reserve texts assigned in undergraduate courses and a file of past course exams. The Media Resources Center is also housed in Moffitt.

The Bancroft Library, devoted primarily to the documentation of western North America, maintains the largest collection of Mark Twain archives in the world. The Berkeley collection is also distinguished for its East Asian Library, which contains rare editions of early manuscripts, scrolls, woodblock and engraved maps, stone rubbings, and bronze inscriptions. Special collections elsewhere in the library system include some of the rarest books and illuminated manuscripts in the world.

As a student you are entitled to use the libraries upon presentation of your registration card. Borrowing privileges and access to the collections vary from unit to unit. Orientation tours are scheduled throughout the year, and librarians are available at reference desks to help you.
Together the two libraries have more than 12,000,000 volumes, a combined research collection that is one of the richest in the world.

Affiliated Libraries
The library system also includes 15 affiliated libraries that contain specialized research collections of unique and often difficult-to-locate materials associated with organized research units, academic departments, and professional schools at Berkeley. These libraries primarily serve the teaching and research needs of faculty and staff, although many of them also serve the campus community at large and the general public.

Lawrence Hall of Science
The Lawrence Hall of Science is both a public science center and a research unit in science education. To increase public understanding of science, LHS's programs are designed to involve participants actively in science. Visitors play logic games on computers, participate in interactive planetarium shows, conduct do-it-yourself experiments and observations in the biology and physics discovery laboratories, and explore a myriad of other exhibits on everything from dinosaurs to lasers. LHS also offers public lectures; science and general interest videos; numerous special events; workshops for school groups and after-school classes in computers, robotics, and math; and summer science camps.

Science curricula developed at LHS are used throughout the world. Teacher-training workshops actively involve participants in curriculum development. LHS is open Monday through Saturday from 10 a.m. to 4:30 p.m. and Sunday from noon to 4:30 p.m. There is an admission fee. Free transportation to and from LHS is available on a shuttle bus on weekdays, excluding UC holidays. For more information, call 642-5132.

Lowie Museum of Anthropology
Facilitating scholarly research and educating undergraduate and graduate students from many disciplines including anthropology are among the primary functions of the Lowie Museum. Teaching exhibits are installed to assist faculty and students with ongoing instruction and individual study. The museum also maintains a program of changing exhibits in its exhibit hall and at other points on campus to meet the varied educational and aesthetic interests of the University community and general public. There are 600,000 catalogued specimens in the museum's holdings. The exhibit hall is open during the week from 10 a.m. to 4:30 p.m. and on weekends from noon to 4:30 p.m. For further information, please call 642-3681 or 643-7648.

Language Laboratory
Dedicated to the support of language instruction, the Language Laboratory offers a variety of services and houses an extensive collection of audiotapes, including programs in 96 languages. Laboratory services include listening and viewing facilities for class and individual use, an audiotape lending library, a recording studio, and a tape duplication service. In addition to language instruction programs, tape library holdings include archival collections of linguistic field work and noteworthy University speeches and events. For further information, call 642-0767.

Summer Session
An extensive offering of regular academic courses and special programs is available through University Summer Session. Students in good standing at any campus of the University or at another college or university are eligible for enrollment. Equally eligible are high school graduates, qualified adult applicants of sufficient maturity and aptitude for the work they plan to undertake, and, in certain cases, high school juniors and seniors.

Tuition varies with the number of units taken. Introductory and advanced courses for University credit are offered, and there are also special sessions for selected intensive language workshops. Extensive cultural and recreational activities are provided. Courses are taught by both regular and visiting faculty.

Study Abroad
Both undergraduate and graduate students may earn University credit while studying abroad at study centers in some 50 cities around the world. See the study abroad sections in the sections on undergraduate and graduate education.

Exchange Programs
Undergraduate and graduate students may participate in exchange programs with Mills College, Oakland; California State University, Sonoma; or California State University, Hayward. Graduate students may participate in exchange programs with other University of California campuses, Stanford University, the Graduate Theological Union, and a number of colleges and universities that participate in the Exchange Scholar Program. See the exchange program sections in the chapters on undergraduate and graduate education.

University Extension
University Extension is the continuing education branch of the University, linking the campus and the community. It ranks among the top half-dozen university-level programs in the nation in size, scope, and the quality of instruction. Its courses—about 1900 are offered each year—provide the adult population of the Bay Area with opportunities to pursue intellectual and cultural interests, keep abreast of current research, prepare for career advancement, and examine critical issues in society.

Most of the University's fields of study are represented in courses ranging from evening classes to one-day seminars and weekend conferences. Instructors are drawn from the campus, the business world, the arts and sciences, and the professions. Most extension students have bachelor's degrees and many have advanced degrees.

Extension offers 22 multi-course certificate programs in such fields as accounting, interior design, marketing, computers and information systems, telecommunications engi-
engineering, and landscape architecture. The programs are designed for persons who want to acquire a thorough background in a given field but do not want to undertake a degree program.

English-language programs, designed for non-native speakers who want to improve their command of English, offer full-time or part-time study.

Extension courses are held throughout the Bay Area, with concentrations in Berkeley, San Francisco, the South Bay, and Contra Costa. Further afield, course locations include environmentally significant areas in California and the West, and there are travel/study courses in cultural centers of Europe, headed by the Oxford/Berkeley Program.

For information write to University of California Extension, 2223 Fulton Street, Berkeley, CA 94720, or call 642-4111.

Cultural and Recreational Resources

The University Art Museum

The University Art Museum, located on Bancroft Way, is the major art museum serving the University community. Facilities include galleries, a fine arts bookstore, restaurant, sculpture garden, and the Pacific Film Archive. Museum hours are 11 a.m. to 5 p.m. Wednesday through Sunday. Admission to gallery exhibitions is free for Berkeley students. For a taped message about exhibits, call 642-0808; for a taped message to gallery exhibitions is free for Berkeley students. For a taped message about the Pacific Film Archive program, call 642-1124. To reach Pacific Film Archive offices and library, call 642-1412, Monday to Friday, 9:00 a.m. to 5:00 p.m.

The museum annually offers about 15 exhibitions; some are nationally circulating and others originate at the museum. A permanent collection of Western and Asian art is on display on a rotating basis. The MATRIX program is a changing exhibition of contemporary art.

Special study collections are available to students and faculty, works in storage are made available for study upon request, and various exhibitions are prepared for and by University classes and seminars. In addition, the museum has a developing program in which advanced students receive practical experience by assisting in museum work.

Lectures on art by artists and art historians are regularly held.

The museum’s film department, the Pacific Film Archive (PFA), is one of the major film exhibition centers in the country, offering programs of international cinema to the public each evening. PFA maintains a study collection of 6000 prints and 4000 books and provides a media information service and facilities for both film study and research screenings. Monthly film programs are scheduled for preschool through high school classes as well.

Music, Dance, Drama

The University offers a broad variety of extracurricular activities in the humanities. These include:

Cal Performances—a year-round program of music, dance, and drama. Registered Berkeley students receive a half-price discount. Berkeley faculty and staff receive a $2 discount. For information or reservations, call 642-9988.

Music—Students may enroll in a variety of student performing groups for credit through the Department of Music, 104 Morrison Hall (642-2678); auditors are also welcome in most groups. The University Chorus, Orchestra, Collegium Musicum, chamber music ensembles, Javanese Gamelan, and African drumming are included. Extracurricular musical groups are the UC Jazz Ensemble (642-5062), the Cal Marching Band (642-6704), and Student Musical Activities— Vocal (642-3880). The Department of Music also presents free noon concerts on Wednesdays in Hertz Hall. San Francisco Symphony tickets are available to students at special prices.

Theater and Dance—The Department of Dramatic Art offers many opportunities for students interested in theater and dance. Credit is offered for all aspects of participation in its productions: acting, dancing, directing, designing, stagecraft, and scenography. A resident dance company tours the West Coast throughout the year and a graduate summer theater season adds to the variety of theater offerings sponsored by the department. For information please call 642-1677.

The Student Union Program, Entertainment, and Recreation Board (Superior), located in Room 201, Martin Luther King, Jr., Student Union, 642-7477 or 642-7511, develops and implements an activities program for the Associated Students of the University of California (ASUC) to help satisfy the cultural, educational, recreational, and social needs of the campus. Programs and activities include concerts, speakers, dances, exhibits, coffee hours, recreational exhibitions, cabarets, drama, movies, music and art festivals, and special presentations, including free noon concerts in the Student Union Plaza each week and the annual UC Berkeley Jazz Festival.

Sports and Recreation Facilities

Each year more than half the Berkeley student body regularly uses the campus physical education, sports, and recreation facilities. The campus has four gymnasiums; seven swimming pools; three weight rooms; squash, handball, racquetball, and tennis courts; a martial arts room; and two 440-yard tracks. Registered students can use these facilities free of charge during the academic year.

The Department of Physical Education offers classes to students in aquatics, sports, dance, combatives, exercise, and gymnastics. Instruction is directed toward improving performance skills, learning about personal health and fitness, and developing and maintaining physical fitness. Elementary, intermediate, and advanced classes are provided in many activities. All classes are open to men and women for credit. (See the Schedule of Classes for specific classes each semester.) For further information, consult the departmental offices at 103 Harmon Gym and 200 Hearst Gym.

The Department of Recreational Sports (DRS) offers a wide range of leisure activities. Students interested in competitive recreational sports can join intramural teams in
over 32 sports clubs or take noncredit classes. Students who enjoy unstructured recreational activities can swim or play basketball, volleyball, badminton, and table tennis on a drop-in basis at the Recreational Sports Facility, the Dwight-Derby Complex, and the Strawberry Canyon Recreation Area. For outdoor enthusiasts, the DRS sponsors classes and outings in backpacking, rock-climbing, sailing, kayaking, windsurfing, and skiing, as well as an equipment rental service. For further information, call the Department of Recreational Sports, 642-8342.

The Men’s Intercollegiate Athletics Department and the Women’s Intercollegiate Athletics Department offer extramural competitive sports for highly skilled student athletes. In addition, student spectators can watch the Golden Bears play in competitive intercollegiate contests.

California Adventures is Berkeley’s outdoor recreation program, offering a wide variety of classes and outings in activities such as backpacking, rock-climbing, sailing, kayaking and sea kayaking, white-water rafting, natural history, windsurfing, cross-country and alpine skiing, and bicycling. A complete line of rental equipment for most outdoor needs is available. The program is open to the community as well as to students, alumni, and employees. Facilities include the main center located in the Recreational Sports Facility, 2301 Bancroft Way, where the office is open Monday through Saturday, 10 a.m. to 6 p.m., and a sailing site at the Berkeley Marina. California Adventures also operates a bicycle center that includes a full-service repair shop for all kinds of bicycles; a retail shop carrying road and mountain bicycles, parts, and accessories; and a rental service for mountain bicycles. Hours are Monday through Saturday, noon to 6:00 p.m. For more information about California Adventures and a free brochure, please call 642-4000 or write to California Adventures, Recreational Sports Facility, 2301 Bancroft Way, Berkeley, CA 94720.

Computing on Campus

The Berkeley campus provides access to a full range of computing capabilities, from individual workstations to supercomputers. Apple Macintosh, DEC VAX Stations running ULTRIX and VMS, IBM PC and PS/2, and Sun UNIX workstations are supported by Workstation Support Services. DEC VAX computers running UNIX, an IBM mainframe running VM/CMS, a Cray supercomputer, and Sun clusters are supported by Central Computing Services. A high-speed network provides data communication among these computers as well as access to other supercomputer centers around the country.

Specialized instructional computing facilities are available at the Tolman Microcomputer Facility (643-6253), the WEB (Workstations in Evans Basement, 643-9661), and the Quantitative Anthropology Laboratory (642-1193). Specialized facilities for survey research are available through the Computer-Assisted Survey Methods Program (642-6592). The Library Microcomputer Center makes available fee-for-service text processing equipment and services in Moffit Library.

Among academic units, Electrical Engineering and Computer Science, Business Administration, Chemistry, Physics, Library and Information Studies, Engineering, and many others have extensive computing facilities. All departments have faculty computing coordinators who can advise on computing resources.

Many of the campus’s minicomputers and workstations are connected to the Campus Communications Network, as are the campus mainframes. The network also provides access to the MELVYL and GLADIS online library catalogs. The campus network is connected to the major national and international data communications networks.

The various systems offer a wide selection of computer languages and applications software, including statistical, mathematical, and graphics packages; database management systems; microcomputer-to-host communications programs; and text processing software. Software and systems documentation is available for reference both online and at libraries on campus. Printed copies of many manuals may be purchased at the ASUC General Bookstore or other local bookstores; selected writeups are available at the Library Microcomputer Center as well as at local Kinko’s Copy stores.

The Scholar’s Workstation offers selected workstations, software, and peripherals at a substantial discount to full-time faculty, staff, and students.

Noncredit instruction for beginning and advanced computer users is offered each semester, in a variety of media. Consultants are available in Evans Hall, at other locations on campus, and via electronic mail to provide guidance in using the computer systems. A free newsletter keeps the campus community informed about developments in computing at Berkeley. IBM PC RT, Sun, and Macintosh users’ groups are active on campus.

Useful phone numbers include the Central Computing consultants, 642-4072; the Central Computing trouble desk, 642-4920; the Workstation Support consultants, 642-8899; The Scholar’s Workstation, 642-8424; and the Library Microcomputer Center, 643-7459.

Botanical Garden

The Botanical Garden was established in 1890 and transferred to its current location on 30 acres in Strawberry Canyon in 1919. Although relatively small in area, the garden ranks with the world’s leading gardens in the variety and quality of its plants. There are 8500 different species, and something is in bloom every month of the year.

One major collection is cacti and other succulent plants. Native plants of California occupy the largest area devoted to a regional collection. Special collections include herbs and spices, palms, rhododendrons, Meso-American plants, gymnosperms, ferns, cacti, carnivorous plants, orchids, a garden of Chinese traditional medicinal plants, and economically important species.

The Botanical Garden offers free tours to the public every Saturday and Sunday at 1:30 p.m. Special group tours may be arranged for a nominal charge by phoning 642-3352. The garden is open to the public daily except Christmas, from 9 a.m. to 4:45 p.m. An Information/Visitor’s Center is also open daily. There is no admission charge for stu-
The California Alumni Association

Nearly 100,000 former students are members of the California Alumni Association to keep in contact with Berkeley and work for the continued welfare of the University and its student body.

The association administers the Alumni Scholarship Program, which annually awards more than $300,000 to some 600 under graduates. It co-sponsors career programs with various campus units and maintains the Alumni Career Resources file, a compilation of Cal graduates whom students may contact to learn more about career fields. In addition to offering free income tax counseling for students each spring, the association co-sponsors internship programs for students interested in summer work in Sacramento and Washington, D.C. It also sponsors the Senior Class Council, which provides activities for students in their last year on campus; Mortar Board, the student honorary society; and the Alumni Scholars Club, a social and service organization.

Alumni are actively involved in helping the University recruit the finest high school students to Berkeley, and every year they host receptions honoring newly admitted students. Outstanding students from under-represented minorities in particular are attracted to Berkeley through the association’s campus headquarters, Alumni House, where students and alumni are always welcome.

The Visitor Center

The staff of the Visitor Center, located in the lobby of the Martin Luther King, Jr., Student Union, answers questions about the campus and conducts free 90-minute tours daily, Monday through Friday, at 1 p.m. Special group tours may be arranged by calling 642-5215. A brochure describing a self-guided walking tour is also available for visitors who wish to explore the campus at their leisure. For information and questions regarding current campus activities, call 642-2294.

Student Life

This section offers general information about student life on the Berkeley campus and brief summaries of some of the services and organizations available, arranged in alphabetical order. You may obtain more information from the appropriate office or from Resource, the student handbook.

The ASUC

The Associated Students of the University of California (ASUC) is the official organization of Berkeley students. Membership in the ASUC is voluntary, although all students must pay the ASUC fees. This nonprofit organization, through its student-elected senate, is responsible for directing a large variety of student activities and serves as the official student spokesperson in University affairs. Graduate students also elect departmental representatives to the Graduate Assembly, which meets regularly in Anthony Hall. The ASUC also provides a wide range of programs and activities. Each year, roughly $600,000 is distributed to student activity groups, including associations, ethnic and cultural groups, hobbies, and sports. The ASUC, moreover, sponsors vital programs such as student advocacy (642-6912), draft counseling (642-0165), the Renters' Assistance Project (642-1755), and the Student Union Program, Entertainment, and Recreation Board (SUPERB) (642-7477).

The basic goals of the ASUC are to enhance the quality of life for both students and the community, as well as to increase the avenues for student participation in education and campus operations. Other important goals of the ASUC are to protect full freedom of assembly and expression in the University community and to facilitate academic and social responsibility.

Career Planning

Career Planning and Placement Center

The Career Planning and Placement Center (642-1716; deaf and hearing impaired (TDD), 642-0592) provides students and alumni with assistance in defining their career objectives based on factual information about the world of work and an understanding of interests and skills acquired through education and life experience; teaches job search skills that assist in finding employment consistent with career objectives; provides on-campus interviewing opportunities for students seeking summer and career employment; and lists opportunities for internships and full-time, part-time, summer, and casual employment.
Advisers are available on a drop-in basis or by appointment to assist students and alumni with any aspect of the career planning and placement process. An adviser at 2200 Bancroft Way can provide specialized assistance to disabled students and alumni. Workshops and programs are conducted throughout the year on a variety of career development topics. Examples include career/life planning, managing your job search, resume writing, interviewing, summer jobs, and evaluating your internship experience.

A career library (Building T-6, upper level) provides many valuable reference materials including occupational information, job market studies, directories of employers, and past job listings.

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<th>If you or your spouse are seeking:</th>
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<tr>
<td>Part-time, temporary, odd-job, or summer employment</td>
<td>2200 Bancroft Way</td>
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<tr>
<td>Work-study positions</td>
<td>Office of Financial Aid, 207 Sproul Hall</td>
</tr>
<tr>
<td>Positions in business, industry, government, social services, or nonprofit organizations</td>
<td>Building T-6, 2200 Bancroft Way, or 26 Barrows Hall</td>
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<td>Positions in education</td>
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The Career Planning and Placement Center supports and subscribes to all state and federal equal opportunity employment practices.

**Student Advising—Preprofessional/Pregraduate**

If you are interested in advanced study in business, a health science, law, or many other graduate or professional fields, you may obtain comprehensive advising in these areas and assistance with applications and letters of recommendation to the schools of your choice. The Student Advising Office is located at 2224 Piedmont Avenue, 642-5207.

**Child Care**

The Child Care Program is available to registered students and provides care for children between the ages of three months and eight years. Families with the lowest income are given the highest priority. Two hours per week of parent participation are required.

The fall semester application deadline is June 2. Late applicants are placed on an eligibility list. Applications and information are available from Child Care Services, 2537 Haste Street, Berkeley, CA 94720, 642-1827.

**Clubs**

**Special Interest Clubs**

Besides regular ASUC-sponsored activities, there are more than 350 registered student organizations on campus serving special interests and activities. On Thursday of the first week of fall semester, an activities fair is held in Sproul Plaza to acquaint you with many of the organizations and to give you an opportunity to join. A list of registered student groups is available in Student Activities and Services, 102 Sproul Hall, 642-6778.

Academic and professional societies, including clubs organized by many of the schools and departments, as well as national professional fraternities, provide you with an opportunity for seminars, discussions, lectures, tutoring services (both giving and receiving), and communication with members of academic or professional fields. Honorary academic societies are open to students of outstanding ability. These groups include Honor Students' Society, Phi Beta Kappa and Golden Key (national honor societies open by invitation to the top juniors and seniors in nonprofessional fields), Tau Beta Pi (a national society of upper division students in the College of Engineering and in chemical engineering), and various other groups within the several disciplines. Most of these groups offer tutoring services.

**Student Publications**

Several student publications provide opportunities for activities in all phases of publishing, writing, editing, reporting, art and design, advertising, sales, and general management. If interested, you should inquire at the Eshleman Library on the seventh floor, Eshleman Hall. Grants are available through the Committee on Student Publications in 102 Sproul Hall.

**Office of Student Affairs**

The Office of Student Affairs within the ASUC offers fiscal advice and program assistance to over 150 ASUC-funded student groups. For information call 642-4536.

**Community Service Programs**

As part of its overall mission to prepare students for good citizenship, Berkeley is committed to promoting the ethic of public service and encouraging students to participate in community service activities. These activities benefit the disadvantaged and address needs such as educating the illiterate, consoling the lonely and sick, serving the elderly, and preserving the environment.

**Community Projects Office (CPO)**

The Community Projects Office, located in 303 Eshleman Hall, 642-3916, is the fiscal and administrative office for approximately 26 community service projects that are initiated and coordinated by students. The agency funds both long- and short-term projects such as tutorial and educational programs, nutrition projects, slide shows, senior citizen projects, refugee and immigrant projects, dance and music programs, and other social service projects. If you are interested in starting a new project or doing volunteer work of any kind, the CPO offers orientation programs and information on its various services. Applications and proposals are welcomed during the fall and spring semesters. Grants range from a few hundred dollars to $3000.

**CAL CORPS Clearinghouse** is a community service agency that helps students locate short- and long-term volunteer positions on campus and in the Bay Area. More than 200 opportunities are listed, among them posi-
at the CAL CORPS Volunteer Clearing House service units, and academic departments such as student religious groups, fraternities, sororities, student government, student service units, and academic departments also provide community service opportunities. For further information, consult the Community Services Directory available at the CAL CORPS Volunteer Clearing-House.

Counseling and Psychological Services
Counseling and Psychological Services include the Counseling Center, Psychiatry, and Student Advising—Pre-professional/Pre-graduate. The Counseling Center and psychiatric services are discussed below. The other programs are listed alphabetically elsewhere in this section.

Counseling Center
If you are a regularly enrolled student, you may talk in confidence with professional staff about your scholastic performance, choice of a major, personal concerns, assessing your interests and aptitudes, or exploring long-range career opportunities. Psychological and aptitude testing is provided as part of the counseling process. An extensive group counseling program is available on a variety of topics such as procrastination, coping with stress, and improving relationships.

The Counseling Center maintains a library of reference materials on occupations, professions, and career opportunities; a comprehensive collection of college catalogs; and directories of colleges, professional schools, and training programs which you may use, even if you are not seeking counseling services. Special testing for admission to graduate or undergraduate programs (except ETS and Psych Corp.) is administered at no charge. The Counseling Center is located in Building T-5, 642-2366.

Psychiatric Services
Psychiatric services are available to all Berkeley students. The highly trained professional staff includes licensed clinical social workers, clinical psychologists, and psychiatrists. The Psychiatry Department is open from 8 a.m. to 5 p.m., Monday through Friday. You should make your initial appointment in person. Appointments are possible before and during enrollment as well as during defined academic sessions. The service is located in 81 Cowell Hospital, 642-9494.

Disabled Students' Program
The Disabled Students' Program (DSP) is located at 2515 Channing Way, 642-0518; deaf and hearing impaired (TDD), 642-6376. If you have a permanent disability or temporary injury, you can receive help with personal and academic support services such as admissions, pre-enrollment, readers, notetakers, sign language interpreters, attendant referral, adapted transportation, wheelchair repair, limited tutoring, and housing assistance. A residence program for severely disabled students needing attendant care is available. Many other services are available and most are free. If you have a visual, hearing, orthopedic, mobility, or learning or other nonvisible disability, you should contact DSP for complete information about ongoing services.

Educational Opportunity Program/Affirmative Action
The EOP/AA Counseling Component of the Student Learning Center provides supportive services and programs to students from economically disadvantaged backgrounds, and to students who are from ethnic minority groups that are underrepresented at the University. The Counseling Component offers assistance with personal, academic, and financial concerns. In addition, the component also administers a wide range of programs and activities designed to assist EOP/AA students in achieving their academic goals. Among these are the Reduced Study Load Program, the Emergency Loan Program, housing assistance, and the Achievement Award Program, which recognizes outstanding students.

The Counseling Component is located in the Student Learning Center, Room 220, Building T-8, 642-7224.

Graduate Assembly
The Graduate Assembly, whose offices are located in Anthony Hall (Pelican Building), 642-2175, is the graduate component of Berkeley's student government, the ASUC. The Graduate Assembly represents and serves the interests of graduate students. If you are a graduate student, you are welcome to participate in the various projects and activities of the Graduate Assembly, but formal representation is assigned through departments.

Services the Graduate Assembly offers include direct funding for graduate student groups and activities, an annual new graduate student orientation, teacher's assistant training programs, a Graduate Minority and Women's Project, and a lounge and meeting room for general use. Staff assistance is
available for a variety of information and referral services including information on fellowships, affirmative action, and other campus units.

Health Services

Student Health Service

The Student Health Service (SHS) provides on-campus health promotion services, medical care, and dental care to Berkeley students. The staff includes more than 200 trained and licensed professionals in the general, specialty, and technical areas of health education, medicine, nursing, and dentistry. The SHS, Cowell Hospital, is an accredited treatment facility located on the eastern edge of campus. The hospital facilities and SHS services are extensive enough to provide for most students’ health care needs.

During the fall and spring semesters, the SHS is open every day. During semester breaks and summer, the SHS is open weekdays from 8 a.m. to 5 p.m. except holidays.

Health plan membership. Any registered Berkeley student who pays the registration fee is automatically a member of the SHS Health Plan. Because the SHS is supported by registration fees, you have already paid for the following services:

- Unlimited visits to an SHS physician or nurse practitioner of your choice; visits to SHS medical specialists in any of 15 different medical disciplines; walk-in urgent care for serious immediate medical problems;
- Individual appointments with a nutritionist, chemical dependency counselor, or health educator to get help with everything from AIDS prevention to stress management;
- The most common laboratory tests and X-ray procedures;
- Free workshops on a variety of health topics; and
- A safety net insurance plan to help defray the costs of hospitalization.

The SHS provides additional services for fees that are about 30 percent less than the community standard. These services include allergy tests and shots, dental services, minor surgery, prescription medication and over-the-counter drugs, on-campus hospitalization for nonsurgical conditions, a summer health care package, general physical exams, supplemental insurance covering students and/or their dependents, physical therapy, lab work and X-rays processed outside the SHS, and travel immunizations and information.

Most of the health care services you need are available to you at the SHS. Because the plan is not designed to cover the rare catastrophic illness or injury, we encourage undergraduates to maintain any private health insurance currently carried. Graduate students are automatically enrolled in a major medical health insurance plan administered through the SHS.

Others who can use the SHS. The following groups may use most SHS services on a pay-as-you-go basis:
- Spouses of registered Berkeley students, including students at Boalt Hall; Berkeley visiting scholars and their spouses; participants in Berkeley special programs; UC faculty and staff (for work-related illness or injury, travel shots and other immunizations, and education programs);
- Campus visitors (for illness or injury occurring on campus); and
- Former students for one year after their last registration.

Fees will be charged according to the services provided. If you have health insurance, reimbursement may be possible, and we can provide the information necessary to process a claim. Monthly payment plans are also available.

For additional information about services and how to use them, visit the Student Health Service or phone 642-2000.

Optometry Clinic

The School of Optometry Clinic offers complete optometric services, including appointments for general eye and vision examinations and contact lens fitting. These services are part of the teaching program of the School of Optometry. The clinics are open to students, faculty, staff, and the general public. In addition to thorough examinations for general needs, clinical services are available in many specialties including contact lens fitting, pathology evaluation, vision training for reading or sports, eye photography, and binocular and infant vision. The clinic also offers services to video display terminal users and has a low-vision rehabilitation center. Vision care coverage under University employee benefit plans is accepted.

For appointments or information, call 642-5761, or go to the appointment desk on the ground level of Minor Hall Addition.

Housing

Admission to the Berkeley campus does not guarantee housing reservations. You should acquaint yourself well in advance of your enrollment with the various living arrangements possible. Undergraduates should check the appropriate box on the Application for Admission to receive descriptive material; graduate students should write directly to Housing Services, 2401 Bowditch Street, Berkeley, CA 94720, to receive descriptive material.

More than 9000 men and women live in University residence halls, fraternities, sororities, International House, cooperatives, and University Family Student Housing. Early application to living groups is recommended. The remaining students live in rooms and apartments in the community.

University Residence Halls

University-operated residence halls accommodate some 4300 students, approximately 70 percent of which are freshmen. Each residence hall is unique, and to become acquainted with the options, new students are encouraged to read their housing information thoroughly. If possible, they should also take the tour offered by the campus Visitor Center. Most halls are co-ed, and all halls offer a dining facility, recreational and social programs, and study rooms. University housing includes “theme houses” which provide a living environment focused on a language or culture. Although most residence halls are within a few blocks of campus, there is space available at Mills College and Holy Names College in Oakland.
Community Living
The Community Living Office offers rental listings and counseling for students who are looking for housing in the community. To use the services, you must visit the office at 2401 Bowditch Street and present one piece of photo identification and a current registration card or letter of acceptance to the University. There is a shortage of rental housing in and around Berkeley. Students should plan to spend at least one week and possibly up to three weeks looking for a place to live. For more information, write to the Community Living Office, 2401 Bowditch Street, Berkeley, CA 94720, or call (415) 642-3642.

Co-ops
The University Students' Cooperative Association (USCA) is a nonprofit, student-owned and operated organization that is independent of the University. The Co-op houses approximately 1400 students in 18 two- and three-story houses and apartments. Members must work five hours a week at a variety of duties. Contracts may be cancelled at the end of each semester. You may also join a program which allows you board although you do not room there. Admission priority is given to EOP/AA and disabled students. For more information, contact USCA, 2424 Ridge Road, 848-1936.

Fraternities and Sororities
Membership in a fraternity or sorority is by invitation after a period of "rushing." If you are interested, apply through the Interfraternity Council for men (643-6919), the College Panhellenic Association for women (643-6916), or the predominantly black National Pan Hellenic Council (643-6917). All three groups are located in 24 Sproul Hall. Each will supply general information regarding programs and costs. Additional information is available from the Greek advisers in 102 Sproul Hall.

International House
International House is a coeducational residence for students from the U.S. and abroad, primarily at the graduate level. It is also a program center for the campus. Cultural, social, and recreational events, home hospitality, and tours and visits around California are designed to promote understanding and friendship among all nationalities. For an application and further information, write or call the Residence Office, International House, University of California at Berkeley; Berkeley, CA 94720; 642-9470 or 642-9460.

Family Housing
The University operates 1022 apartments for married students and single-parent families. The apartments are located at the University Village in Albany, approximately four miles northwest of the campus, and at the Smyth-Fernwald complex in Berkeley. You may apply for family student housing even before you have been admitted to the University. You should apply early, as assignments are made on a first-come, first-served basis. For more information, contact the Family Housing Assignment Coordinator, 2401 Bowditch Street, Berkeley, CA 94720, 642-4109.

Information
The Student Information Center on the main floor of the Student Union provides campus, transportation, and entertainment information; counseling and advising referrals; directory assistance; campus literature; help with registration procedures; a Student Union lost and found; on-loan magazines, newspapers, and chess sets. Call 642-INFO.

International Student Advising
Services for International Students and Scholars offers a wide range of services to international students, international scholars, and their families. Services include an international student orientation program, guidance on visa matters, help in solving financial problems, health care counseling, advice and referrals about personal concerns, and information on almost any topic of special interest to international students and scholars. Located in International House, 2299 Piedmont Avenue, 642-2818, the office is open Monday through Friday, 9 a.m. to noon and 1 to 4 p.m. The International House Program Office, 642-9460, organizes cultural, social, and recreational programs that enhance the appreciation of various cultures. Programs offer opportunities for personal interaction and participation in campus and community events. Trips to neighboring communities for home stays and tours of local institutions and facilities enable international visitors and U.S. citizens to learn from each other; at the same time these activities introduce people from abroad to unique aspects of U.S. society. I House cultural events, parties, and slide shows enrich the extracurricular life of the campus.

Nonresident membership in the I House (for a nominal fee) keeps newcomers informed of activities for the international community.

Office of the Ombudsperson
The ombudsperson serves all students and academic staff of the University community who feel they have been treated unfairly or need help in resolving a problem. The ombudspersons at Berkeley are professors appointed by the Academic Senate. Ombudspersons have no official authority or administrative power to impose solutions. They are independent "agents of justice" who, if in their opinion the situation warrants it, investigate complaints and the conditions leading up to the complaints and attempt to work with all parties to mediate a satisfactory solution. All matters referred to the ombudsperson are held in the strictest confidence.

If you are confronted with a bureaucratic impasse or feel you have been treated unfairly or need help with a procedural or academic problem, contact an ombudsperson at 328 Stephens Hall. The office is open Monday through Thursday, 9 a.m. to noon and 1 to 4 p.m. To make an appointment, come by or call 642-5754.
Religious Activities
Since the University is a state-supported institution, it does not offer chapel services or religious activity on campus. However, there are more than 35 churches and student religious clubs within a few blocks of the campus. For additional information, contact the Office of Student Activities and Services, 102 Sproul Hall, 642-5171.

Safety
The University maintains a campus police department of approximately 70 officers who are fully trained for your protection. Police services are located in Room 1 in the basement of Sproul Hall. You can make emergency calls on a 24-hour basis by telephoning 9-911 from nonrestricted office phones, 642-3333 from restricted phones, and 911 from campus pay phones. The emergency numbers should also be used to report fires and to request ambulance service. For general business, call 642-6760; for personal safety counseling and crime prevention information and training, call 642-3186; for lost and found, call 642-4936.

Escort Service
Night escort service is available to your car, nearby home, or public transportation from 6:30 p.m. to 12:30 a.m., Sunday through Thursday. Limited service is available Friday and Saturday. Call 642-WALK.

Rape Prevention Education Program
Student Health Services administers the Rape Prevention Education Program, which offers rape prevention counseling, referrals, and classes in practical self-defense. Call 642-7310.

Student Activities and Services
Student Activities and Services (SAS) staff work closely with students, campus units, and the ASUC on activities such as the Activities Fair; Leadership 98/197 courses; UC student regent recruitment; Immigrant Students Project; and the Residential Life Program. Registered students may use the free services of an attorney (see Student Legal Services, below) and the notary public (University documents only).

SAS assists in registering student groups, reserving facilities, disseminating information regarding campus rules and regulations, and administering funding for student activities and programs such as Community Projects Office, Forensics, Spirit Groups, Model United Nations, Cal in the Capital/Sacramento, and Committee on Student Publications. Sponsored groups include fraternities and sororities, service organizations, and honor societies.

SAS offers Cal Student Orientation (CalSO), an orientation program for new students and their parents, during the summer and at the start of the semester. Information, advice, and the student handbook Resource are provided to help new students ease into life at Berkeley. CalSO also organizes fall's Welcome Week and runs the CalSO Resource Center in the Martin Luther King, Jr., Student Union, which helps students with class enrollment during the early weeks of each semester. SAS is located in 102 Sproul Hall, 642-5171.

Student Learning Center
The Student Learning Center is an academic support service that offers tutoring and learning skills assistance to University students. The Counseling Component of the center provides assistance with personal, academic, and financial aid concerns to Educational Opportunity and Affirmative Action students.

Learning skills assistants provide individual and group tutorial services in writing, study skills, and reading improvement, and in introductory courses in the humanities, social sciences, mathematics, and sciences. Other services include preparation for graduate and professional school exams. The Student Learning Center is located in Building T-8, 642-7332, and in the Golden Bear Building, 642-7022.

Student Legal Services
If you are concerned about a legal problem or want information about your legal rights and obligations, you are encouraged to make an appointment with the Student Legal Services' attorney by calling 642-4980. Offices are located in 102 Sproul Hall and are open Monday through Wednesday.

Women's Resource Center
The Women's Resource Center is a student service unit that promotes and supports the academic achievement and personal development of women students at Berkeley. The center serves as a clearinghouse for information by providing drop-in resource and referral services, a women's library collection, a campus newsletter, and a central calendar of campus and community events of special interest to women. The center also co-sponsors special events and acts as an advocacy resource concerning the needs of women students. Ongoing program areas include undergraduate skills and issues, a re-entry support network, minority retention, sexual harassment education, a student parent support project, and graduate women's projects. Hours are from 8:30 a.m. to 5 p.m. Monday through Friday in Building T-9, 642-4786. The library is open from 10 a.m. to 4 p.m.
Undergraduate Education

The 1500 men and women of the Berkeley faculty constitute one of the most outstanding faculties of any university in the world. In both research and teaching, the quality of their efforts has been recognized by their students and national and international organizations. In addition to the 10 Nobel laureates on the faculty, there are four Pulitzer Prize winners and more than 150 members of the national academies of sciences and engineering. Over the last 20 years, more Berkeley faculty have won Guggenheim fellowships than faculty at any other university.

In three out of the five-year history of the program, more young faculty in the sciences and engineering at Berkeley were named Presidential Young Investigators by the National Science Foundation than from any other university.

Berkeley has 60 "organized research units" administered separately from the teaching departments. These interdisciplinary units support the research of faculty and assist in graduate student training. Among them are Lawrence Berkeley Laboratory, Earthquake Engineering Research Center, Institute of International Studies, Earl Warren Legal Institute, and the Cancer Research Laboratory.

To enter the University of California as an undergraduate, you must complete requirements that demonstrate, as accurately as possible, whether you have sufficient intellectual knowledge, skills, and interests to pursue a University degree.

You should begin fulfilling University admission requirements by the ninth grade and may need to continue working on them through the first two years of college. Admission requirements include completion of specific courses with specified minimum grades and achievement of specific scores on nationally administered examinations. While these requirements are somewhat rigorous, consideration is given to special circumstances.

Applying for Admission

The University's application processing system allows you to apply to as many as eight campuses of the University on one application and select a different major or program for each one. (San Francisco, as the only health sciences campus of the University, is not included in this process.)

A basic application fee of $35 entitles you to be considered at one campus, and an additional $35 is charged for each additional campus selected. These fees are subject to change and are not refundable.

You may obtain a University of California Undergraduate Application Packet containing the necessary forms and instructions from California high school or community college counselors or from the Office of Admissions and Records, 120 Sproul Hall, University of California at Berkeley; Berkeley, CA 94720.

Priority Application Filing Periods, Berkeley


Fall semester 1990: File November 1-30, 1989

Note: Dependent upon institutional enrollment needs, some colleges, schools, majors, or class levels may be closed. Generally, the Berkeley campus is not open to lower division transfer applications in either fall or spring. You should inquire just before the beginning of the filing period to determine if your area of interest is open. After the filing period, applications are accepted only until application targets are met.

Competitive Admission at Berkeley

Berkeley is not able to admit all qualified undergraduate applicants. Many undergraduate programs of study attract more qualified applicants than the campus can accommodate each year. Engineering at all levels (including chemical engineering in the College of Chemistry), all majors in the College of Letters and Science and the College of Environmental Design at the freshman level, and business administration at the junior level are current examples of oversubscribed programs. While all applicants who apply to open programs during the priority filing period will be considered, it is inevitable that some will be denied admission to Berkeley. The Berkeley campus's selection of applications to consider for admission is based primarily upon applicants' demonstrated high scholarship in preparatory work, which often goes well beyond the minimum eligibility requirements.

Admission as a Freshman

If you have not registered in regular session in any college-level institution since you graduated from high school, you will be applying for admission as a freshman. Minimum subject, scholarship, and examination requirements follow. If you do not meet these requirements or cannot qualify by examination alone (see below), you can only be admitted in advanced standing.

Eligibility Requirements

Subject Requirement

In the admission process is a set of high school courses called the "a to f" requirements. These consist of 15 year-long courses, each of which must be completed with at least a C grade. At least 7 of the 15 units must be earned in courses taken during your last two years of high school. Your grades in the "a to f" required courses are the only grades used in calculating your grade-point average for determining admission. Courses that fulfill the "a to f" requirements must appear on a list that your high school principal has certified meets Univer-
sity requirements. This list is called “Courses to Meet Requirements for Admission to the University of California” and can be obtained from your school counselor. The list may vary slightly in some colleges and schools; see the section “Colleges and Schools,” beginning on page 69.

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<tr>
<th>University of California Freshman Eligibility Index</th>
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*a ACT is scored in intervals of 1 point from a minimum of 1 to 35 maximum.
**SAT is scored in intervals of 10 points from a minimum of 400 to 1600 maximum.

The "a to f" requirement courses are:

a. History
One year of United States history or one-half year of United States history and one-half year of civics or American government.

b. English
Four years of university preparatory English composition and/or literature; not more than one year will be accepted from the 9th grade.

c. Mathematics
Three years of subjects such as algebra, geometry, trigonometry, calculus, elementary functions, and mathematical analysis. Nonacademic courses such as arithmetic and business mathematics may not be used.

d. Laboratory Science
A year course in one laboratory science, taken in the 10th, 11th, or 12th grade.

e. Foreign Language
Two years of one foreign language with a written literature are acceptable.

f. College Preparatory Electives
Four units in addition to those required in a. through e. to be chosen from at least two of the following subject areas: history, English, advanced mathematics, laboratory science, foreign language, social science, and fine arts. In general, elective courses should involve considerable reading and should aim to develop your analytical and reasoning ability and skill with written and oral exposition.

Scholarship Requirement
If you achieve a grade point of 3.3 in courses listed in "a to f" taken after the ninth grade, you will be eligible to enter the University regardless of your scores on standardized tests. If your grade-point average is below 3.3 but greater than 2.77, you will be eligible for admission to the University if you achieve specified scores on the standardized tests. (See the University of California Freshman Eligibility Index on the left.) Note, however, that eligibility alone does not guarantee admission; there are more students eligible for admission than there are spaces available.

Grades you received in courses taken in the 9th grade or earlier are not used in determining your scholarship average, although subject requirements (except laboratory science) may be satisfied with grades of C or better in these courses. If you successfully complete more than the minimum units within each required subject, only the best grades are used in calculating your grade-point average. The grades earned in the required third year of mathematics (intermediate algebra) will be used only if they improve your grade-point average. Two of the 4 units in elective courses used to satisfy the "f" requirement must be completed with a grade of C or better, and all 4 units must be accepted by the high school for graduation. The best grades earned in any two of these units taken in grades 10 through 12 will be used in computing your grade-point average for admission. Grades are counted on a semester basis unless a school gives only year grade averages. Although there is no limit to the number of repeats that may be used in fulfilling "a to f" requirements, you may repeat a course only once.

If the courses you repeat were originally taken before the ninth grade, they will be treated as if you were taking them for the first time.

The grades earned in up to 4 units (8 semesters) in courses that are (1) certified by your high school as offered at the honors level, and (2) taken in the last two years of high school will be given extra weight in computing your grade-point average for admission. Grades earned in honors courses are counted as follows: A=5 points, B=4, and C=3. To be counted, these grades must have been earned in honors courses in history, English, advanced mathematics, laboratory science, and foreign language. Courses in these subjects that prepare you for the Advanced Placement examinations of the College Board are examples of honors courses.

Examination Requirement
All freshman applicants must submit test scores as described below. If you are applying for admission to the fall term, you should take the tests by November of your senior year. The following tests are required:

1. One aptitude test—either: (a) the Scholastic Aptitude Test—SAT (the verbal and mathematics scores you submit from this test must be from the same sitting); or (b) the American College Test—ACT—composite score.

2. Three College Entrance Examination Board achievement tests, which must include (a) English composition, (b) mathematics (level 1 or 2), and (c) any third achievement test (not English composition or mathematics).

High School Proficiency Examination
The University of California will accept the Certificate of Proficiency, awarded by the State Department of Education upon successful completion of the California High School Proficiency Examination, in lieu of the regular high school diploma. However, all other University entrance requirements (subject pattern, grades, tests) must be met. The date of graduation on University records (subject pattern, grades, tests) must be met. The date of graduation on University records will be the date of the certificate. Entrance by standardized test scores will remain an option if you are ineligible on the basis of your high school record.
Admission by Examination Alone
If you do not meet the scholarship and subject requirements for admission and have completed fewer than 12 transferable college units since graduation, you can qualify for admission as a freshman by examination alone. (Note: If you have completed transferable college courses, College Entrance Examination Board tests cannot be taken in academic subjects covered in those courses.) To qualify for admission by this method, you must score at least 1100 on the Scholastic Aptitude Test or 26 on the American College Test. Further, your total score on the three achievement tests must be 1650 or higher, with no score less than 500 on an individual achievement test. High school graduation or a certificate of proficiency is required for students who qualify for admission by examination.

Admission of Nonresident Applicants
The admission requirements for nonresidents are stiffer than those for residents; nonresident freshman applicants are required to have a grade-point average in “a to f” subjects of 3.4 instead of 3.3. Admissions procedures and examination requirements for nonresidents, however, are the same as those for California residents, except that to be admitted by examination alone, nonresident applicants must have the same total score on the Scholastic Aptitude Test of 1100 but a higher total score on the three achievement tests: 1730 or higher, with no score less than 500 on an individual achievement test.

For detailed information on these requirements and on admission by examination alone, consult the publications Information for Prospective Students or the Undergraduate Application Packet, obtainable from California high school or community college counselors or from the Office of Admissions and Records, 123 Sproul Hall.

Selection Criteria
A detailed description of the criteria used in selecting freshmen appears at the beginning of the appendix on page 388.

Admission as a Transfer Student
The requirements for admission in advanced standing vary according to your high school record. The transcript you submit from the last college you attended must show that at minimum you were in good standing and you earned a grade-point average of 2.0 or better. If your grade-point average was below 2.0 at any college you attended, you may have to meet additional requirements to qualify for admission.

Eligibility Requirements
Requirements for Residents
If you completed all the “a to f” subjects and met the Eligibility Index, you may be eligible for admission any time after you have established an overall college grade-point average of 2.0 or better.

If you have completed fewer than 12 quarter or semester units of transferable college credit since high school graduation, you must also satisfy the examination requirement for freshmen.

If you meet the Eligibility Index but you have not studied one or more of the “a to f” subjects required for freshman admission, you must complete the following:
- (a) completed 12 or more quarter or semester units of transferable work with a grade-point average of 2.8 or better. In addition, if you lacked any of the required subjects in high school, you must complete appropriate college courses as outlined under “Requirements for Residents” above.

Eligibility Requirements for Nonresidents
If you met the admission requirements for freshman admission as a nonresident, you must have a grade-point average of 2.8 or better in college courses that are accepted by the University for transfer credit.

If you are a nonresident applicant who graduated from high school with less than a 3.4 grade-point average in the “a to f” subjects required for freshman admission, you must have completed at least 56 semester (84 quarter) units of transferable work with a grade-point average of 2.8 or better. In addition, if you lacked any of the required subjects in high school, you must complete appropriate college courses as outlined under “Requirements for Residents” above.

Intercampus Transfers
If you are registered on any campus of the University or were previously registered in a regular session of the University, you may apply for transfer to another campus of the University by filing the undergraduate application. Filing dates and application fees are the same as those listed for new applicants.

Additional Requirements
For additional requirements for admission in advanced standing, see the announcement of the individual college or school to which you seek admission.

Selection Criteria
A detailed description of the criteria used in selecting advanced-standing students appears in the appendix on page 389.

Admission of International Applicants
If you are applying from another country, you should request further information about admission to the University, visas, special examinations, fees and expenses, housing, and travel. Direct your inquiries to the Office of Admissions and Records, 120 Sproul Hall, 642-3246. If you need to improve your English language skills, you should contact...
the English Language Program, University of California Extension, 2223 Fulton Street, Berkeley, CA 94720, USA. All nonimmigrant international students must check in with Services for International Students and Scholars, International House, as soon as possible.

**Readmission**

If you formally withdraw from Berkeley, were absent for one or more semesters, or are returning to Berkeley in the Limited Status or Second Bachelor’s programs, you must file an Undergraduate Application for Readmission. Application deadlines are April 15 for fall admission and August 15 for spring admission. Applications must be accompanied by a $35 readmission fee. If you attended other colleges or universities while you were away from Berkeley, you must send an official transcript to Berkeley immediately. Address correspondence to the Office of Admissions and Records, 120 Sproul Hall, or call 642-0734.

**Special Admission Circumstances**

**Admission by Exception**

Berkeley does not have a specific list of criteria that must be met for an applicant to be eligible for admission by exception. This consideration is reserved for very few students who, because of extraordinary circumstances, cannot be eligible for Berkeley under the standard guidelines. When reviewing for special action (admissions by exception), we judge the applicants’ potential for success by weighing their overall academic performance, talents and achievements, and personal hardships. If you feel you have reason to request special action consideration, write to Robert L. Bailey, Director, 127 Sproul Hall.

**Educational Opportunity Program (EOP)**

Students from minority and low-income backgrounds who may not meet the regular admission requirements are given a chance to apply to the University through the Educational Opportunity Program (EOP). Prospective EOP students must show a potential to benefit from higher education. Financial aid counseling, tutoring, and housing aid are available under the program.

To be considered for the EOP, you must fill out the section of the undergraduate application that is designated for those interested in the EOP.

**Limited Status**

If you already have a bachelor’s degree or have completed a substantial amount of college work with a superior scholastic average, you may take certain courses toward a definite and limited objective. You will be considered only if you are an applicant of unusual merit. You must normally have a personal interview with an admissions officer who will determine from your record your needs, plans, and conditions of admission, subject to approval from the dean of your college or school.

Admission is for a specified time, determined beforehand, and you must maintain a prescribed scholastic average. There are no “special courses”; you will be admitted only to courses for which you are able to demonstrate, in the opinion of the instructor, satisfactory preparation.

**Work Toward a Second Bachelor’s Degree**

Ordinarily the University discourages work toward a second bachelor’s degree, but complete changes in objective occasionally require one. If you are applying for admission to undergraduate study for a second bachelor’s degree, you must indicate, by your previous scholastic record, a strong probability of academic success in such an undertaking. Admission is subject to approval of the director of the Office of Admissions and Records and the dean of the college or school in which your work is to be undertaken.

**Registration and Enrollment in Classes**

**The Advance Class Enrollment System**

Berkeley’s computerized Advance Class Enrollment (ACE) system enables you to request classes and receive a class schedule well before each semester begins. The system is designed to increase the probability that spaces will be available for all students wishing to take a particular course. For courses that are limited in enrollment, ACE will ensure that students who meet the courses’ specific priority requirements are scheduled first.

To register and enroll, follow these steps:

**Obtain Your Registration Packet**

**New students (including transfer students):** You will be mailed your registration packet after you return your Statement of Intention to Register, Statement of Legal Residence, and the $100 deposit.

**Readmitted students:** You will be mailed your registration packet after receiving approval of your readmission.

**Continuing students:** You must obtain your registration packet in person at locations indicated on campus bulletin board placards during the Advance Enrollment period (see the Academic Calendar at the front of this catalog).

Your registration packet will contain a Schedule Request Form for requesting classes and a billing statement for paying your registration fees. If you will be a new or readmitted student, you will also receive a Schedule of Classes which lists the meeting times and locations of all courses to be given at Berkeley for the term. Continuing students must purchase one from the ASUC Bookstore or from other local bookstores.

**Select Classes and Submit Your Schedule Request Form**

With the Schedule of Classes and the General Catalog, you can determine a class schedule. You are encouraged to contact a college, school, or major adviser to help you choose classes and formulate a schedule tailored to your particular academic interests. Once you have selected your classes, you must complete and submit your Schedule Request Form by the appropriate ACE deadline.

**Pay Registration Fees**

You must pay the fees indicated on your billing statement by the ACE fee payment deadline in order to be scheduled into classes. You may pay your fees in full or in three installments on the Deferred Payment Plan (see below). If your fees are not paid in full by the designated due dates, you may be dropped from the rolls for the current term and blocked from future registration in accordance with University policy.
Planning Your Program/College of Letters and Science

You will note in the selection of sample programs below that there are several ways to fulfill college requirements such as the reading and composition requirement. If you plan to take a mathematics course, please read with great care Choosing Your First Math Course at UCB, available in the Office of Undergraduate Advising. As you look through the courses in this catalog, you will learn that some courses must be taken in a specific sequence while many others may be taken in random order. The courses taken in your first year should be selected for a variety of reasons, including the following:

1. General interest
2. Fulfillment of degree requirements listed in the Announcement of the College of Letters and Science
3. Prerequisite (or lower division) requirements for the major or majors you wish to consider. Most major departments will not accept you into the major until the lower division requirements for that major are completed. These prerequisites are listed in the “Courses and Curricula” section of this catalog for all majors in the College of Letters and Science.

### Sample Programs for First-Year Students

#### Social Science

<table>
<thead>
<tr>
<th>Units</th>
<th>Fall Semester</th>
<th>Spring Semester</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>Statistics 2</td>
<td>Special Programs 44A</td>
</tr>
<tr>
<td>5</td>
<td>Special Programs 44A</td>
<td>Special Programs 44B</td>
</tr>
<tr>
<td>4</td>
<td>Political Science 2</td>
<td>Anthropology 3</td>
</tr>
<tr>
<td>2</td>
<td>Integrative Biology 33</td>
<td>English 39</td>
</tr>
<tr>
<td></td>
<td>Units: Fall Semester</td>
<td>Units: Spring Semester</td>
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<tr>
<td></td>
<td>Satisfies quantitative reasoning requirement</td>
<td>Reading and composition course</td>
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<tr>
<td></td>
<td>Reading and composition course</td>
<td>Freshman/sophomore seminar course/humanities breadth course</td>
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#### Biological Science

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<tr>
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<th>Spring Semester</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>Chemistry 1A</td>
<td>Math 1B/16B</td>
</tr>
<tr>
<td>4/3</td>
<td>Math 1A/16A</td>
<td>Calculus sequences</td>
</tr>
<tr>
<td>4</td>
<td>English 1A</td>
<td>Reading and composition course</td>
</tr>
<tr>
<td>3</td>
<td>Sociology 90</td>
<td>Freshman/sophomore seminar/social science breadth course</td>
</tr>
<tr>
<td></td>
<td>Units: Fall Semester</td>
<td>Units: Spring Semester</td>
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</table>

#### Humanities

<table>
<thead>
<tr>
<th>Units</th>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>5</td>
<td>French 2</td>
<td>French 3</td>
</tr>
<tr>
<td>2 [4]</td>
<td>Subject A1</td>
<td>Comparative Literature 1A</td>
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<tr>
<td>4</td>
<td>Art History 10A</td>
<td>Art History 10B</td>
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<tr>
<td>4</td>
<td>Statistics 2</td>
<td>Geography 4</td>
</tr>
<tr>
<td></td>
<td>Units: Fall Semester</td>
<td>Units: Spring Semester</td>
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<td></td>
<td>Example is French; any other language may be substituted</td>
<td>Example is French; any other language may be substituted</td>
</tr>
<tr>
<td></td>
<td>Satisfies quantitative reasoning requirement</td>
<td>Reading and composition course</td>
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</table>

#### Physical Science

<table>
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<tr>
<th>Units</th>
<th>Fall Semester</th>
<th>Spring Semester</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>Math 1A</td>
<td>Math 1B</td>
</tr>
<tr>
<td>5</td>
<td>German 1</td>
<td>Physics 7A</td>
</tr>
<tr>
<td>4</td>
<td>Afro-American Studies 1B</td>
<td>German 2</td>
</tr>
<tr>
<td></td>
<td>Units: Fall Semester</td>
<td>Units: Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Example is German; any other language may be substituted</td>
<td>Satisfies foreign language requirement</td>
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</table>
The Deferred Payment Plan: You may pay your registration fees in three installments if you wish. A $10 nonrefundable processing fee, charged to your first installment, will be assessed. Your billing statement will indicate the amount due for the first payment; subsequent statements for the remaining payments will be mailed to your local address on file with the Office of Admissions and Records. For full information about the Deferred Payment Plan, read the billing statement or call the Loans and Receivables Office at 643-6373.

Receive Your Confirmed Class Schedule
If you submitted your Schedule Request Form and paid your registration fees by the ACE deadline, a Confirmed Class Schedule will be produced for you shortly before the beginning of the semester. You may have your schedule mailed to your local or permanent address or have it held for pickup at the Office of Admissions and Records.

You are responsible for all classes into which you have been scheduled. To make any changes, you must file a Petition to Add/Drop Courses and/or a Petition to Change Grading Option on or after the first day of instruction.

In-Person Registration
If you fail to submit your Schedule Request Form and/or pay your registration fees by the ACE deadlines, you will have another opportunity to do so at In-Person Registration at the beginning of the semester. However, you will be limited to requesting classes that are still open after the scheduling of students who enrolled through ACE. Continuing students will be liable for a $50 late registration fee and/or a $50 late enrollment fee. Confirmed Class Schedules will be available on the first day of instruction.

Undergraduate Majors and Degrees
Planning for a Major
The decision on the choice of a major is a very important one and should be made on the basis of your interests and abilities as well as your career goals. You should look carefully into the programs available by using this catalog and by visiting departments in which you are interested. Your adviser can help you explore the possibilities of interdisciplinary majors, which you take by declaring a group major or field major. If the major you are interested in is offered in more than one college or division, your adviser can help you choose the one that best suits your academic goals.

You are strongly urged to declare your major as soon as possible and should begin thinking about possible majors in your first year at Berkeley. Some majors require a full four years to complete; most majors require that some or all the lower division major requirements be completed before you may be accepted into the major. Since you are expected to be accepted into a major by the time you have completed 60 units, these lower division major requirements should be planned into your program for the first two years. It is possible for you to plan a program that would include preparation for more than one major, an easy task if the majors in question have some lower division requirements in common.

There are some majors which are very crowded and cannot accommodate all applicants. You should consult closely with the
departments in which you have an interest to learn of any restrictions that have been placed on entry to the major.

**Declaration and Change of Major**

Regulations and procedures for declaring the major vary for each college. You may, at any time up to the last semester of residence, file a petition for a change of major. You must secure approval for this action from the dean or other authorized person in the college or department to which you are transferring.

**Preparation for Graduate Study**

If you are preparing for study toward a higher degree, you should learn, as early as possible, the entrance and degree requirements of your graduate field, in order to include all prerequisite steps in your undergraduate program.

**Undergraduate Degrees**

**Afro-American Studies, A.B.**

**Ancient Near Eastern History and Archaeology, A.B.**

**Anthropology, A.B.**

**Architecture, A.B.**

**Art (History of), A.B.**

**Art (Practice of), A.B.**

**Asian Studies, A.B.**

**Asian-American Studies, A.B.**

**Astronomy, A.B.**

**Biochemistry, A.B.**

**Bioengineering, B.S.**

**Biological Sciences, A.B.**

**Biophysics, A.B.**

**Biophysics: Medical Physics Option, A.B.**

**Bioresource Sciences, B.S.**

**Botany, A.B.**

**Business Administration, B.S.**

**Chemical Engineering, B.S.**

**Chemistry, A.B. or B.S.**

**Chicano Studies, A.B.**

**Civil Engineering, B.S.**

**Classical Civilization, A.B.**

**Classical Languages, A.B.**

**Comparative Literature, A.B.**

**Computer Science, A.B. or B.S.**

**Conservation and Resource Studies, B.S.**

**Development Studies, A.B.**

**Dramatic Art, A.B.**

**Dramatic Art—Dance, A.B.**

**Dutch Studies, A.B.**

**Earth Science, A.B.**

**Economics, A.B.**

**Electrical Engineering and Computer Sciences, B.S.**

**Engineering, Seven Double Major Programs, B.S.**

**Engineering Geoscience, B.S.**

**Engineering Mathematics and Statistics, B.S.**

**Engineering Physics, B.S.**

**English, A.B.**

**Entomology, B.S.**

**Environmental Sciences, A.B.**

**Ethnic Studies, A.B.**

**Film, A.B.**

**Forest Products, B.S.**

**Forestry, B.S.**

**French, A.B.**

**Genetics, A.B. or B.S.**

**Geography, A.B.**

**Geology, A.B.**

**Geophysics, A.B.**

**German, A.B.**

**Greek, A.B.**

**History, A.B.**

**Humanities, A.B.**

**Industrial Engineering and Operations Research, B.S.**

**Integrative Biology, A.B.**

**Italian, A.B.**

**Landscape Architecture, B.S.**

**Latin, A.B.**

**Latin American Studies, A.B.**

**Legal Studies, A.B.**

**Linguistics, A.B.**

**Manufacturing Engineering, B.S.**

**Mass Communications, A.B.**

**Materials Science and Engineering, B.S.**

**Mathematics, A.B.**

**Mathematics, Applied, A.B.**

**Mechanical Engineering, B.S.**

**Microbiology and Immunology, A.B.**

**Middle Eastern Studies, A.B.**

**Mineral Engineering, B.S.**

**Molecular and Cell Biology, A.B.**

**Molecular Biology, A.B.**

**Molecular Plant Biology, B.S.**

**Music, A.B.**

**Native American Studies, A.B.**

**Naval Architecture, B.S.**

**Near Eastern Studies, A.B.**

**Neurobiology, A.B.**

**Nuclear Engineering, B.S.**

**Nutrition and Clinical Dietetics, B.S.**

**Nutrition and Food Science, B.S.**

**Optometry, O.D.**

**Oriental Languages, A.B. (Chinese, Japanese, Arabic, Latin)**

**Paleontology, A.B.**

**Peace and Conflict Studies, A.B.**

**Pest Management, B.S.**

**Petroleum Engineering, B.S.**

**Philosophy, A.B.**

**Physical Education, A.B.**

**Physical Sciences, A.B.**

**Physics, A.B.**

**Physiological Optics, B.S.**

**Political Economy of Natural Resources, B.S.**

**Political Science, A.B.**

**Psychology, A.B.**

**Religious Studies, A.B.**

**Rhetoric, A.B.**

**Scandinavian, A.B. (Danish, Norwegian, Swedish)**

**Slavic Languages and Literatures, A.B.**

**Social Sciences, A.B.**

**Social Welfare, A.B.**

**Sociology, A.B.**

**Soil Resource Management, B.S.**

**South and Southeast Asian Studies, A.B.**

**Spanish, A.B.**

**Statistics, A.B.**

**Women's Studies, A.B.**

**Zoology, A.B.**

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1 Applicants interested in pre-veterinary medicine should apply for the major in bioresource sciences in the College of Natural Resources and contact the pre-veterinary advisor after admission.

2 College of Natural Resources students who are already pursuing the B.S. in genetics or molecular plant biology may continue in the program but are encouraged to consider changing to a major in plant biology or biotechnology.

3 The School of Business Administration requires completion of 60 semester units for admission into its program.

4 A chemistry major may be declared either in the College of Chemistry (B.S.) or in the College of Letters and Science (A.B.).

5 Computer science may be studied either in the College of Engineering (B.S. in electrical engineering and computer sciences) or in the College of Letters and Science (A.B.).

6 See the Announcement of the College of Engineering for details.

7 Nutrition and Clinical Dietetics requires completion of 56 acceptable semester units for admission into its program.

8 Optometry requires completion of 90 acceptable semester units for admission into its program.

9 Applicants interested in peace and conflict studies should apply for an alternate major and contact the peace and conflict studies advisor after admission.

10 Applicants interested in physiological optics should apply for optometry and contact an adviser after admission.

11 Students will no longer be able to declare majors in pest management and plant pathology as of fall 1990.
Minors

Minors are offered at Berkeley in many departments and groups in the College of Letters and Science (Afro-American Studies, Art, Asian Studies, Celtic Studies, Classics, Demography, English, Ethnic Studies, Geography, Music, Near Eastern Studies, Philosophy, Physics, Religious Studies, Rhetoric, Slavic Languages and Literatures, South and Southeast Asian Studies, Women's Studies, and many foreign language departments), in the College of Environmental Design, and in the College of Natural Resources. For more detailed information and lists of the minors available, see the section "Colleges and Schools," beginning on page 69.

Undergraduate Degree Requirements

As soon as you have been accepted for admission to Berkeley, you should learn the requirements you will have to fulfill to earn your bachelor's degree. These requirements are prescribed by three sources: the University, your college or school, and your department. All are summarized below. For more information, please visit the Office of Admissions and Records, Student Service Area, 128 Sproul Hall.

University Requirements

The University sets two general requirements for the baccalaureate degree: Subject A and American History and Institutions.

Subject A Requirement

The University assumes that you are proficient in English and in writing about academic topics. Fulfillment of the Subject A requirement is a prerequisite to enrollment in all freshman Reading and Composition sequences. If you have not passed the Subject A examination or otherwise fulfilled the requirement on entrance to the University, you must complete Subject A1, "Introduction to Language."

If your native language is not English, you may have to complete one or both of the preliminary courses Subject A20 or 30 before completing Subject A1. Beginning with your first semester at Berkeley, you must enroll each semester in a course leading to fulfillment of the Subject A requirement until you have fulfilled the requirement. If you enter at the Subject A1 level and have not fulfilled the requirement after two semesters, you may not be eligible to enroll at Berkeley for a third semester.

In addition to a passing score on the Subject A examination, the Office of Admissions and Records accepts the following means of fulfilling the Subject A requirement before you enter the University:

1. A score of 600 or above on the English Composition Test of the College Entrance Examination Board (CEEB).
2. A score of 3, 4, or 5 on the CEEB Advanced Placement Test in English Composition and Literature or in English Language and Composition.
3. A score of "Pass for Credit" on the California State University and Colleges English Equivalency Examination.
4. A score of 600 or above on the Test of English as a Foreign Language (TOEFL). (Restricted to non-native speakers of English who have had no previous academic work in English-speaking countries and who have taken the test before their arrival in the United States.)
5. A grade of C or higher in an approved transfer-level English composition course taken at another institution.

American History and Institutions Requirements

The American History and Institutions requirements are based on the principle that a U.S. resident enrolled at an American university should have an understanding of the history and governmental institutions of the United States. These requirements may be met as follows:

1. History Requirement: By completing two semesters of U.S. history in high school with an average grade of B or better.
2. By taking one quarter or semester of a transferable course in basic U.S. history or U.S. government at a college or university before entering Berkeley. Inquiries about specific courses should be directed to the Office of Admissions and Records, 120 Sproul Hall.
3. By passing the high school Advanced Placement American History exam with a score of 3 or better.
4. By passing the College Board Achievement Test in U.S. history with a score of 500 or better.
5. For students transferring from another UC campus: by taking any course or courses that satisfy the AH&I requirements of that campus.

Students who have not satisfied the AH&I requirements before entering Berkeley may satisfy them in the following ways:

1. By taking the American History and/or American Institutions exams (see Section II, 4 below).
2. By taking, at Berkeley, History 7A or 7B for the History requirement, and Political Science 1 or 100 for the Institutions requirement. (Students who took other courses before fall semester 1988 may check with the AH&I Office, 29 Dwinelle, 642-5006, for possible AH&I credit.)
3. By taking a course or courses, approved by the AH&I Office, at another collegiate institution.
4. By mixing these three alternatives (for example, an exam for one requirement and a course for the other). Freshmen: Your first opportunity to see the status of your AH&I requirements will be on your first Berkeley transcript.

II. Options for Students Who Entered Berkeley Between Fall 1981 and Spring 1983:

1. History Requirement: By completing two semesters of U.S. history in high school with an average grade of B or better.
2. By taking, at Berkeley, History 7A or 7B for the History requirement, and Political Science 1 or 100 for the Institutions requirement. (Students who took other courses before fall semester 1988 may check with the AH&I Office for possible AH&I credit.)
3. By petitioning for the acceptance of courses taken at an accredited college or university and equivalent in scope and content to those on the approved Berkeley course list. When making such a petition, you should present a course syllabus, reading list, and copy of your transcript or report card to the AH&I Office.

4. By passing two essay examinations, one for each requirement. The exams are based on reading lists (three books for each exam), are graded passed/not passed, and are offered on campus throughout the year. If you want to take either or both of the exams, you may obtain the reading lists, sample answers, and test dates at the AH&I Office.

5. The American History requirement can be fulfilled by passing the Advanced Placement Test in American History with a score of 3, 4, or 5 or by passing the College Board Achievement Test in American History with a score of 500 or better.

6. By mixing these five alternatives (for example, an exam for one requirement and a course for the other).

III. Students Who Entered Berkeley Before Fall 1981 may use any of the options listed under Section II above, with the following exceptions:

High school courses will not satisfy either the History or the Institutions requirement.

The College Board Achievement Test will not satisfy the American History requirement.

IV. International students: The AH&I requirements will be waived if you have at least 90/1 credits, hold a current, nonimmigrant visa (F is the most common), and an I-94 departure record. If you exceed 90 units, you should consult the Office of Admissions and Records. 128 Sproul Hall.

5. The American History requirement can be fulfilled by passing the Advanced Placement Test in American History with a score of 3, 4, or 5 or by passing the College Board Achievement Test in American History with a score of 500 or better.

6. By mixing these five alternatives (for example, an exam for one requirement and a course for the other).

College and School Requirements

Every college and school has established a program of requirements for the degree, which may be in addition to those of a field of concentration. These requirements may include (1) preparatory subject requirements for admission; (2) preparatory college-level courses for your particular field of study—to be completed, if possible, during your early period of residency in the college or school, or in some cases before entrance; (3) breadth requirements, courses outside the field of study, considered essential to a well-rounded curriculum; (4) the credit requirement, which is the total number of units to be completed, with specifications of how these credits are to be distributed; and (5) a minimum scholarship requirement. For detailed information you should obtain a copy of the announcement of your college or school.

Reading and Composition Requirement

The Berkeley campus is strongly committed to developing high levels of ability in critical thinking and communication among its undergraduates. Hundreds of courses require long papers and a number of courses provide training in writing or speaking. In addition to the Universitywide Subject A requirement, the College of Letters and Science and most other colleges and schools require two semesters of lower division work in composition. Eleven departments and programs regularly offer courses that satisfy the reading and composition requirement: Afro-American Studies, Asian American Studies, Chicano Studies, Comparative Literature, Division of Special Programs, Dramatic Art, English, Native American Studies, Rhetoric, South and Southeast Asian Studies, and Women's Studies. Since each course has a slightly different focus, you should contact the individual departments for details and consult your college or school for the particular courses that satisfy its requirements.

Minimum Scholarship Requirement

If you fail to maintain the minimum grade-point average prescribed by your college or school, you will normally be dismissed or put on probation. Since scholarship rules are applied only at the close of regular sessions, grade points that you earn in a University of California summer session or by removing an Incomplete grade are not taken into consideration until the close of your next semester of attendance.

Residence Requirement

After you have completed 90 units toward the bachelor's degree, you must complete at least 24 of the remaining units in residence in no fewer than two semesters in the college or school of the University in which you will take your degree. You must begin these final 24 units in the semester in which you exceed 90 units. You should consult the announcement of your college or school for details concerning the senior residence requirement as it pertains to the summer session.

Departmental Requirements

Every student must select a field of concentration and pursue a major or curriculum, normally by taking a minimum number of units in one department or school. Occasionally—as with business administration, optometry, and others—the school and the department are synonymous. In some cases a major may embrace more than one department, as with the humanities field major in the College of Letters and Science.

Major Requirements

Major requirements that must be fulfilled before you may receive a baccalaureate degree are outlined in each department in the "Courses and Curricula" section of this catalog. See also your department adviser.

Declaration of Candidacy

If you know at the beginning of a semester that you will have fulfilled graduation requirements by the end of the semester, you must fill in the appropriate bubble on the back of your Schedule Request Form just before the beginning of the semester in which you will complete your degree requirements. You may also declare your candidacy in person in the Office of Admissions and Records, 128 Sproul Hall. The period for declaring candidacy is the first five weeks of the semester. Up to the end of the third week you may declare with no fee, and from the third to the end of the fifth week there is a $5 fee. If for any reason you do not meet the requirements for graduation after declaring your candidacy, you must file a new declaration in the filing period for the subsequent semester in which the degree will be awarded.
If you are a nonregistered student at the time you are ready to declare your candidacy, you must go in person to 128 Sproul Hall to fill out the form "Candidate for Bachelor's Degree for a Nonregistered Student." The filing deadline is the same as that stated above.

Note: The Office of Admissions and Records does not backdate degrees. The semester in which all your requirements are completed is the semester in which your degree will be posted to your academic record.

General Rules and Academic Policies

See also the section "Academic Policies," beginning on page 59.

Academic Probation

Regulations and procedures governing academic probation vary with each college and school. For specific details, consult your college or school announcement. Students on probation are not entitled to take courses with a passed/not passed option.

Academic Dismissal

Regulations and procedures governing academic dismissal vary with each college and school. For specific details, consult your college or school announcement.

If you are dismissed, you may appeal for a hearing by formal petition to the dean of your college or school, but the action of dismissal is normally considered final. If you are dismissed and want to transfer to another college or school at Berkeley, you may petition the dean of your college or school.

Minimum Progress

For undergraduates, normal progress toward a degree requires 30 units of successfully completed course work each year. If you fail to achieve minimum academic progress, you may continue to be enrolled only with the approval of the dean of your college or school. To achieve minimum academic progress, you must have successfully completed a number of units no fewer than 15 times the number of semesters, less one, in which you have been enrolled on the Berkeley campus. Summer Session is not counted as a semester. A 15-unit study list is considered a normal course load; a study list of fewer than 13 units must be authorized by the dean of your college or school.

Progress Toward a Degree

At the close of each semester, the courses, units, grades, and grade points earned are added onto your cumulative University record. From this record, you may determine your progress toward a degree.

In working for a degree, you should keep in mind the various levels on which you must satisfy requirements—University, college, school, and department—as well as the kinds of requirements you must fulfill: course, unit, grade point, and amount of upper division work. You may receive additional counsel in these matters from your adviser.

Academic Opportunities

Exchange Program with Hayward, Mills, and Sonoma

Berkeley has an exchange program with California State University, Hayward; Mills College, Oakland; and California State University, Sonoma. With the approval of your adviser and the dean of your school or college, you may register and pay applicable fees at Berkeley and be exempt from tuition and fees at the host campus. You may enroll for only one course per semester at the host campus.

Studying Abroad

While progressing toward your bachelor's degree, you have a number of opportunities to earn University of California credit while studying abroad. The Universitywide Education Abroad Program has study centers at the following universities:

Africa
University of Ghana, near Accra
University College, Nairobi, Kenya
University of Benin, Lome, Togo (summer program)

Asia
Beijing University, People's Republic of China
Chiang Mai University, Chiang Mai, Thailand
Chinese University of Hong Kong
Chulalongkorn University, Bangkok, Thailand
Gadjah Mada University, Yogyakarta, Indonesia
Indonesia Dance Institutes in Bali and Bandung, Indonesia
Indonesia Institute of the Arts, Yogyakarta, Indonesia
International Christian University and Sophia University, Tokyo, Japan
Meiji Gakuin University, Yokohama, Japan
Nanjing University, People's Republic of China
Nankai University, Tianjin, People's Republic of China
National Chengchi University, Taipei, Taiwan
Padjadjaran University, Bandung, Indonesia
University of Delhi, India
Yonsei University, Seoul, Korea

Australia and New Zealand
Australian National University, Canberra
Flinders University, Bedford Park
La Trobe University, Melbourne
Lincoln College, Christchurch, New Zealand
Macquarie University, near Sydney
Massey University, Palmerston North, New Zealand
Monash University, Melbourne
University of Adelaide
University of Auckland, New Zealand
University of Melbourne
University of New South Wales, Kensington
University of Otago, Dunedin, New Zealand
University of Sydney
Victoria University, Wellington, New Zealand

Central America
National Autonomous University of Mexico, Mexico City
Summer Intensive Language, Morelia, Mexico
University of Costa Rica, San Jose
Europe
University of Vienna, Austria
University of Copenhagen, Denmark
Universities in France: Bordeaux, Grenoble, Lyon, Marseilles, Montpellier, Paris (Film, Literature), Pau, Pau-Puris (one semester in each city), Poitiers
Georg-August University, Goettingen, Germany
Karl Marx University, Budapest, Hungary
Universities in Ireland: University College, Cork; University College, Galway; University of Dublin, Trinity College (a part of the United Kingdom and Ireland program)
Universities in Italy: Padua; Academy of Fine Arts, Venice; G.B. Martini Music Conservatory, Bologna; II Bisonte International School of Graphic Arts, Florence
University of Bergen, Norway
University of Lisbon, Portugal
Universities in Spain: Barcelona, Madrid
University of Lund, Sweden
State University of Leningrad, USSR
Universities in the United Kingdom: Aberystwyth, Birmingham; East Anglia, Exeter, Hull, Kent, Lancaster, Leeds, St. Andrews, Stirling, Sussex, York

Middle East
Universities in Israel: Haifa, Jerusalem (Hebrew University)
American University of Cairo, Egypt

North America
University of British Columbia, Vancouver, Canada

South America
University of São Paulo, Brazil
Pontifical Catholic University of Peru, Lima, Peru

Requirements for participation are a grade-point average of 3.0, upper division standing, and sufficient language preparation. University scholarships, loans, and grants may be used to finance the year abroad.

Berkeley also participates in several inter-collegiate consortia for advanced language studies: Rome Classics Program (requiring Latin fluency), Japanese language study in Tokyo, Mandarin Chinese study in Taipei, and Arabic study in Cairo.

If you are interested, consult your academic advisers and the Education Abroad adviser in the Berkeley Programs for Study Abroad office, 2538 Channing Way, 104 Building D, 642-1356.

Teaching, Research, and Internships
Berkeley offers many opportunities for you to gain practical teaching experience, conduct research projects, and engage in internships either as volunteers or paid employees.

Teaching
Over 2000 students participate every year in more than 100 programs that provide you with the opportunity to develop and refine teaching or tutoring skills. You may work with local schools, help other undergraduates through various departmental tutoring programs, or guide visitors around the campus, and may receive academic credit or financial compensation for your work. A listing entitled "Opportunities for Undergraduates to Teach," available at Moffitt Undergraduate Library, describes these programs and how you might participate.

Research
In classes in a wide range of disciplines, students work independently or as part of a team on projects ranging from writing preliminary research designs to carrying out sophisticated research projects. Past projects have included working on archaeological digs, collecting and recording family folklore, cataloging museum collections, determining the mechanism for habitat selection of garden snails, assessing the effect of media coverage of the Vietnam war on public sentiment, and collecting information from scholars, managers, and workers in Yugoslavia on management in Yugoslavian firms. For more information consult your adviser.

Internships
A wide variety of internships—loosely defined as structured field experience—is available to you on and off campus. The positions may be paid or unpaid, may or may not carry academic credit, and may have either educational or career value. Courses with field components occur principally in the 98, 99, 197, 198, and 199 series. Check the course listings in the catalog for specific information. The following offices have listings of numerous internships, both on and off campus: SCOPE Cooperative Education Internship Program, Building T-6, upper level; College of Engineering Cooperative Education Program, 209 McLaughlin Hall; Career Planning and Placement Center, 2200 Bancroft Way; Work-Study Program, 207 Sproul Hall; and Community Projects Office, 303 Eshleman Hall. Many individual internship programs in education, counseling, government, news media, museums, and other private and public organizations are available through campus-based offices.

Cooperative Education Program
The Cooperative Education Program is an opportunity for undergraduate and graduate students to integrate classroom study with supervised practical and professional experience in the field. You may work with government, industry, business, or nonprofit organizations in positions related to your academic and/or career objectives before graduation. These positions are paid and may be full- or part-time. They last for one semester or as long as two years, depending upon the type of experience you want.
Two offices constitute the campus-wide cooperative education program: SCOPE Survey of Career Options through Professional Experience) and the Engineering Cooperative Education Program. Each program office has separate application procedures and requirements. If interested, you should contact the appropriate program for specific information.

SCOPE Cooperative Education Program
Liberal arts, sciences, natural resources, environmental design, and business administration majors may apply through this office. Positions are paid, full- or part-time, and last for one semester or as long as two years. For general requirements, contact the SCOPE Office, Career Planning and Placement Center, Building T-6, upper level, 642-1532.

Engineering Cooperative Education Program
All engineering, computer science, and chemical engineering majors may apply through this office. Positions offered are full-time, paid, for a minimum of one semester. For general requirements, contact the Engineering Co-op Office, 209 McLaughlin Hall, 642-6385.

Honors Courses
Berkeley offers some honors courses for highly qualified students, usually in their senior year. A very small number of these courses is available to lower division students. See your major adviser for information.

Individual Majors
If you have interests that fall outside traditional disciplines, you may design your own major to satisfy your individual academic goals. See an adviser for assistance and more information.

Advising and Academic Assistance
College and Department Advisers
The College of Letters and Science has a staff of professional advisers who will help you plan your course of study, fulfill requirements, and eventually choose a major. After you have chosen a major, you will be assigned to an adviser who is a faculty member in your major department. Outside the College of Letters and Science, your adviser will most likely be a faculty member.

Student Learning Center
The Student Learning Center, located in Building T-8, 642-7332, offers assistance and noncredit courses in reading, writing, and study skills and preparation for examinations. Priority is given to Affirmative Action and Educational Opportunity Program students, but everyone is welcome.

Academic Excellence
Semester Honors
To be eligible for semester honors, you must have completed a minimum of 12 units undertaken for letter grades at Berkeley and must have achieved the minimum grade-point average required by your school or college. Schools and colleges may establish additional criteria that you must also meet.

Honors at Graduation
To be eligible for honors in general scholarship at graduation, you must have completed a minimum of 50 semester units at the University of California, of which a minimum of 43 units must be undertaken for a letter grade; completed a minimum of 30 units at Berkeley; and achieved a grade-point average that ranks you in your school or college in the top 3 percent for highest honors, the next 7 percent for high honors, and the next 10 percent for honors. These criteria are minimal; consult your college or school office.

Honor Societies
Berkeley has a number of honors societies that elect students in recognition of academic excellence. Among these are Phi Beta Kappa, a national honor society; the Prytanean Society, founded in 1900 to honor upper division and graduate women for academic accomplishment and service to the University; the Honors Students Society; Tau Beta Pi, the national honor society for all engineering disciplines and various other engineering honors societies (see the Student Guide to Engineering Societies, available at the Engineers Joint Council office); Alpha Mu Gamma, a national society for students with demonstrated excellence in languages; and individual societies in most language departments. See your adviser for more information.

Prizes
Awards for outstanding ability in some area of creative, scholarly, or athletic achievement are available at Berkeley in two general categories: competitive prizes for creative effort or departmental awards for outstanding scholastic achievement. Consult the Committee on Prizes, 642-3498, for more information.
The rich cultural life of the Berkeley campus rivals that of San Francisco in diversity and scope.

Cal Performances sponsors a dazzling array of music, dance, and theatrical performances by major dance and theater companies, orchestras, chamber ensembles, and solo performers. Many of these are held at Zellerbach Hall, a 2100-seat auditorium that has an orchestra pit capable of accommodating the world's largest symphony orchestras and a stage wide enough for major operas and ballets. The more intimate Hertz Hall and the Zellerbach Playhouse are used for smaller-scale professional and student productions.

Berkeley's museums—including the University Art Museum and Lowie Museum of Anthropology and the Museum of Paleontology—offer world-class exhibits from other museums and rotate exhibits from their permanent collections as well. The Pacific Film Archive in the University Art Museum has received international recognition as a resource for film scholarship and exhibition.

The Botanical Garden, a 30-acre facility, has more than 8500 plant species from around the world.

The main purpose of graduate study is to inspire independence and originality of thought in the pursuit of knowledge. As a graduate student you are expected to achieve mastery of your chosen field through advanced course work, independent study, and research.

Graduate education embraces study for all degrees and certificates beyond the bachelor's degree—principally the master's and doctor's degrees. Graduate degrees fall into two broad categories: (1) Professional—degrees awarded by each professional college and school in recognition of a student's command of a comprehensive body of professional knowledge and the ability to organize and carry out investigation of significant problems in the field. (2) Academic—degrees awarded by the academic departments and some professional schools in recognition of a student's command of a wide range of related subjects within an academic field, preparation in one or more foreign languages, and ability to pursue original research leading to a significant contribution to a field of study.

These graduate degree programs have been approved by the Graduate Council and the Coordinating Committee on Graduate Affairs, which must approve any new programs. A list of graduate degrees appears later in this section. For complete information on regulations and procedures for graduate students, see the section "Academic Policies," beginning on page 59.

The Nature of Graduate Education

Graduate study is the pursuit of knowledge through advanced course work and research. Graduate courses demand a capacity for critical analysis and a specialization of research interests not normally appropriate for an undergraduate major. These courses may be conducted in a number of ways: (1) as advanced lecture courses; (2) as seminars in which faculty and students present critical studies of selected problems within the subject field; (3) as independent study or reading courses; or (4) as research projects conducted under faculty supervision.

You are accorded considerable liberty in your choice of courses, at the discretion of your graduate adviser, as long as you meet the minimum requirements for academic residence. Possession of a bachelor's degree does not in itself entitle you to enroll in a graduate course. These courses assume adequate preparation at the upper division level in the subject field (a minimum of 12 units of upper division work basic to the subject matter of the graduate course; this basic work may be pursued in more than one department). You are therefore encouraged to take upper division courses that will give you the background you need for advanced work; you are not confined to graduate courses.

Graduate courses completed before you attain your bachelor's degree are not acceptable for unit credit toward an advanced degree. Courses in the 300 and 400 series, which are professional in nature, are not acceptable for unit credit as part of the program for an academic degree. These courses may, however, satisfy certain requirements, such as teaching, research, or technical work, in particular academic programs.

Graduate Advisers

Graduate advisers are appointed by the dean of the Graduate Division for each department, school, or group and are announced before the beginning of the fall semester. Graduate advisers (1) assist students in selecting programs of study; (2) endorse study lists; (3) act on petitions for study list changes only; (4) maintain records of all students enrolled under their jurisdiction; and (5) supply information requested by the dean of the Graduate Division about a student's progress. In addition, the chair of the graduate advisers (1) endorses applications for candidacy for higher degrees and for qualifying examinations; (2) acts on petitions by graduate students; and (3) assists the dean in the enforcement of regulations, particularly those relating to registration, admission to graduate courses, and maintenance of acceptable scholastic performance.

You will also have an individual or major adviser, usually assigned after you are advanced to candidacy for the doctorate, but frequently appointed in the earlier stages of your training. The individual or major advisers may or may not be the same as the official graduate advisers. You should keep in close touch with your individual adviser and should confer with your official graduate
adviser at the beginning of each semester to obtain approval of your program of study (by signature on the Schedule Request Form).

Graduate Admissions

Applying for Admission

You must file a completed application for admission, as well as all additional documents specified in the application booklet (including transcripts from each college-level institution you previously attended) and a nonrefundable application fee of $40, with the Graduate Admissions/Fellowship Office or the department to which you are applying by the established deadlines. Follow the instructions in the application packet, which you should request from the department of your choice.

Many departments have earlier final application dates than the Graduate Division, both for admission and financial assistance, and many departments also admit students only for the fall semester. Information on special departmental deadlines and requirements is contained in the application packet.

You must meet departmental deadlines. The final dates of the Graduate Division for acceptance of applications for admission for the 1989-90 academic year are: fall semester, February 10; and spring semester, September 1. The School of Law admits only for the fall semester; the deadline is February 1.

Limited Enrollment

Each graduate program at Berkeley has a maximum enrollment, which limits the number of applicants who may be accepted. Almost invariably, this maximum is smaller than the number of applicants who meet the minimum qualifications for admission. Selection procedures are designed to admit applicants in accordance with their relative merit and promise among those at least minimally qualified. It is to your advantage to inquire early about the possibility of study at Berkeley.

Admissions Requirements

The University requires the following academic qualifications: (1) a degree from an accredited institution, comparable to the bachelor's degree offered at Berkeley; (2) sufficient undergraduate training to undertake graduate study in the chosen field; and (3) a satisfactory scholastic average. In addition to the general University requirements, certain schools or departments may require additional records, such as separate applications, reading lists, examples of original work, or the results of qualifying examinations. Information on undergraduate requirements for a major field and on graduate programs and requirements is available in the school or departmental announcements and bulletins and in the "Courses and Curricula" section of this catalog.

Graduate Record Examination

Applicants for graduate admission (with certain exceptions listed below) are required to take the general test of the Graduate Record Examination and to have their scores on this examination reported by the Educational Testing Service. Although current test scores are preferred, reports up to five years old—but not older—will be accepted.

If you are applying to the UCB-UCSF Joint Medical Program, you are not required to take the GRE but must take the MCAT (Medical College Admission Test).

If you are applying to the School of Business Administration, you must take the Graduate Management Admission Test (GMAT) in place of the Graduate Record Examination.

If you are applying to the School of Law for the J.D. degree, you must take the Law School Admission Test (LSAT) rather than the GRE.

Teaching Credential applicants (Multiple and Single Subject only) are not required to take the GRE. However, applicants for the M.A.T. degree must fulfill the GRE requirement.

You should make arrangements directly with Educational Testing Service to take the GRE at least three weeks before the desired test date (six weeks, if registering to take the examination outside the United States).

You may obtain applications for the GRE examination and GMAT examination from the Educational Testing Service, Box 955, Princeton, NJ 08540, or from its western office at P.O. Box 23470, Oakland, CA 94623-0470.

If you are a domestic candidate from a family with an extremely low income, you may qualify for a waiver of GRE test fees. Consult your undergraduate financial aid office to determine whether your institution participates in the GRE Fee Waiver Program and whether you qualify. Fee waivers are not available directly from the Educational Testing Service.

International Applicants

Applicants who come from a country in which the official language is English or who have studied for one year or more in schools or universities in which English is the language of instruction must take the general test of the Graduate Record Examination. In general, others applying from countries outside the United States need not submit GRE scores unless their major departments require. A list of departments or groups that require the GRE of all their applicants is included in the application packet.

International applicants must fulfill all previously stated admissions requirements and have an excellent command of English before beginning graduate study at Berkeley; students cannot be admitted to graduate standing to learn English. If you are applying from a country in which English is not the official language, you must take the Test of English as a Foreign Language (TOEFL) and have the results sent directly to the Graduate Admissions/Fellowship Office. The test is administered six times a year, and you should register as soon as possible by writing either the TOEFL agent in your home country or TOEFL, CN 6155, Princeton, NJ 08541-6155.

Applicants who register to take the TOEFL in May or later cannot be considered for admission to the fall semester. The results of institutional administrations of the TOEFL are not acceptable in lieu of the international or special center administrations. If you took the test more than two years ago, you must take it again.

Special Circumstances

Readmission

If you have withdrawn and want to re-enroll, you must file an Application for Readmission, obtainable from the Petitions Desk, Graduate Division, 1 California Hall, and pay a nonrefundable, nontransferable readmission fee of $40. This fee must accompany the Application for Readmission when first submitted or the application will not be reviewed. Approval of readmission is not automatic. The Graduate Division and your school, group, or department will review your petition and academic record and notify you of their decision.
Duplication of Higher Degrees

Normally, duplication of degrees is not permitted. You may petition the dean of the Graduate Division for an exception to this policy if the degree you want is in a field of study distinctly different from the field in which you attained your original degree. A professional degree is not regarded as duplication of an academic degree.

On the recommendation of the graduate adviser and with the approval of the dean of the Graduate Division, you may, however, be permitted to earn a second master's degree in the same subject as that of the first master's (or in a closely allied subject), if you are enrolled in a doctoral program at Berkeley in that subject (or allied subject), and if that particular doctoral program requires a master's degree from Berkeley.

Reactivation of Application

The Graduate Division keeps application materials on file for two years. If you filed an application within the past two years but did not complete the application process, were denied admission, or were admitted but did not register, you may reactivate your previous file by submitting a new application form by the established deadline for the semester in question.

The first reactivation is free. Thereafter, a $40 fee is required. A request for reconsideration in another major field for the same semester does not constitute a reactivation of application.

Notification of Action on Admission

A written notice from the dean of the Graduate Division is the only valid proof of admission. Admission to graduate study is limited by the number of places available in the various colleges, schools, and departments of Berkeley. If you have applied for admission and fellowship consideration, you should be notified on or about March 15 of the action on your applications. If you have applied for admission only, you will be advised as soon as possible after a decision has been reached. Normally, however, acceptance letters for admission only will not be issued until after March for the fall semester.

Registration and Enrollment in Classes

Advance Class Enrollment

Berkeley's computerized Advance Class Enrollment (ACE) system enables you to request classes and receive a class schedule well before each semester begins. The system is designed to increase the probability that spaces will be available for all students wishing to take a particular course. For courses with limited enrollment, ACE will ensure that students who meet the courses' specific priorities are scheduled first.

To register and enroll, follow these steps:

Obtain Your Registration Packet

New students: See "Special Information for New Graduate Students" below.

Readmitted students: You will be mailed your registration packet after receiving approval of your readmission.

Continuing students: You must obtain your registration packet in person at locations indicated on campus bulletin board placards during the Advance Enrollment period (see the Academic Calendar at the front of this catalog).

Your registration packet will contain a Schedule Request Form for requesting classes and a billing statement for paying your registration fees. If you will be a readmitted student, you will also receive a Schedule of Classes that lists the meeting times and locations of all courses to be given at Berkeley for the term. New and continuing students must purchase one from the ASUC Bookstore or from other local bookstores.

Select Classes and Submit Your Schedule Request Form

With the Schedule of Classes and the General Catalog, you can determine a class schedule. Once you have selected your classes, you must complete and submit your Schedule Request Form, with the approval of your major adviser, by the appropriate ACE deadline.

Pay Registration Fees

You must pay the fees indicated on your billing statement by the ACE fee payment deadline in order to be scheduled into classes. You must pay your fees in full or in three installments on the Deferred Payment Plan (see below). If your fees are not paid in full by the designated due dates, you may be dropped from the rolls for the current term and blocked from future registration in accordance with University policy.

The Deferred Payment Plan: You may pay your registration fees in three installments if you wish. A $10 nonrefundable processing fee, charged to your first installment, will be assessed. Your billing statement will indicate the amount due for the first payment; subsequent statements for the remaining payments will be mailed to your local address on file with the Office of Admissions and Records. For full information on the Deferred Payment Plan, read the billing statement or call the Loans and Receivables Office at 643-6373.

Obtain Your Confirmed Class Schedule

If you submitted your Schedule Request Form and paid your registration fees by the ACE deadlines, a confirmed Class Schedule will be produced for you shortly before the beginning of the semester. You must obtain your schedule in person from your major department office.

You are responsible for all classes into which you have been scheduled. To make any changes, you must file a Petition to Add/Drop Courses and/or a Petition to Change Grading Option on or after the first day of instruction.

In-Person Registration

If you fail to submit your Schedule Request Form and/or pay your registration fees by the ACE deadlines, you will have another opportunity to do so at In-Person Registration at the beginning of the semester. However, you will be limited to requesting classes that are still open after the scheduling of students who enrolled through ACE. Continuing students will be liable for a $50 late registration fee and/or a $50 late enrollment fee. Your Confirmed Class Schedule will be available at your major department office on the first day of instruction.
Statement of Intent to Register

The admission notice to new (including reactivating) graduate students contains a Statement of Intent to Register that must be filled out and returned to the Graduate Admissions/Fellowship Office by the date indicated in the notice. Only the return of the form to the Graduate Admissions/Fellowship Office indicating an intent to register will reserve the registration slot allocated to you. If you want to retain a record of the return of your Statement of Intent to Register, you should send it by certified or registered mail. If you do not want to accept the offer of admission, you should return the Notification of Declination of Admission so that your place can be allocated to another applicant.

Failure to Register

If you do not return the Statement of Intent to Register or return it but do not register for the semester in which you were admitted, you must request reactivation of your application if you want to attend any subsequent semester. You have no priority over other applicants for any subsequent semester by virtue of your previous admission.

Registration

To maintain good standing as a graduate student, you must register with the Office of Admissions and Records each semester until you complete all requirements for the degree, unless you have permission from the dean of the Graduate Division to withdraw. Failure to register or to obtain formal permission to leave the University will constitute withdrawal from the Graduate Division, and you will be denied re-admission. You can satisfy the requirement for full-time continuous registration by attending both semesters of an academic year. You must be registered or pay the filing fee, whichever is applicable, for the semester in which your degree is conferred. If you hold a nonimmigrant visa, you must be registered for both semesters of each academic year unless you have special permission from the Immigration Service to do otherwise. Consult the International Student Adviser for further information. In summary, you must register in any semester in which you are enrolled in formal courses of instruction or are making any use of University facilities, including access to the faculty, except for uses accorded the general public.

If your studies or research requires absence from California for the semester, you must file a petition requesting absence and a reduction of the University registration fee with the Graduate Division, 1 California Hall.

Special Information for New Graduate Students

If you will be a new graduate student, you must enroll and register during the In-Person Registration period at the beginning of the semester. However, if you have submitted your Statement of Intent to Register in time, you will be mailed a billing statement shortly before the ACE fee payment deadline. The statement will indicate the registration fees due and the amount of financial aid, if any, applied against your fees. You may make a payment at that time or by the In-Person Registration deadline. You must obtain your registration packet, which will include your Schedule Request Form, in person from your major department office (available approximately two weeks before the beginning of instruction). After meeting with your major adviser, you must submit your Schedule Request Form and pay your registration fees (if you did not do so previously) by the In-Person Registration deadline. Your Confirmed Class Schedule will be available in your major department office on the first day of instruction.

Cancellation of Registration

Students who have registered and decide before classes begin not to attend Berkeley may cancel by filing the appropriate form. For further information see the section "Academic Policies," beginning on page 59.

Class Schedule and Unit Load

Under Advance Class Enrollment, all students fill out a Schedule Request Form, entering on it all course requests, including thesis and/or research approved by the graduate adviser. Courses are classified as lower division (numbered 1 through 99); upper division (100-199); and graduate (200-299). Lower division courses are not counted as part of a full program of study leading to a higher degree. You must be enrolled in 12 units in 200 series (or above) to be considered a full-time student. (For information on courses in the 600 series, see page 60.)

Graduate student instructors and research assistants must normally carry a minimum of 6 units of upper division or graduate work (courses in the '100 or 200 series). Fellowship holders and foreign students on nonimmigrant visas must carry a full program of study; the minimum program is 12 units in upper division and/or graduate courses, although individual study in the form of language preparation, comprehensive and qualifying examination preparation, etc., for the Ph.D. degree is taken into account.

In these cases reduced unit loads are accepted as full programs with the consent of the graduate adviser and dean of the Graduate Division.

Changes in the Confirmed Schedule

Graduate students may file petitions to add or drop courses listed on their confirmed class schedules at any time through the fifth week of instruction with the signed approval of the course instructor and graduate adviser. If you discontinue a course after this time, you will normally receive a grade of F unless you submit a letter of explanation from your graduate adviser along with your petition for special approval to the dean of the Graduate Division. A $5 fee will be assessed for petitions submitted after the third week of instruction.

Withdrawal

If you want to withdraw from Berkeley at the end of a semester or while the semester is in progress, you must file a formal withdrawal. For further information, see the section "Academic Policies," beginning on page 59.
Graduate Degrees and Certificates

Academic degrees are the M.A., M.S., M.F.A., and Ph.D. All other degrees and certificates are professional. The J.D. in Law is the basic law degree. It is a graduate degree, and if interested you should apply directly to the School of Law.

Students applying for admission to the biological sciences should be aware of the current reorganization of majors in that discipline (see page 89). Please contact the graduate adviser in your proposed major for up-to-date information.

Agricultural and Environmental Chemistry, M.S., Ph.D.*
Agricultural and Resource Economics, M.S., Ph.D.
Anatomy, M.A., Ph.D.
Ancient History and Archaeology, M.A., Ph.D.*
Anthropology, M.A.,* Ph.D.
Applied Mathematics, Ph.D.
Architecture, M.Arch., Ph.D.
Art, M.F.A.
Asian Studies, M.A., Ph.D. M.A. program emphases: East Asian, Southeast Asian, South Asian
Astronomy, M.A.,* Ph.D.
Biochemistry, M.A., Ph.D.
Bioengineering, M.S., Ph.D.* (Joint program with San Francisco campus)
Biophysics, M.A., Ph.D.*
Biostatistics, M.A., Ph.D.*
Botany, M.A., Ph.D.
Buddhist Studies, Ph.D.*
Business Administration, M.B.A., M.S.,* Ph.D.
Chemical Engineering, M.S., Ph.D.
Chemistry, M.S., Ph.D.
City and Regional Planning, M.C.P., Ph.D.
Classical Archaeology, M.A., Ph.D.
Classics, M.A., Ph.D. M.A. program emphases: Greek, Latin
Comparative Biochemistry, M.A., Ph.D.*
Comparative Literature, M.A., Ph.D.
Computer Science, M.S., Ph.D.
Demography, M.A.,* Ph.D.*
Design (Visual), M.A.
Developmental Biology, M.S., Ph.D.
Dramatic Art, M.A.,* Ph.D.
Economics, M.A.,* Ph.D.
Education, M.A., M.A.T., Ph.D., Ed.D.
Education (Special Education Group), Ed.D., Ph.D. (Joint degree program with San Francisco State University)
Endocrinology, M.A., Ph.D.*
Energy and Resources, M.A., M.S., Ph.D.*


English, M.A., Ph.D.
Entomology, M.S., Ph.D.
Environmental Health Sciences, M.S., Ph.D.*
Environmental Planning, Ph.D.
Epidemiology, M.S., Ph.D.*
Ethnic Studies, M.A., Ph.D.
Folklore, M.A.*
Forestry, M.F.
French, M.A., Ph.D.
Genetics, M.S., Ph.D.*
Geography, M.A., Ph.D.
Geology, M.A., M.S., Ph.D.
Geophysics, M.A., Ph.D.
German, M.A., Ph.D.
Greek, M.A.

Health and Medical Sciences, M.S. Program emphases: Dual Degree Option, Genetic Counseling, UCSB-UCSF Joint Medical Program, Mental Health
Hispanic Languages and Literatures, Ph.D.
History, M.A., Ph.D.
History of Art, M.A., Ph.D.
Immunology, M.A.,* Ph.D.*
Italian, M.A., Ph.D.
Journalism, M.J.
Jurisprudence and Social Policy, M.A., Ph.D.
Landscape Architecture, M.L.A.
Latin, M.A.
Latin American Studies, M.A., Ph.D.*
Law, J.D., LL.M., J.S.D.
Library and Information Studies, M.L.I.S., Ph.D., D.L.I.S.
Linguistics, M.A., Ph.D.
Logic and the Methodology of Science, Ph.D.*
Mathematics, M.A., Ph.D.
Medical Anthropology, Ph.D. (Joint program with San Francisco campus)
Medical Physics, Ph.D.*
Microbiology, M.A.,* Ph.D.*
Molecular and Physiological Plant Biology, M.S., Ph.D.*
Molecular Biology, M.A.,* Ph.D.
Music, M.A., Ph.D.

Near Eastern Studies, M.A., Ph.D.
Neurobiology, Ph.D.*
Nutrition, M.S., Ph.D.*
Oriental Languages, M.A., Ph.D.
Paleontology, M.A., Ph.D.
Parasitology, M.S., Ph.D.*
Philosophy, M.A.,* Ph.D.
Physical Education, M.A., Ph.D.
Physics, M.A., Ph.D.
Physiological Optics, M.S., Ph.D.*
Physiology, M.A., Ph.D.
Plant Pathology, M.S., Ph.D.
Political Science, M.A., Ph.D.
Psychology, M.A.,* Ph.D.
Public Health, M.P.H., Dr.P.H.
Public Policy, M.P.P., Ph.D.
Range Management, M.S.*
Rhetoric, M.A., Ph.D.
Romance Languages and Literatures, Ph.D. Emphases: French, Italian, Spanish
Romance Philology, Ph.D.*
Scandinavian Languages and Literatures, M.A., Ph.D.
Science/Mathematics Education, Ph.D.*
Slavic Languages and Literatures, M.A., Ph.D.

Social Welfare, M.S.W., Ph.D.
Sociology, M.A.,* Ph.D.
Soil Science, M.S., Ph.D.*

South and Southeast Asian Studies, M.A., Ph.D. M.A. program emphases: Hindi-Urdu, Malay-Indonesian, Sanskrit, Tamil, South Asian Archaeology, and South Asian Civilization; Ph.D. program emphases: Hindi-Urdu, Malay-Indonesian, Sanskrit, Tamil, and South Asian Archaeology

Spanish, M.A.
Statistics, M.A., Ph.D.
Wildland Resource Science, M.S., Ph.D.
Wood Science and Technology, M.S., Ph.D.*

Zoology, M.A., Ph.D.

Certificate in Russian and East European Studies

The Certificate in Russian and East European Studies has been developed to serve graduate students in the humanities and social sciences who wish to broaden their knowledge of the Russian and East European area. To be eligible you must be in good academic standing and currently enrolled in a graduate program at Berkeley in a

*Students are not admitted to work for the M.A./M.S. degree, although it may be awarded to students pursuing work toward the Ph.D. degree after fulfillment of the appropriate M.A. requirements.
†Indicates established interdisciplinary group or field.
field related to the Russian/East European area. The program is to include at least 18 semester units in three or more disciplines, not including that in which you have received or are planning to receive your master's or doctoral degree. Advanced language courses in grammar, composition, or conversation may not be used to fulfill this requirement. Of the 18 required units, at least 6 must be at the 200 level; the remaining units may be at the 100 or 200 level. Applications and further information about the certificate program are available at the Center for Slavic and East European Studies, 361 Stephens Hall.

Certificate of Completion of Graduate Curricula in Library and Information Studies

A certificate program has been established which is designed to meet the need for advanced studies beyond the first professional degree (M.L.I.S.) and short of the doctoral degrees (Ph.D., D.L.I.S.). You should direct inquiries to the School of Library and Information Studies.

Certificate of Completion of Graduate Curriculum in Optometry

In this program you will spend 9 to 18 months in graduate professional training and must have previously earned the Doctor of Optometry degree. For information contact the Director of Clinics, School of Optometry, 250 Minor Hall, 642-0945.

Master of Arts in Teaching

The degree of Master of Arts in Teaching is offered by the School of Education jointly with the Department of English. If you are a candidate you must satisfy all requirements for certification to teach in California, in addition to completing academic training in one of the subject fields. You should direct inquiries to the appropriate academic department and to the School of Education.

Joint Doctoral Programs

There are two intercampus joint degree programs between Berkeley and the University of California, San Francisco: Bioengineering and Medical Anthropology. If interested, you should apply to the campus most appropriate to your research interests, but you will have access to facilities and faculty on both campuses through intercampus exchange registration. For information, write to the Department of Anthropology or the Group in Bioengineering.

Near Eastern Religions

A program leading to the Ph.D. degree is conducted jointly by the Berkeley campus and the Graduate Theological Union. For more information, see the discussion below under "Academic Opportunities."

Special Education

A joint doctoral program in special education leading to either the Ph.D. degree or the Ed.D. degree is offered by the Berkeley campus and San Francisco State University. The program is interdisciplinary, including clinical experience as well as in-depth preparation in the behavioral sciences and in statistics and research methods. For application material and additional information, write to: Special Education Group, c/o School of Education, University of California at Berkeley, or Department of Education, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132.

Concurrent Degree Programs

Concurrent degree programs provide a broad integrated curriculum between two disciplines. You should direct inquiries to the departments or schools involved.

Architecture, M.Arch.—Structural Engineering, M.S.
Asian Studies, M.A.—Law, J.D.
Business Administration, M.B.A.—Asian Studies, M.A.
Business Administration, M.B.A.—Law, J.D. (Berkeley)
Business Administration, M.B.A.—Law, J.D. (Davis)
Business Administration, M.B.A.—Law, J.D. (Hastings)
Business Administration, M.B.A.—Public Health, M.P.H.
City and Regional Planning, M.C.P.—Civil Engineering, M.S.
City and Regional Planning, M.C.P.—Law, J.D. (Berkeley)
City and Regional Planning, M.C.P.—Law, J.D. (Hastings)
City and Regional Planning, M.C.P.—Public Health, M.P.H.
Economics, M.A.—Law, J.D.
Journalism, M.J.—Asian Studies, M.A.
Journalism, M.J.—Law, J.D.
Landscape Architecture, M.L.A.—City and Regional Planning, M.C.P.

Library and Information Studies, M.L.I.S.—History of Art, M.A.
Library and Information Studies, M.L.I.S.—Law, J.D.
Library and Information Studies, M.L.I.S.—Near Eastern Studies, M.A.
Nutrition, M.S.—Public Health, M.P.H.
Public Health, M.P.H.—M.D. (School of Medicine, San Francisco)
Public Policy, M.P.P.—Engineering, M.S.
Public Policy, M.P.P.—Law, J.D.
Public Policy, M.P.P.—Public Health, M.P.H.
Social Welfare, M.S.W.—Law, J.D.

Teaching Credentials

Courses leading to the multiple subject or single subject teaching credentials are offered on the Berkeley campus. For details, please consult the Announcement of the School of Education.

Requirements for Graduate Degrees

The Master's Degree

Berkeley offers instruction leading to both academic and professional degrees. For specific regulations governing the professional master's degrees, see the individual announcements of the colleges and schools. This section will deal primarily with the academic master's degree.

Residence Requirement

A minimum of two semesters of academic residence is required for the master's degree. Academic residence is defined as enrollment in at least 4 units in 100-200 series courses. Specific subject requirements and performance levels are set by the schools, departments, and groups.

Transfer of Credit from Other Institutions

You should first request a transfer of units at the end of your first semester of attendance. Your graduate adviser should make a formal request to the dean of the Graduate Division specifying the units and courses involved. Your credits may be transferable if (1) the units involved are equivalent to work normally offered within your current program of study, (2) the grade recorded was at least
The following rankings of selected graduate departments at U.S. universities are drawn from the most recent assessment of the country's top research institutions.

In the 1982 study sponsored by four national academic organizations, Berkeley emerged as the strongest graduate institution across the board on a "reputational" scale in which faculty members rated the academic quality of their peers across the country.

The study, which consisted of polling 5000 faculty members at 228 colleges and universities, was sponsored by the Conference Board of Associated Research Councils, an ad hoc group consisting of the American Council on Education, American Council of Learned Societies, National Research Council, and Social Sciences Research Council.

The study surveyed 32 fields, and the reputations of Berkeley's departments were listed among the top 10 in 30 of them. Stanford was in the top 10 in 24 fields, and Harvard in 22. To the right are the 16 fields in which Berkeley's departments were rated among the top three.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Anthropology</td>
<td>1. Berkeley</td>
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<td></td>
<td>2. Chicago</td>
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<td></td>
<td>3. Michigan</td>
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<tr>
<td>Botany</td>
<td>1. UC Davis, Texas</td>
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<td></td>
<td>2. Berkeley, Wisconsin</td>
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<td></td>
<td>3. Cornell</td>
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<tr>
<td>Chemical Engineering</td>
<td>1. Minnesota</td>
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<td></td>
<td>2. Wisconsin</td>
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<tr>
<td></td>
<td>3. Berkeley, Caltech</td>
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<tr>
<td>Chemistry</td>
<td>1. Berkeley, Caltech, Harvard</td>
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<td></td>
<td>2. MIT</td>
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<tr>
<td></td>
<td>3. Columbia</td>
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<tr>
<td>Civil Engineering</td>
<td>1. Berkeley</td>
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<td></td>
<td>2. MIT</td>
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<td></td>
<td>3. Illinois</td>
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<tr>
<td>Classics</td>
<td>1. Harvard</td>
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<td></td>
<td>2. Berkeley</td>
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<td></td>
<td>3. Yale</td>
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<tr>
<td>English Language and Literature</td>
<td>1. Yale</td>
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<td></td>
<td>2. Berkeley</td>
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<td></td>
<td>3. Virginia</td>
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<tr>
<td>Electrical Engineering</td>
<td>1. MIT</td>
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<td></td>
<td>2. Berkeley</td>
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<td></td>
<td>3. Stanford</td>
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<tr>
<td>History</td>
<td>1. Berkeley</td>
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<td></td>
<td>2. Yale, Harvard</td>
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<tr>
<td></td>
<td>3. Princeton</td>
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<tr>
<td>Mathematics</td>
<td>1. Princeton</td>
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<td></td>
<td>2. Berkeley, MIT</td>
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<td></td>
<td>3. Chicago, Harvard</td>
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<tr>
<td>Mechanical Engineering</td>
<td>1. MIT</td>
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<td></td>
<td>2. Stanford</td>
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<td></td>
<td>3. Berkeley</td>
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<tr>
<td>Music</td>
<td>1. Berkeley, Chicago, Princeton</td>
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<td></td>
<td>2. Yale</td>
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<td></td>
<td>3. Illinois</td>
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<tr>
<td>Physics</td>
<td>1. Caltech, Harvard</td>
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<td></td>
<td>2. Berkeley, Harvard</td>
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<td></td>
<td>3. MIT</td>
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<tr>
<td>Political Science</td>
<td>1. Yale</td>
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<td></td>
<td>2. Berkeley, Harvard</td>
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<td></td>
<td>3. Michigan</td>
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<tr>
<td>Statistics and Biostatistics</td>
<td>1. Berkeley, Stanford</td>
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<td>2. Chicago</td>
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<td></td>
<td>3. Wisconsin</td>
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<tr>
<td>Zoology</td>
<td>1. Harvard</td>
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<td></td>
<td>2. Berkeley</td>
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<tr>
<td></td>
<td>3. Washington</td>
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</table>

Ratings of Selected Graduate Departments at U.S. Universities
a B, and (3) you have a superior scholastic record (at least a 3.3) at both your original institution and at Berkeley. Final action will be taken when you have completed half the program and are applying for advancement to candidacy. No more than 4 semester or 6 quarter units are transferable, and the work must have been completed previously in graduate status at an institution of high standing. The units transferred cannot be used to reduce the minimum required in the 200 series courses or the minimum residence requirement.

Work that formed part of the program for a master’s degree previously conferred (either at the University of California or elsewhere) may not be applied toward a current degree program.

Credit for graduate work that you completed on other campuses of the University of California may be granted in excess of 6 quarter units or 4 semester units. Requests are handled on an individual basis.

**Concurrent Enrollment—University Extension**

Courses taken concurrently through University Extension but held on the Berkeley campus under the instruction of a regular member of the Berkeley faculty are generally not applicable toward a Berkeley master’s degree. These courses are intended to provide Extension students with an opportunity to take courses that would not ordinarily be available to them. Concurrent enrollment cannot replace normal registration by Berkeley graduate students, nor may it be used to accumulate credit toward a Berkeley degree by an individual not formally admitted to graduate standing at Berkeley. An exception may be made for you only if there is clear evidence that you were concurrently enrolled through Extension while in graduate standing at another institution and with the intent of applying the units earned toward a graduate degree at that institution. Exceptions must be fully justified by the graduate adviser and will require special approval by the dean of the Graduate Division.

**Amount and Distribution of Work**

If you work toward an academic master’s degree on the Berkeley campus, you will pursue one of two plans, as determined by your school, department, or group. (Units may adopt either or both plans and will, in the latter case, designate which plan you are to follow.)

**Plan I** requires at least 20 semester units of upper division and graduate courses and a thesis. At least 8 of these units must be in graduate courses (200 series) in your major subject. Course units are not granted for the thesis.

**Plan II** requires at least 24 semester units of upper division and graduate courses, followed by a comprehensive final examination administered by your school, department, or group. At least 12 of the units must be in graduate courses in your major subject.

Your graduate adviser will guide you regarding distribution of course work among departments. Please note that departments, schools, and groups may have performance standards that are higher than the minimum B average required by the Graduate Division. Further requirements are specified by the major department.

**Advancement to Candidacy**

When you complete the requirements for your degree, you will not automatically be admitted to candidacy for the master’s degree; you must make a formal application to the dean of the Graduate Division when you have completed approximately half the master’s program. The application must be approved by the chair of graduate advisers in your major school, department, or group and must include a precise statement of the studies on which the application is based. You must apply no later than the end of the third week of instruction of the semester in which the degree is to be awarded. If you are to submit a thesis, however, you should consult your adviser as early as possible about advancement to candidacy so that the appropriate committee can be formed.

**The Master’s Thesis**

If you are following Plan I, described above, you must submit a typewritten thesis, double-spaced on medium-weight, 8½ x 11-inch approved paper, with a minimum left-hand margin of 1 ½ inches. Consult the Degrees staff in the Graduate Division for required brands of paper.

The thesis must be unbound and without perforations. The type must be adequate for photographic reproduction. Following approval by your thesis committee, two copies are filed with the Graduate Division. Further information regarding the organization and format of the thesis is available from the Degrees staff in the Graduate Division.

The thesis constitutes a report, in as brief a form as possible, of results obtained in an original investigation of a problem. The problem in question need only be of limited scope; however, the thesis should be comparable in style, organization, and depth of understanding to investigations of greater scope, such as the dissertations of doctoral candidates.

You must submit your thesis to a committee of three members of the faculty appointed by the dean of the Graduate Division. One member of the committee must be chosen from a department other than that of your major subject. You are required to confer with all members of your committee before beginning your thesis; since the committee is not appointed until you are advanced to candidacy, you should not begin thesis work before advancement in order to avoid extensive revisions. You are responsible for placing the completed thesis in the hands of your committee members.

Three years is the normal time period allowed for completion of the thesis. Candidacy for the master’s degree will lapse automatically at the end of that time. You can be reinstated, however, upon the recommendation of the graduate adviser to the dean at the time your thesis committee members have approved a final draft of your thesis. If all three members of your committee approve the thesis, they sign the official title page prepared by the Graduate Division. You then file two copies of the thesis with the Graduate Division for later deposit in the University library. If any member of your committee doubts the acceptability of the thesis, the committee chair convenes the committee to discuss it. If the committee reaches agreement on its acceptability, the thesis is signed and filed as described above.

If the committee continues to disagree, the thesis is sent to the dean of the Graduate Division together with a brief statement of each committee member’s opinion. If all members of the committee reject the thesis, it is sent to the dean with a statement to that effect by the committee chair. In all cases of rejection or split vote, the Administrative Committee of the Graduate Council makes the final decision.
The Doctoral Degree

Berkeley offers both academic and professional degrees. Professional degree programs are outlined in the individual announcements of the colleges and schools offering them. The general procedures given in this section apply primarily to the academic doctoral degree.

The Doctor of Philosophy degree is not granted solely for fulfilling technical requirements such as residence and completion of specified courses; it is awarded in recognition of a student’s knowledge of a broad field of learning and for distinguished accomplishment in that field through an original contribution of significant knowledge and ideas. The student’s research must reveal high critical ability and powers of imagination and synthesis.

Programs of Study

Programs of study for doctoral degrees are more individualized than those for master’s degrees, permitting more specialization within a field or the establishment of connections among fields. Nevertheless, if you are seeking a doctoral degree, you must have your program of study approved by the graduate adviser of the department or group to which you are admitted or later transferred. University policy requires continuous registration from entrance until receipt of the degree, unless a formal withdrawal is granted by the dean of the Graduate Division.

Your field of study may be in a single department, except for essential related courses in other departments; in several departments; or in an interdisciplinary group. Once you have chosen a field of study, you should confer with your graduate adviser to select the sequence of courses that will best prepare you for qualifying examinations and research work.

Residence Requirement

A minimum of two years or four semesters of academic residence is required for the Ph.D. degree. Academic residence is defined as enrollment in at least 4 units in 100-200 courses. The period during which you are allowed to be in candidacy is limited; after its expiration your candidacy for the degree is likely to lapse. You should consult your department or the Graduate Division for the time permitted in candidacy.

Foreign Language Requirement

The foreign language requirement ensures that you have the ability to acquire wide knowledge in your field of study and to keep up with foreign developments in your field. You are urged to complete the foreign language requirement early in your graduate career. You must fulfill the foreign language requirement before admission to the qualifying examinations and advancement to candidacy. Each graduate program may have somewhat different foreign language requirements. If you are a prospective student, you are urged to inquire about the foreign language requirement as soon as possible and, if you can, to fulfill it while still an undergraduate. In some graduate programs, applicants for admission must have satisfied the foreign language requirement before applying.

Qualifying Examinations

Before you are admitted to candidacy, you must pass a series of qualifying examinations administered by a four- or five-member committee approved by the Graduate Council. An oral component is required. You must be registered in the semester in which you take the examinations, and you must have removed any previous deficiencies in training, including incomplete grades in courses that your graduate adviser required for your program. You must have maintained at least a B average in all course work that you undertook in graduate status, and you must have fulfilled the language requirement(s).

Please note: Departments, schools, and groups may have performance standards that are higher than the minimum B average required by the Graduate Division.

Advancement to Candidacy

You must apply for advancement to candidacy, on a form furnished by the Graduate division, no later than the semester following the one in which you passed your qualifying examinations. The completed form, bearing the endorsement of your graduate adviser chair and dissertation chair, is filed with the Graduate Division. You must pay a fee of $25 when you file the application, and you must have completed all requirements for the doctoral degree except the dissertation before you may be advanced to candidacy.

The Candidate’s Degree

The degree “Candidate in Philosophy,” which gives formal recognition to a definite state of progress toward the doctorate, may be awarded to you when you are advanced to candidacy for the Ph.D. degree. The following departments and groups currently offer this degree:

- Agricultural and Resource Economics
- Ancient History and Archaeology
- Anthropology
- Applied Mathematics
- Architecture
- Astronomy
- Biochemistry
- Biostatistics
- Botany
- City and Regional Planning
- Classics
- Comparative Literature
- Computer Science
- Demography
- Dramatic Art
- Economics
- Education
- Endocrinology
- Engineering
- English
- Entomology
- Environmental Planning
- Ethnic Studies
- French
- Genetics
- Geography
- German
- Hispanic Literatures
- History
- Immunology
- Italian
- Latin American Studies
- Library and Information Studies
- Linguistics
- Logic and the Methodology of Science
- Mathematics
- Microbiology
- Molecular and Physiological Plant Biology
- Molecular Biology
- Near Eastern Religions
- Near Eastern Studies
- Nutrition
- Oriental Languages
- Paleontology
- Physical Education
- Physiology-Anatomy
- Plant Pathology
- Political Science
- Psychology
- Rhetoric
- Romance Languages and Literatures
- Romance Philology
Scandinavian Languages and Literatures
Science/Mathematics Education
Slavic Languages and Literatures
Soil Science
Statistics
Wildland Resource Science
Wood Science and Technology
Zoology

The Doctoral Dissertation

The format of the doctoral dissertation is similar to that outlined in the section on the master's thesis. Further information is available from the Graduate Division.

The dissertation, the product of independent investigation under faculty supervision, must be submitted to the committee in charge (see below) and must receive both its approval and the approval of the Graduate council. The dissertation is the most important requirement for the doctoral program; the degree is never granted for completion of course work only, no matter how extensive.

You are to work under one of two plans, as adopted by the department, school, or group:

Plan A: The Administrative Committee of the Graduate Council appoints a five-member committee which determines whether you have met the requirements for the degree. Three members of the committee, one of whom must be from a department other than that of your major subject, guide you in research and judge the merits of your dissertation. The entire committee conducts a final oral examination dealing with the relationship between your dissertation and the general field of study in which the subject of the dissertation lies. Admission to the final examinations may be restricted to the members of the committee, members of the Academic Senate, and guests of equivalent rank from other institutions.

Plan B: The Administrative Committee of the Graduate Council appoints a committee of three members, one of whom must be from a department other than that of your major subject, to guide you in research and judge the merits of your dissertation. This committee may require any necessary conferences to elucidate the subject treated in the dissertation. After presentation of the dissertation but before final action is taken upon it, the committee may, if necessary, require you to defend the dissertation in a formal oral examination.

After your committee has approved your dissertation, the original must be filed with the Graduate Division by a deadline specified by that office. You must also file an abstract of the dissertation, no longer than 350 words and signed by the committee chair.

Programs using Plan A and Plan B are listed below.

Plan A
Anatomy
Buddhist Studies
Logic and the Methodology of Science
Near Eastern Religions
Romance Philology
South and Southeast Asian Studies

Plan B
Agricultural and Environmental Chemistry
Agricultural and Resource Economics
Ancient History and Archaeology
Anthropology
Applied Mathematics
Architecture
Asian Studies
Astronomy
Biochemistry
Bioengineering
Biophysics
Biostatistics
Botany
Business Administration
Chemical Engineering
Chemistry
City and Regional Planning
Classical Archaeology
Classics—Emphases: Greek, Latin
Comparative Biochemistry
Comparative Literature
Computer Science
Demography
Dramatic Art
Economics
Education
Endocrinology
Energy and Resources
Engineering
Engineering Science
English
Entomology
Environmental Health Sciences
Epidemiology
Ethnic Studies
French
Genetics
Geography
Geology
Geophysics
German
Hispanic Languages and Literatures
History

History of Art
Immunology
Italian
Jurisprudence and Social Policy
Latin American Studies
Library and Information Studies
Linguistics
Mathematics
Medical Anthropology
Medical Physics
Microbiology
Molecular and Physiological Plant Biology
Molecular Biology
Music
Near Eastern Studies
Neurobiology
Nutrition
Oriental Languages
Paleontology
Parasitology
Philosophy
Physical Education
Physics
Physiological Optics
Physiology
Plant Pathology
Political Science
Psychology
Public Policy
Rhetoric
Romance Languages and Literatures—Emphases: French, Italian, Spanish
Scandinavian Languages and Literatures
Science/Mathematics Education
Slavic Languages and Literatures
Sociology
Soil Science
Statistics
Wildland Resource Science
Wood Science and Technology
Zoology

Minimum Requirements

All the procedures and regulations described above and in the preceding section on master's degrees constitute the minimum requirements for the higher degrees, as set by the Graduate Division. Each academic department may adopt additional requirements, as approved by the dean of the graduate Division and the Graduate Council, according to the demands of your field of study.

Interdisciplinary Groups and Individual Majors

If your interests fall outside departmental boundaries, Berkeley has a number of interdisciplinary graduate programs that cut across departmental lines and are administered by faculty from a variety of departments. You may also design your own major with the consent of the Graduate Council.
For information about these programs, see the discussions of interdisciplinary graduate groups and individual doctoral programs under “Academic Opportunities” below.

Academic Opportunities

Exchange Programs

Berkeley students participating in any of the following exchange programs, with the exception of the Intercampus Exchange Program, will not automatically receive credit for taking course work at the host campus. The courses will be posted in the memorandum column of your transcript. If you want to transfer units, see page 44, “Transfer of Credit from Other Institutions.” No more than 4 semester or 6 quarter units are transferable toward the master’s degree.

Intercampus Exchange Program

If you are a graduate student registered on any campus of the University, you may go to another campus of the University as an Intercampus Exchange Graduate Student with the approval of your graduate adviser, the chair of the department in which you want to study, the dean of the Graduate Division on the home campus, and the dean of the Graduate Division on the host campus. You may obtain an application form for the Intercampus Exchange Program for Graduate Students from the Office of the dean of the Graduate Division on your home campus. You should complete and file the application form at least three weeks before the opening of the term of enrollment on the host campus. (Please note that all other UC campuses are on the quarter system.)

This privilege is available to graduate students who would like to associate with scholars or fields of study not available on the home campus, or who seek the use of special facilities and collections. Whenever possible, you should make personal arrangements with faculty members on both campuses to ensure that the courses, seminars, or facilities will be available to meet your needs. This privilege will be granted where there is evidence of serious and high-quality scholarship.

As an intercampus exchange student, you register and pay fees on your home campus but have library, infirmary, and other student privileges on your host campus. You should make arrangements with the Office of Admissions and Records to follow the enrollment procedure of the host campus so that the grades you obtain in courses taken on the host campus will be transferred to your record on the home campus. Exchange students are considered graduate students in residence on the home campus and are not formally admitted to the host graduate school and department. Unless specifically restricted, fellowship recipients may participate in the Intercampus Exchange Program.

Stanford-California Exchange Program

If you have a superior academic record, you may participate in the Stanford-California Exchange Program when it is considered desirable for you to take a limited number of courses that are offered at Stanford but not at Berkeley. Participation in the program must be approved by the Graduate Division and your department. Normally, you will not be allowed to participate in the Exchange Program until you have completed a year of graduate study at Berkeley. Participants in this program register and pay the applicable fees at Berkeley and are exempt from tuition and fees at Stanford. The same privilege is accorded to Stanford students who want to take courses at Berkeley. If you apply for this program, you must enroll in at least one course at Berkeley. You may obtain further information and an application form from the Petitions Desk in the Graduate Division, 1 California Hall.

Exchange Program with Hayward, Mills, and Sonoma

You may also participate in exchange programs with California State University, Hayward; Mills College, Oakland; and California State University, Sonoma. With the approval of the Graduate Division and your department, you may register and pay applicable fees at Berkeley and be exempt from tuition and fees at the host campus. You may enroll for only one course per semester at the host campus.

Graduate Theological Union

There are two kinds of programs that include the facilities of the Graduate Theological Union in Berkeley: the “casual program” and the joint Ph.D. program in Near Eastern Religions.

The casual program is open to all students in the GTU community and all graduate students at Berkeley. This program allows you to register on one campus and take courses on the other, subject to the appropriate academic approvals. You may obtain applications and deadline dates from the Petitions Desk in the Graduate Division, 1 California Hall.

The Joint Doctoral Program in Near Eastern Religions is open only to students who intend to work toward the Ph.D. degree. To apply, you must first have an M.A. (or its equivalent) in Near Eastern studies or in a related field and must have at least two ancient languages suitable to the proposed program. You must be admitted to both the Graduate Theological Union and the University, because the degree is conferred jointly by both institutions. As a student in the joint doctoral program, you will be under the administrative supervision of the graduate dean at each institution. Both deans must participate in decisions before final action may be taken on a student matter.

You may use the extensive library holdings of the Union and supplement your program with selected courses in Palestinian archaeology, Biblical studies, Semitic epigraphy, and philology. For information about the program, a catalog, and application forms, write to the Graduate Theological Union, 2465 LeConte Avenue, Berkeley, CA 94709.

The Exchange Scholar Program

The Exchange Scholar Program is an experimental program designed to enable doctoral students with superior academic records to study at one of the participating institutions to take advantage of educational opportunities that are not available at Berkeley. Normally, you are eligible to become an exchange scholar only after you have completed one year in a Berkeley graduate degree program. You may take courses and/or conduct research with particular faculty at the host institution for no more than one year while remaining registered at Berkeley.

Participating institutions are Berkeley, Brown University, University of Chicago, Columbia University, Cornell University, Harvard University, Massachusetts Institute of Technology, Princeton University, Stanford University, and Yale University. You may obtain further information and an application from the Petitions Desk in the Graduate Division, 1 California Hall.

Please note: Guidelines for participation in the exchange program with Stanford University are outlined above under the Stanford-California Exchange Program.
Studying Abroad

Graduate students who have been admitted to study toward a higher degree may, under certain conditions, be granted permission to study abroad. To apply, you must have completed at least one year in residence before your departure for study abroad, and you must demonstrate language proficiency where required.

As a graduate student, you are eligible to apply to most of the study centers under the Universitywide Education Abroad Program. (For a list of study centers, see “Studying Abroad” on page 35.) You must obtain the approval of both your department and the dean of the Graduate Division.

Internship/Study Opportunities in Professional Studies Program in India

The professional schools in Berkeley conduct a program in New Delhi. Students earn credit for internship work in local government agencies appropriate to their professional interest and enroll in an Indian university. For additional information on all the above programs, write to the Office of International Education, 2538 Channing Way, Berkeley, Berkeley, CA 94720.

Tropical Biogeography

If you are a registered graduate student interested in doing field research in the tropics, see Integrative Biology 289 (formerly Biology 250) for information.

Interdisciplinary Groups

Berkeley has established graduate programs in a number of fields that cut across conventional departmental lines yet comprise distinct cores of knowledge. These programs are administered by groups of faculty from several related departments and, in certain instances, from several campuses. If you are enrolled in these programs you can work with any faculty member in the group without having to pursue the particular discipline of the department with which the faculty member is associated. Moreover, this arrangement gives you access to a range of facilities not ordinarily open to students enrolled in departmental programs. In some cases (e.g., medieval studies), a faculty committee is appointed specifically to advise you and the interested departments on setting up a program that will best meet the departments’ and your views of the intellectual quality of the proposed programs. Since groups have no budgets or facilities of their own, however, most applicants, to be accepted by a particular group, must first obtain the sponsorship of one of its faculty members.

Following is a current list of graduate groups on the Berkeley campus:

**Group in Agricultural and Environmental Chemistry**

*(Chair to be announced)* For information, contact Benito deLumen
c/o Department of Nutritional Sciences
119 Morgan Hall

**Group in Ancient History and Archaeology**

*(Chair to be announced)*

**Group in Asian Studies**

Professor Lowell Dittmer, *Chair*
2223 Fulton, Room 520

**Group in Bioengineering**

Professor Edwin R. Lewis, *Chair*
c/o Department of Electrical Engineering and Computer Science
230 Bechtel Engineering Center

**Group in Biophysics and Medical Physics**

Professor Alan Bearden, *Chair*
230 Donner Laboratory

**Group in Biostatistics**

Professors Lucien LeCam and Nicholas Jewell, *co-chairs*
c/o School of Public Health
19 Warren Hall

**Group in Buddhist Studies**

Professor Padmanad S. Jaini, *Chair*
c/o Department of South and Southeast Asian Studies
1203 Dwinelle Hall

**Group in Comparative Biochemistry**

Professor Lester Packer, *Chair*
c/o Department of Molecular and Cell Biology
Life Sciences Annex

**Group in Demography**

Professor Eugene A. Hammel, *Chair*
c/o Graduate Group in Demography Office
2234 Piedmont Avenue

**Group in Developmental Biology**

Professor Fred H. Wilt, *Chair*
c/o Department of Molecular and Cell Biology
Life Sciences Annex

**Group in Endocrinology**

Professor Charles Nicoll, *Acting Chair*
c/o Department of Molecular and Cell Biology
Life Sciences Annex

**Group in Environmental Health Sciences**

Professor Eddie Wei, *Chair*
c/o Public Health, Biomedical and Environmental Health Sciences
107 Haviland Hall

**Group in Epidemiology**

Professor Warren Winkelstein, *Chair*
c/o School of Public Health
19 Warren Hall

**Group in Ethnic Studies**

Professor Alex Saragoza, *Chair*
c/o Chicano Studies
4106 Dwinelle Hall

**Group in Folklore**

Professor James Fristrom, *Chair*
c/o Department of Anthropology
232 Kroeber Hall

**Group in Genetics**

Professor James Fristrom, *Chair*
c/o Department of Molecular and Cell Biology
Life Sciences Annex

**Group in Health and Medical Sciences**

Professor Donald Heyneman, *Chair*
c/o Program Office, 106 Building T-7

**Group in Immunology**

Professor Phyllis B. Blair, *Chair*
c/o Department of Molecular and Cell Biology
Life Sciences Annex

**Group in Indian Studies**

Professor Sharon E. Fleming, *Chair*
c/o Program Office, 106 Building T-7

**Group in Logic and the Methodology of Science**

*(Chair to be announced)*

**Group in Medieval Studies**

*(Chair to be announced)*

**Group in Microbiology**

*(Chair to be announced)*

**Group in Neurobiology**

Professor Frank S. Werblin, *Chair*
c/o Department of Electrical Engineering and Computer Sciences
231 Cory Hall

**Group in Nutrition**

Professor Sharon E. Fleming, *Chair*
c/o Department of Nutritional Sciences
119 Morgan Hall

**Group in Parasitology**

Professor James L. Hardy, *Chair*
c/o Department of Nutritional Sciences
119 Morgan Hall

**Group in Physics**

Professor Alan Dundes, *Chair*
c/o Department of Anthropology
232 Kroeber Hall

**Group in Physiology**

Professor Betty S. Polson, *Chair*
c/o Department of Biological Sciences
231 Cory Hall

**Group in Physical Optics**

Dean Jay M. Enoch, *Chair*
School of Optometry
350 Minor Hall

**Group in Range Management**

Professor James Bartolome, *Chair*
c/o Department of Forestry and Resource Management
107 Haviland Hall
Group in Romance Languages and Literatures
(Chair to be announced)

Group in Romance Philology
Professor Charles Faulhaber, Chair
c/o Department of Spanish and Portuguese
Dwinelle Hall

Group in Science/Mathematics Education
Professor Frederick Reif, Chair
c/o School of Education
1607 Tolman Hall

Group in Soil Science
Professor Harvey Doner, Chair
c/o Department of Plant and Soil Biology
108 Hilgard Hall

Group in Special Education
Professors Reginald Jones and Nadine Lambert, Co-chairs
c/o School of Education
4413 Tolman Hall

Group in Wood Science and Technology
Professor Arno P. Schniewind, Chair
c/o Forest Products Laboratory
478 Richmond Field Station

Advisory Groups
(not degree programs)

Committee on Psychoanalytic Studies of the Arts and Society
Professors Neil Smelser and Joseph Lipshutz, Co-chairs
c/o Department of Linguistics
2337 Dwinelle Hall

Program in Public and Nonprofit Management
Professor Nancy Van House, Coordinator
School of Library and Information Studies
South Hall

Committee for Certificate in Russian and East European Studies
Professor George W. Breslauer, Chair
Center for Slavic and East European Studies
361 Stephens Hall

Individual Doctoral Programs

To allow you to work in a field that, in its breadth, falls between that of a department and an interdisciplinary group, the Graduate Division permits the informal establishment of ad hoc programs leading to the Ph.D. degree. You will be considered for an interdisciplinary program only if you have completed at least two semesters of graduate study in a doctoral program on this campus and have shown superior academic performance in your graduate studies here. In these programs, you may prepare a proposal for a course of study under the sponsorship of five faculty members. Final approval of every individual graduate program and admission of each student into such a program must be granted by the Graduate council.

You must complete degree requirements in accordance with Plan A of the Graduate Council policies, and the degree is awarded in a field approved by you and the council.

Teaching and Research Appointments

Many departments make graduate student instructorships available to qualified graduate students, and departments, centers, and institutes often seek qualified graduate students for research appointments. For specific information see the section “Fees and Financial Aid,” beginning on page 53.

Internships

A number of internships are available to graduate as well as undergraduate students. For information see “Teaching, Research, and Internships” on page 36.

General Rules and Academic Policies

A brief summary follows of some of the general rules and policies you are subject to as a graduate student. For more exhaustive coverage, see the section “Academic Policies,” beginning on page 59.

Standards of Scholarship

You must receive a grade of A, B, C (including pluses and minuses), or S in your course work to satisfy degree requirements. You will not receive course credit for courses graded below C-. You must maintain a grade-point average of 3.0 in all upper division and graduate course taken as a graduate student. Your department, school, or group may establish more stringent standards.

Probation and Dismissal

You are subject to probation and dismissal if your grade-point average falls below that required by your department, school, or group; if you have too many incomplete grades; if your written work is substandard; or if you fail to make adequate progress toward the degree. You may appeal dismissal for academic reasons to the Graduate Council of the Academic Senate.

Normative Time

Normative time is defined as the elapsed calendar time in years that under normal circumstances would be needed to complete all requirements for the doctoral degree, assuming that a student is engaged in full-time, uninterrupted study and is making desirable progress toward the degree.

The primary goals of the Normative Time program are to provide incentives to both students and instructional units to reduce the average time taken to complete requirements for the doctoral degree, to facilitate a greater degree of continuity in doctoral studies, and to provide a more equitable assessment of fees for doctoral students advanced to candidacy. After advancement to candidacy, eligible students will receive a special grant to offset the cost of the educational fee.

The program is obligatory for all doctoral students (independent of original degree goal) first enrolled on the Berkeley campus in fall 1978 and thereafter. If you entered earlier you may elect to join the program. The conditions of the program are described in the section “Academic Policies,” beginning on page 59.

Academic Residence

In order to meet the academic residence requirement for higher degrees—not to be confused with state residence, defined in the Appendix—every graduate student must enroll in and complete a minimum of 4 units of upper division and/or graduate courses per required semester of academic residence. Only courses in the 100 or 200 series satisfy this requirement. You should also become familiar with the regulations on academic residence for the individual graduate degree.

Postdoctoral Fellows and Visiting Scholars

Prospective fellows or scholars should communicate with the chair of the department, school, or research unit in which they are interested to determine whether the facilities they require are available and whether they meet eligibility requirements for an honorary appointment. With rare exceptions, visiting scholars must hold a doctoral degree or its equivalent. Visiting scholars may not be students enrolled or on leave from another institution of higher education, candidates for a graduate degree, or employees of any University of California campus. Foreign fellows or scholars should communicate with Services for International Students and Scholars, International House, to determine whether they hold the proper visa to assume an appointment.
Il facel trasmefè lecchc femmena durante la Tribù. & appoiati ad
una tavoletta mossa di Dendro era un'alaioia fortunato sacro, sop pensò
esporre di taci disfetto su l'altro. Con le spalle inginocchiato
in un bruciato. Tra quest'una fatina uno pelle in no. Dall'altro lati era
uno che l'opera truboltu littera, uno annello farite humilmente la
mcsa inuro di sopra l'ingresso polvino impaccato. A chest'epoca
una macchina, con il capillamento domenico deapillata, & quella di il
ca flalsì disposto a mada, & le cibaramonda. Tenendo una faccia con la
parte acciaccata in pio. La quarta di apparsarono appresso per più
cadevano, uno porpello una macchina. Le una poce in una
macchina manda a centri, sopra il muro inducia di parto indiante, fu
parte di fanciula che l'affare inconveniente operato cubito, l'luca
uscendo vestito & di sopra portava una vistosa cotta pie
mai di frutto di fondi, & l'altro nera uno solo ne
suoi diritto o obbliore carente. Quel se
gore opportunamente era un'opale &c asep-
querato, il luna accinta soppagno, & il
corno femminile da sintia serre
flate di monti. ma quanti non
solo a me suo elegammentefino
in uno favo insegna ogni
tipo teamente
la manifato dia
logo se offera &
tali di cennovi.
Fees and Financial Aid

Berkeley's library system, composed of approximately seven million volumes and 100,000 periodicals, contains one of the best research collections in the country. Most of the collection is housed in the Doe Library and Moffitt Undergraduate Library, where the core collections emphasize social sciences and the humanities. The Bancroft Library, devoted primarily to the documentation of western North America, maintains the largest collection of Mark Twain archives in the world. The Berkeley collection is also distinguished for its East Asian Library, which contains rare editions of early manuscripts, scrolls, woodblock and engraved maps, stone rubbings, and bronze inscriptions from East Asia. Special collections of the library system include some of the rarest books, illuminated manuscripts, and other publications in the nation.

It is very important that you carefully consider the total financing of your education, from your first term at Berkeley to completing your degree objective. If financial help will be needed beyond funds that you or your family are able to provide, you should make the necessary applications for financial assistance well in advance of enrollment. You should pay particular attention to early deadlines for application for grants, scholarships, work-study, and National Direct Student Loans. While the needs and resources of each student differ, the University can provide a general list of fees and expenses normally encountered. You should note that fees are subject to change without notice.

Part of your fees may be refunded if you cancel your registration before the opening day of the semester or withdraw before the beginning of the sixth week of classes of any semester. (See Index, "Schedule of Refunds.") A circular on refunds, Student Fees and Deposits, is also available from the Office of Admissions and Records, 120 Sproul Hall. Total Expenses. The cost of attending the University varies according to individual circumstances. The expenses listed below are approximate costs for the nine-month academic year and should be used only as a guideline.

Required Fees

University Registration Fee—$326.50 per semester. This fee is paid by all students and covers normal expected usage of facilities such as laboratories and gymnasiums and services such as counseling, placement, and health.

Educational Fee—This fee is paid by all students at $462 per semester. It is used to support a portion of the cost of the educational program. In exceptional circumstances the educational fee may be reduced by one-half for part-time undergraduate students. Approval of part-time undergraduate study is made only in exceptional cases and is based on considerations of occupation, family responsibility, and health. Applications must be approved by the appropriate dean before the start of each term. A fee reduction will be made only if you enroll in no more than two courses.

Berkeley Campus Fee—This fee is paid by all students in the amount of $47.25 per semester. It provides support for a wide range of activities sponsored by the ASUC, including work with academic and administrative units of the campus. It covers use of the Student Union, helps pay construction costs of the Union building, and assists with the provision of ethnic studies on the Berkeley campus.

Graduate Student Health Insurance Plan (GSHIP)—$90 for the fall semester; $125 for the spring semester. The health insurance fee is required of all graduate students and all undergraduates on nonimmigrant visas. Payment of the fee for both the fall and spring semesters provides coverage for the entire calendar year, including summer. If you have insurance comparable to the GSHIP, you may either use both plans or apply for an exemption from the GSHIP. For more information, call 643-7474.

Nonresident Tuition—$2899.50 per semester. At the time of registration, you are classified as a resident or nonresident for tuition purposes. Only U.S. citizens and holders of immigrant visas can become qualified for resident classification. Under California law you will be classified as a resident for tuition purposes if you have lived in California for more than one year immediately before the day instruction begins at the last of the campuses to open for a semester. Residence is the combination of physical presence within California plus intent to live in California permanently. Nonresidents must pay a nonresident tuition fee each semester. For detailed information regarding the establishment of California residence, see the Appendix or write to the Attorney in Residence Matters, 590 University Hall, University of California at Berkeley, Berkeley, CA 94720.

Additional Fees and Expenses

Late Fee Payment—$50. Continuing students who pay fees after the ACE fee payment deadline are liable for this fee.

Late Enrollment—$50. Continuing students who submit their Schedule Request Forms after the ACE deadline (see calendar for dates) are liable for this fee.
Reinstatement after having been dropped from University rolls—$10.

Athletic Privilege Cards, Men's Athletic Events—Student football season tickets and basketball/all sports cards are available for purchase at the Athletic Ticket Office. Privilege cards permit free admission or reduced rates to most University men’s athletic events. For more information call 642-5150.

Athletic Privilege Cards, Women's Athletic Events—$15, Cal Gold Card. Purchase is optional. The privilege card is a season pass that permits free admission to all women's intercollegiate athletic events.

Table of Fees
At the time of registration, by mail or in person, students pay the following fees each semester:*  

<table>
<thead>
<tr>
<th>Student Category</th>
<th>Fees per Semester</th>
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<tbody>
<tr>
<td>Resident Undergraduate</td>
<td>$836</td>
</tr>
<tr>
<td>Resident Graduate</td>
<td>926(F); 961(SP)</td>
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<tr>
<td>Nonresident Undergraduate</td>
<td>3735</td>
</tr>
<tr>
<td>Nonresident Graduate</td>
<td>3825(F); 3860(SP)</td>
</tr>
<tr>
<td>Foreign</td>
<td>3825(F); 3860(SP)</td>
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<tr>
<th>School of Law</th>
<th>Fees per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident</td>
<td>$941(F); 976(SP)</td>
</tr>
<tr>
<td>Nonresident</td>
<td>3840(F); 3875(SP)</td>
</tr>
<tr>
<td>Foreign</td>
<td>3840(F); 3875(SP)</td>
</tr>
</tbody>
</table>

Students may apply for a variety of financial aid funds, including grants, scholarships, work-study, and loans. Financial aid applications and supporting information will be sent to entering undergraduate and graduate students who indicated their interest in financial aid on their applications for admission. New financial aid applications will not be sent to continuing students; they should stop by the Financial Aid Office in December or January to pick up their forms. The deadline for filing each year is normally March 2.

All financial aid except fellowships, honorary scholarships, teaching and research appointments, and prizes is granted on the basis of financial need. Financial need is the difference between the cost of attendance for the academic year and the amount you and your family can contribute toward those costs. Prizes are awarded on the basis of competition or outstanding ability in some area of creative or scholarly ability. Most scholarships are awarded on the basis of academic performance and financial need. Regents', Chancellor's, and Alumni scholarships, however, are awarded solely in recognition of outstanding achievement and promise. A separate booklet describing the prizes offered to Berkeley students is available from the Committee on Prizes, 127 Sproul Hall.

Much of the funding for graduate students comes from sources other than the Financial Aid Office. Fellowships are awarded through the Graduate Division. Information and applications are available at the Graduate Division, 1 California Hall.

Financial Aid
The Financial Aid Office is located on the second floor of Sproul Hall. The office is composed of four units, each serving a different part of the academic community. Please refer to the following directory for the address and telephone number of each unit. You may obtain detailed information about the various kinds of student aid available to Berkeley students by calling or writing the appropriate unit.

*All fees subject to change without notice.

Directory
Financial Aid Offices:
Unit 1 and Unit 2
Undergraduate College of Letters and Science, 250 Sproul Hall 642-6442
Unit 3
Undergraduate Professional Schools and Colleges, 201 Sproul Hall 642-0623
Unit 4
Graduate/Law, 201 Sproul Hall 642-0485

Special Financial Aid Services:
Committee on Prizes, 127 Sproul Hall 642-3498
Director's Office, 224 Sproul Hall 642-0645
Emergency Loans, 205 Sproul Hall 642-0470
Undergraduate Scholarship Office, 203 Sproul Hall 642-6363
Work-Study Program, 207 Sproul Hall 642-5628

Veterans' Educational Benefits
The Veterans Services Unit in the Office of Admissions and Records certifies eligible veterans, dependents, surviving spouses, and reservists for educational benefits. As the campus liaison to the Veterans Administration and the State Department of Veterans Affairs, Veterans Services can answer all questions regarding your eligibility for benefits and can assist you with counseling and referrals. A veterans’ work-study program, a tutorial assistance program, and a fee waiver program are also available.

If you are a veteran newly admitted to Berkeley, please submit a certified copy of your Certification of Release or Discharge from Active Duty (form DD-214). You may also need to submit certified copies of your marriage certificate, dependent children’s birth certificates, and final divorce decree, if applicable.

If you are a veteran’s dependent, you must provide your spouse or parent’s VA claim number and social security number. The VA pamphlet, “A summary of Veterans Administration Benefits,” is available upon request.

If you have questions or need more information, you may write to the Veterans Services Unit, Office of Admissions and Records, 120 Sproul Hall, or call 642-1592.
## Estimated Student Expenses 1989–90

Prepared by Office of Financial Aid, University of California at Berkeley

<table>
<thead>
<tr>
<th>Commuter (living at home)</th>
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<tbody>
<tr>
<td>Housing</td>
<td>$ 0</td>
<td>Food</td>
</tr>
<tr>
<td>Books and Supplies</td>
<td>440*</td>
<td>Personal</td>
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<tr>
<td>Transportation</td>
<td>576</td>
<td>Fees</td>
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<tr>
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<tr>
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<td>Food</td>
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<tr>
<td>Books and Supplies</td>
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<td>Personal</td>
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<tr>
<td>Transportation</td>
<td>280***</td>
<td>Fees</td>
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<th>Off-Campus Resident</th>
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<td>Housing</td>
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<td>Food</td>
</tr>
<tr>
<td>Books and Supplies</td>
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<td>Personal</td>
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<td>Transportation</td>
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<td>Fees</td>
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<td>Total</td>
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</tbody>
</table>

*Law students add $194 for additional law books and $30 for additional fees.
**Additional allowance will be added for the Clark Kerr Campus and Manville Hall.
***Travel allowance to cover costs during vacation/semester break for dorm students.
If not a California resident, add $5799 nonresident tuition (estimated).
Graduate students and law students add $215 health insurance fee.
Fellowships, Graduate Scholarships, and Academic Appointments for Graduate Students

Numerous programs—from fellowships, grants-in-aid, and loans to assistantships, subsidized housing, and child care programs—provide ways in which you can cut the cost of graduate school. Some of the programs are need-based and are administered through the Financial Aid Office. These programs are discussed in preceding paragraphs. Others are merit-based and are administered through the Graduate Division Fellowship Office and the academic departments. For detailed information about all the sources available to you, consult the Graduate Application for Admission and Fellowships, available from the department to which you wish to apply. The following paragraphs discuss merit-based fellowships, graduate scholarships, and teaching and research appointments, the primary sources of non-loan financial aid for graduate students.

Fellowships and Graduate Scholarships

Applications for fellowships and graduate scholarships are considered only once a year. Awards are made for the academic year beginning with the fall semester. In assigning awards, the Committee on Fellowships and Graduate Scholarships will consider the extent and quality of your previous academic work, evidence of your ability in research or other creative accomplishments, your intellectual capacity, and promise of productive scholarship.

In addition to Regents’ Fellowships and fellowships funded by endowed income, the following fellowships are awarded in open competition:

The Berkeley Fellowships for Graduate Study. Fellowships are awarded to students of outstanding achievement and high promise who will begin graduate study toward the doctoral degree in any field. These are three-year awards, based on continued excellence in the fellow’s advanced degree program, with an initial annual stipend of $8000, plus tuition and fees.

University Predoctoral Humanities Fellowships. Entering humanities students who enroll in Ph.D. programs and who plan to pursue a career in teaching and research are eligible for this fellowship, which provides $10,000, plus tuition and fees, for the first year of graduate study and for the dissertation year. For the second and third years, departments provide support in the form of teaching or research appointments.

The Chancellor’s Minority Predoctoral Fellowships. Fellowships are awarded to minority students of outstanding achievement who are beginning study toward the doctoral degree and are planning a career in university teaching. Fellowships provide a stipend of $7500 plus tuition and fees. The fellowships are for three years and are based on continued excellence in the fellow’s advanced degree program.

Foreign Language and Area Studies Fellowships. The U.S. Department of Education allocates fellowship funds to institutions of higher education that offer advanced training in modern foreign languages and in area and international studies. Area studies is defined as a program of comprehensive study of aspects of a society or societies including geography, history, culture, economy, politics, international relations, and languages. To be eligible, you must be a citizen or permanent resident of the U.S., show potential for high academic achievement, and plan to enroll in a course in the language of award.

Graduate Opportunity Fellowships. The purpose of the Graduate Opportunity Fellowship Program is to increase the enrollment of women and ethnic minorities in departments in which they have been traditionally underrepresented. To be eligible for an award under this program, you must have demonstrated scholastic achievement and be an entering or continuing full-time registered graduate student and a citizen or permanent resident of the United States. Awards will carry a maintenance stipend plus tuition and fees.

Fellowship Application Procedure. If you are applying for admission/fellowship, you must file the combined Graduate Application for Admission and Fellowships according to instructions included in the application. Important: You are strongly advised to take the October Graduate Record Examination.

If you are applying for admission for the spring semester, you must file a Continuing/Returning Graduate Student Fellowship Application (secured from the Graduate Fellowship Office) for an award to begin the following fall semester.

If you are a continuing or returning graduate student at Berkeley, you may obtain the necessary fellowship application material from the Graduate Fellowship Office. You must file the application and supporting materials with the department or graduate group.

The fellowship application deadlines for new students range from December 15 to January 5, depending on the department; see the Application for Admission and Fellowships for deadlines. Continuing students must submit fellowship applications to their departments by January 5.

Announcement of Awards. Awards are announced by April 1 and must be accepted or refused, in writing, by April 15. Your acceptance of a fellowship or graduate scholarship carries with it the presumption that you will devote full time to graduate study and research at Berkeley.

Fellowship Supplementation. Fellows may be employed no more than 25 percent time per semester as teaching or research assistants or in similar educationally relevant positions. Any exception to this policy
must be approved by the dean of the Graduate Division upon recommendation of the graduate adviser.

Nonresident Tuition Scholarships
If you are a nonresident student with an outstanding academic record, you may be recommended by your department for a nonresident tuition scholarship. Awards may cover a full academic year or partial nonresident tuition only. If you receive one of these scholarships, you must enroll in a full-time program of study and/or research leading to a higher degree.

Applications are available in the Graduate Fellowship Office, 1 California Hall, and in departments. You should submit your completed application to your department by April 15.

Graduate Minority Program
The goal of the Graduate Minority Program is to increase the number of minority students entering and completing higher degrees at the University. The program assists with recruitment activities and provides financial assistance and support services for students from groups that have been traditionally underrepresented in graduate and professional programs in the United States.

The University has identified blacks, Native American/ African Americans, Mexican Americans (Chicanos), Filipinos, and Puerto Ricans as the most severely underrepresented, and it recognizes that Asian Americans and Latinos are underrepresented in certain fields. U.S. citizenship is required.

Graduate Minority Program awards are based on evaluation of academic promise, financial need, and available program funds. Awards provide a maximum stipend of $4500 for students in professional master’s degree programs and up to $7500 for students in the Ph.D. programs, plus payment of fees. Award amounts are subject to verification of financial need. Awards are made for one year and are renewable for an additional year if satisfactory academic progress is being made toward completion of the degree.

Applications for prospective students are included in the Graduate Application for Admission and Fellowships. Applicants are also required to complete the Financial Aid Office application for determination of financial need.

Application fee waivers are also available for disadvantaged needy students from underrepresented groups. The request forms are available at the Graduate Minority Program Office.

For further information write to the Graduate Minority Program, Graduate Division, 1 California Hall, University of California at Berkeley; Berkeley, CA 94720.

Teaching and Research Positions
Teaching Appointments. Many departments make graduate student instructorships available to qualified graduate students, providing them with a stipend of $1095 to $1303 per month (based on a half-time appointment). Appointments are half time or less. Graduate student instructors must be registered full-time students. Chosen for scholarly achievement and promise as a teacher, appointees serve the apprenticeship under active supervision of the regular faculty. Advancement to candidacy, teaching experience, and continuous and satisfactory progress toward the degree are rewarded with appointment to the higher steps of graduate student instructor. In some departments, students working for a Ph.D. are required to complete a specified minimum period of teaching as part of their degree program. If interested, you should apply directly to the chair of the department in which you wish to teach.

New students who have graduated from institutions in non-English-speaking countries will be required to demonstrate competence in spoken English before they are appointed as graduate student instructors. Applicants are strongly encouraged to take the Test of Spoken English. Enrolled students should contact their major departments for details.

Research Appointments. If you are a qualified registered full-time graduate student, you may seek a research appointment in the departments, centers, and institutes of the University. The stipend ranges from $944 to $1241 per month for a half-time appointment. The duration and extent of such an appointment are variable. If interested, you should apply directly to the department, center, or institute in which you wish to work.

Stipend figures for all positions mentioned above are subject to United States income tax deductions. Figures given are gross, not net, and do not reflect deductions. If you are offered an appointment, you should obtain information about payment schedules, since payment for work performed is later than the deadline for payment of registration fees. Appointments are for one or two academic semesters and carry no guarantee of waiver of the nonresident tuition fee or any other fees. Reappointment may be recommended. Summer Session appointments may be additional and, in some cases, full time. For teaching appointments, payment is in 10 equal installments (five installments per semester). In order to ensure proper academic progress, candidates for higher degrees may not be appointed by the University in any capacity at more than half time without the express consent of the dean of the Graduate Division. Graduate students appointed half time by the University to most academic titles must be registered for at least 6 units of upper division and/or graduate work and are considered full-time students. The structure of graduate student research appointments is currently under review on the Berkeley campus.
Academic Policies

While considered an urban university, Berkeley retains much of the beauty associated with more pastoral settings. The campus's 1200 acres are spotted with groves of oak, redwood, and eucalyptus trees. Strawberry Creek meanders through the central campus, amidst hiking and running trails, athletic fields, and spacious lawns.

Buildings on campus provide a collection of outstanding architectural designs, from neoclassical to modern. Among the more notable structures are the Hearst Greek Theatre, an outdoor amphitheater seating 10,000; Wurster Hall, home of the College of Environmental Design; the Hearst Memorial Mining Building, considered one of the most elegant and stately structures on the campus; Doe Library, with its magnificent reading rooms; and South Hall, the oldest building on campus, constructed in 1873.

The Semester System

Under the semester system on the Berkeley campus, the academic year is divided into two semesters and one summer session. Quarter units, either earned previously at Berkeley or at another institution, are converted to semester units by multiplying by two-thirds; for example, 180 quarter units equal 120 semester units.

Courses and Units

Most University courses are assigned a unit value. One unit represents three hours of work per week by the student, including both class attendance and preparation. Laboratory, discussion, quiz, or review sessions may or may not be given unit value. For graduate courses (numbered 200 and above) it is generally understood that 1 unit should require four hours per week of effort on the part of the student, including time spent in class, laboratories, and outside reading and preparation.

Grades

The work of all students on the Berkeley campus is reported in terms of the following grades: A (excellent), B (good), C (fair), D (barely passing), F (failure), P (passed at a minimum level of C-), NP (not passed), S (satisfactory), I (work incomplete due to circumstances beyond the student's control, but of passing quality), IP (work in progress; final grade to be assigned upon completion of entire course sequence). The grades A, B, C, and D may be modified by plus (+) or minus (-) suffixes.

A course in which the grades A, B, C, D or P (undergraduate students only) is received is counted toward degree requirements. A course receiving the grade S (graduate students only) is similarly counted unless otherwise specified in the course description. A course in which the grade of I or IP is received is not counted toward degree requirements until the I or IP is replaced by grade A, B, C, D, P, or S.

Grade Points

Grade points per unit are assigned as follows: A=4, B=3, C=2, D=1, and F=none. When attached to the grades A, B, C, or D, plus (+) grades carry three-tenths of a grade point more per unit, and minus (-) grades three-tenths of a grade point less per unit than unsuffixed grades, except for A+, which carries 4.0 grade points per unit as does the A.

Grade-Point Average

Your grade-point average is computed on courses undertaken in the University of California, with the exception of courses undertaken in University Extension. Grades A, B, C, D, and F are used in determining your grade-point average; grades IP, P, S, NP, and U carry no grade points and are excluded from all grade-point computations. Grade I, if assigned before fall 1973, is included and is computed as an F; an I grade assigned fall 1973 and later is excluded from computations. For additional information, see "Repetition of Courses" below.

Examples:

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Point more per unit, and minus (-) grades three-tenths of a grade point less per unit than unsuffixed grades, except for A+, which carries 4.0 grade points per unit as does the A.
Special Provisions—Graduate Students

Only courses graded A, B, C (with or without plus or minus signs), or S are accepted in satisfaction of degree requirements. Courses graded below C- do not yield unit credit toward a higher degree, regardless of your overall grade-point average. Graduate students must maintain a minimum grade-point average of 3.0 in all upper division and graduate course work undertaken in graduate standing in the University of California or its exchange programs. Please note that departments, schools, and groups may have a higher performance standard than the minimum B average required by the Graduate Division. You must also work full time at your academic or professional program unless a program with fewer units is approved by your graduate adviser. In addition, you must successfully complete all course work required by your department, school, or group program, be advanced to candidacy, pass the required examinations, and fulfill other requirements specified for the program.

For a course extending over more than one semester in which evaluation of your performance is deferred until the end of the final semester, provisional grades of in progress (IP) may be assigned in the intervening semesters. The provisional grades are replaced by the final grade if you complete the full sequence. If you do not complete the full sequence, the Berkeley Division of the Academic Senate is authorized to regulate the award of credit.

With the consent of the department involved, graduate students may enroll in courses in the 600-series. These courses are evaluated by means of the grades satisfactory and unsatisfactory (S and U). They prepare you for appropriate master’s or doctoral examinations and do not count toward academic residence or the unit requirements for a higher degree. Beginning with fall semester 1985, you may earn 1-8 units of 601 or 602 per semester or 1-4 units per summer session. You may accumulate a maximum of 16 units in 601 and 602, respectively, toward examination preparation. No credit is allowed for work graded unsatisfactory.

Passed/Not Passed and Satisfactory/Unsatisfactory Grades

If you are an undergraduate in good academic standing (2.0 grade-point average or better, or in good academic standing under the academic probation regulations of your college or school), you may elect to take letter-graded courses on a passed/not passed basis, and if you are a graduate student in good academic standing, you may elect to take letter-graded courses on a satisfactory/unsatisfactory basis with the consent of your department, school, or group. Credit for courses taken on these bases is limited to one-third of the total units that you have taken and passed on the Berkeley campus at the time your degree is awarded. Included in this one-third are any units completed in an Education Abroad program, or on another University of California campus in an intercampus visitor or exchange program, or in a joint doctoral program. For graduate degree programs, grades of Satisfactory assigned in courses numbered 299 and in courses of the 300, 400, or 600 series are excluded from this computation. If you enroll in a course offered only on a passed/not passed or satisfactory/unsatisfactory basis, you will be graded P/NP if an undergraduate and S/U if a graduate.

A course that is required in or prerequisite to your major may be taken on a P/NP or S/U basis only upon approval of the faculty of your school or college. Courses required in a graduate major are determined by your adviser.

If you are a special or limited-status student, you may take courses on a P/NP or S/U basis only upon approval of the faculty of your school or college. Courses required in a graduate major are determined by your adviser.

The option of being graded P/NP or S/U in a course may be cancelled if you are found to be ineligible for the option. If the course is offered on a P/NP or S/U basis only, it may be deleted from your study list at the option of your dean.

If you want honors at graduation, you should consult your college, school, or division for additional restrictions.

Your level of performance must correspond to a minimum letter grade of C- if you are to receive a passed grade, and to a B- if you are to receive a satisfactory grade.

These rules may be further limited by the faculties of the various schools and colleges and by the Graduate Council.

Grade I (Incomplete)

The grade I may be assigned if your work in a course has been of passing quality but is incomplete for reasons beyond your control. Prior arrangements must be made with the instructor, because in assigning the I grade the instructor is required to specify the reasons to the department chair.

For graduate students, the I grade will remain on the record until the required work is completed. Graduate students must finish the course requirements as soon as possible. To remove an I grade from your record, you must file the appropriate petition and fees with the Office of Admissions and Records, 128 Sproul Hall.

Although I grades are not counted in computing the grade-point average, it is important to remove them quickly. If you have more than the maximum allowable number of I grades, you will be placed on probation with the possibility of dismissal. Graduate students may have no more than two I grades on their academic records. You should seek the advice of the Graduate Division if you have further questions concerning I grades.

For undergraduate students, an I grade received in the fall semester must be replaced by the first day of instruction in the following fall semester.

An I grade received in the spring semester or Summer Session must be replaced by the first day of instruction in the following spring semester.

When you complete the required work or deferred examination, grade points will be assigned if you receive a grade of A, B, C, or D. If you repeat the course, grade points will then be assigned to the earned grade if the dean has given prior written approval to repeat it. If you repeat the course without the approval of the dean, the I grade will be converted to an F and the repeated course will be treated the same as any other course in which you receive an F. The dean of your college or school may extend the deadline
for undergraduate completion of an I grade. For undergraduates, except as noted below, any I grade which has not been replaced within the above deadlines will, at the end of that time, be converted to grade F (or NP if taken passed/not passed). After that time, but not retroactively, the grade is counted in computing your grade-point average.

Exceptions: Within the above deadlines for completing an I grade, undergraduate students may notify the dean that they have not attempted completion and will not complete the work required for removal of the I grade, and may request that the grade not be replaced by an F (or NP). This procedure is limited to a maximum of two courses. Once the decision has been made, it is irrevocable; the course cannot afterward be completed by any means, including repetition of that course or any equivalent course. Also, if a degree is conferred before the end of the above deadlines following the assignment of an I grade, the grade will not be converted to an F (or NP). However, you still have the option of removing the I grade within the above deadlines.

If you are an undergraduate student with 12 or more units of I on record, you may not register without the permission of the dean.

If you have registered by mail, the registration may be cancelled.

All students who receive an I grade whenever assigned must file a Petition for Grade and Grade Points in Incomplete Course, available at department offices and at the Office of Admissions and Records, 128 Sproul Hall. You should file the petition with the department in which you received the I grade as soon as you and the instructor have established the date you completed the course. The filing fee is $5, payable at the Cashier’s Office. You must make arrangements to complete the course at least 30 days before the deadline. The final grade cannot be recorded until you have filed the petition with the department.

Note: The I grade is not physically replaced or removed from the academic record. Completion of the work is reflected as a subsequent line entry on the record, and the units and grade points thus earned will be included in the grade-point computations at the close of the next session.

Grade IP (In Progress)

If you take a course extending over more than one term and evaluation of your performance is deferred until the end of the final term, provisional grades of IP (In Progress) are assigned in the intervening term(s). The provisional grades are replaced by one final grade if you complete the full sequence. The grade IP is not included in the grade-point average. Effective with an IP assigned fall 1973 or later, if the full sequence is not completed as scheduled, the IP will be replaced by grade I when the instructor has no basis for assigning a grade for the term(s) completed. Further changes in your record will be subject to the rules pertaining to I grades (see above).

Changes of Grade

All grades except I and IP (see above) are considered final when assigned by an instructor at the end of a term. An instructor may request a change of grade when a computational or procedural error occurred in the original assignment of a grade, but a grade may not be changed as a result of re-evaluation of your work. No final grade except I may be revised as a result of re-examination or the submission of additional work after the close of the term.

Appeal Process

If you have a grievance about grades, you may appeal. You have grounds for appeal if you feel that considerations of race, politics, religion, sex, or sexual harassment affected your grades, or that your work was evaluated by other criteria that do not directly reflect your performance of the course requirements. The following formal procedure may not be activated unless you, the instructor in charge, an ombudsperson (or any mutually accepted third party), and the department chair have failed to resolve the dispute informally. The procedure, once initiated, is to be completed at the unit level within 20 days and at the Senate level within 40 days if both parties are in residence and the University is in regular session. The formal process must be initiated within two semesters of the alleged offense.

Appeal of Grades in Courses and Examinations

Each department or other instructional unit, or group of units teaching similar disciplines, must establish a standing Grievance Committee chair. For each case this chair will appoint an ad hoc Grievance Committee composed of three faculty members, only two of whom may be from the same unit, and two students in good standing appointed by the student association(s) of the unit(s). If no student association exists, the students are to be appointed by the ASUC or the Graduate Assembly. (The student members must have passed courses or an examination in the unit(s) at least at the level of the disputed course or examination and have been in residence for at least one year.) If you are dissatisfied with the outcome of the informal discussion, you may submit the case in writing to the Grievance Committee, which will obtain a written response from the instructor and will provide all parties the opportunity to present additional information orally or in writing. The Grievance Committee’s recommendation to the Committee on Courses, including minority view, if any, must be given in writing.

If the Committee on Courses finds in your favor, it may change a failing grade to a P or S, drop a course retroactively, retain the course but eliminate the grade from the GPA, or adopt the letter grade, if any, that was recommended by four of the five members of the Grievance Committee of the unit(s).

Repetition of Courses

You may repeat only courses in which you received a grade of D+, D, D-, F, NP, or U. You may repeat an I grade subject to limitations listed below (see Grade I). Courses in which you received a grade of D+, D, D-, or F and courses that you undertook for a letter grade but for which you received a grade of I may not be repeated on a passed/not passed basis. Repetition of a course more than once requires approval by the dean of the college, school, or division in which you are enrolled at the time you repeat the course. Without this approval, a course repeated more than once will not be included in the grade-point average, but a passing grade in the repeated course will be accepted in satisfaction of unit requirements for the
degree. Degree credit for a repeated course will be given only once, but the grade assigned may not be replaced by a grade of D+, D, D-, or F. If you receive a grade of D+, D, D-, or F, the units are counted once only and only the most recent earned grades and grade points are used for the first 12 units repeated. In case of further repetitions, the grade-point average is based on all grades assigned and total units attempted. If, however, you receive a grade of I upon repetition of a course, the grade of D+, D, D-, or F will continue to be computed in the grade-point average until the I grade is replaced. If you repeat an I in a letter-grade course, the units will be computed in the average, but no grade points will be allowed without specific approval of your dean. In effect, the grade-point penalty will be the same as for a grade of F, regardless of the grade earned.

Credit by Examination

Undergraduate Students

You may earn credit by examination in two ways:

1. If you are a new or re-entering undergraduate student, on the recommendation of the Board of Admissions you may be allowed credit by examination for knowledge that you acquired since graduation from high school, either by independent study or at another institution, and for which you have not been allowed advanced standing credit. You should apply to the Office of Admissions and Records for credit.

2. If you are a student in good standing and currently registered in a regular session, you may qualify for course credit by examination. You may apply for credit to the dean of your college or school on the Petition for Credit by Examination, obtainable from the Office of Admissions and Records. You may apply for credit by examination in any course listed in the current General Catalog that pertains to the regular sessions at Berkeley. However, the subject in which you want to be examined should be one in which, in the opinion of the instructor in charge of the department, knowledge can be tested by examination. You must file a separate petition for each course for a fee of $5 per course. In certain laboratory, field, or practice courses, neither a written nor an oral examination may be a satisfactory test. You may not receive credit by examination (1) if the credit would duplicate credit that you presented for admission to the University or (2) in elementary courses in your native language if it is not English. The examination must cover the entire course and be administered at one sitting of no longer than three hours. It may be the regularly scheduled final examination for the class, provided that the examination meets the foregoing criteria. The result of the examination may be reported to the Office of Admissions and Records only as Passed or Satisfactory, according to the regulations governing the assignment of these grades. Further information concerning credit by examination may be obtained from the Office of Admissions and Records.

Graduate Students

If you are a graduate student in residence, you may petition to receive a limited amount of course credit toward your degree by passing examinations on material covered in certain courses in lieu of taking those courses. Laboratory courses or graduate seminar or research courses are excluded. You must be registered for at least 4 units of upper division and/or graduate course work at the time you take the examination and you must be in good academic standing (3.0 grade-point average or better). The final result of the examination will only be reported as satisfactory or unsatisfactory. You may obtain the petition from the Office of Admissions and Records. Approval to take these examinations must be given by the dean of the Graduate Division and by the course instructor, or, if no instructor is designated, by the department chair.

Midterm and Final Examinations

The number of midterm examinations varies at the discretion of the instructor. Notices will be sent to undergraduate students whose work at midterm is D or F quality. Final examinations are required in all undergraduate nonlaboratory courses, with the exception of courses that the Schedule of Classes indicates do not require a final examination. This requirement allows you to demonstrate mastery of course material while providing the instructor with written evidence for evaluation. You may be re-examined only to complete an incomplete grade, not to raise any other grades. The examination may last no longer than three hours and must be administered at the time announced in the Schedule of Classes. Any deviation from this announced time, including take-home examinations, requires approval from the Committee on Courses. This requirement guarantees you ample prior notice of the examination time and eliminates conflict with other examinations. The Committee on Courses considers take-home examinations that extend into final examination week to violate both the letter and spirit of the three-hour limit.

Instructors or departments must return your final examinations or copies of them, or retain them for 13 months after the date of the examination. They must give you access to retained examinations under the supervision of the instructor or a designee. The department is responsible for ensuring compliance with this regulation for all faculty, including visiting faculty on leave.

Other Academic Policies

Grade Reports and Transcripts

After the close of each semester, the Office of Admissions and Records will mail you an unofficial copy of your academic record, which will include courses taken and grades received for the previous semester. For students admitted fall quarter 1975 and later, this copy will reflect all work undertaken on the Berkeley campus. For students admitted before fall quarter 1975, the copy may be partial and cover only course work undertaken fall quarter 1976 and later. Official copies of the academic record transcripts are also available from the Office of Admissions and Records, 128 Sproul Hall. After the last
Probation may be initiated by the dean of the Graduate Division or by recommendations of the chair of graduate advisers in your major department, school, college, or graduate group. The most common reasons for probation are a low GPA, incomplete grades in 100-200 series courses, written work of substandard quality in courses central to your program of study, or failure to make adequate progress toward the degree. Dismissal for academic deficiencies is normally carried out by the dean on the recommendation of the chair of the graduate advisers, but the dean may also initiate dismissal after reviewing your record. You may appeal dismissal for academic reasons to the appropriate committee of the Graduate Council of the Academic Senate.

Normative Time—Doctoral Students

This program is obligatory for all doctoral students who first enrolled on the Berkeley campus in fall 1978 and afterward, regardless of their original degree goal. Students who entered earlier may elect to join the program. The conditions of the Normative Time Program are as follows:

1. Upon entry to a Berkeley doctoral program, you proceed with course work in the normal fashion until you have completed all requirements for advancement to candidacy. During this period you are registered continuously, except for semesters on approved withdrawn status as appropriate, and are liable for payment of all fees and applicable tuition.

2. Once you have been advanced to candidacy for the doctoral degree, you become eligible in subsequent semesters for a fee offset grant equal in amount to the educational fee.

3. You are awarded the grant each semester until your accrued time in graduate status exceeds the normative time set for your program of study. Accrued time is the number of semesters since you first registered, less a maximum of two semesters of approved withdrawn status, and any other adjustments that may be approved by the dean of the Graduate Division.

4. During the entire period of study, you must be registered continuously, except when you are on approved withdrawn status, or during the semester when the filing fee is used in lieu of registration. You will be informed of your eligibility and the number of semesters of fee-offset grant support available to you when you are advanced to candidacy. You must attain formal candidacy for the doctoral degree before the first day of instruction in the semester for which the first

Registration Cards

Your registration card is your official identification as a student at Berkeley. You should keep it with you at all times. After you have paid all applicable fees and submitted your Schedule Request Form, you will receive a Confirmed Class Schedule which will have your validated registration card attached to it. As a supplement to the registration card you are also expected to have a photo ID card, which will eventually replace the registration card. For more information, go to 120 Sproul Hall.

Change of Name and Address

If you are moving, go to 120 Sproul Hall to fill out a change of address form.

Probation and Dismissal—Graduate Students

Graduate students are subject to probation and dismissal for academic deficiencies at the discretion of the dean of the Graduate Division under the policies established by the Graduate Council of the Academic Senate. Probation may be initiated by the dean of the Graduate Division or by recommendation of the chair of graduate advisers in your major department, school, college, or graduate group. The most common reasons for probation are a low GPA, incomplete grades in 100-200 series courses, written work of substandard quality in courses central to your program of study, or failure to make adequate progress toward the degree. Dismissal for academic deficiencies is normally carried out by the dean on the recommendation of the chair of the graduate advisers, but the dean may also initiate dismissal after reviewing your record. You may appeal dismissal for academic reasons to the appropriate committee of the Graduate Council of the Academic Senate.

Normative Time—Doctoral Students

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1. Upon entry to a Berkeley doctoral program, you proceed with course work in the normal fashion until you have completed all requirements for advancement to candidacy. During this period you are registered continuously, except for semesters on approved withdrawn status as appropriate, and are liable for payment of all fees and applicable tuition.

2. Once you have been advanced to candidacy for the doctoral degree, you become eligible in subsequent semesters for a fee offset grant equal in amount to the educational fee.

3. You are awarded the grant each semester until your accrued time in graduate status exceeds the normative time set for your program of study. Accrued time is the number of semesters since you first registered, less a maximum of two semesters of approved withdrawn status, and any other adjustments that may be approved by the dean of the Graduate Division.

4. During the entire period of study, you must be registered continuously, except when you are on approved withdrawn status, or during the semester when the filing fee is used in lieu of registration. You will be informed of your eligibility and the number of semesters of fee-offset grant support available to you when you are advanced to candidacy. You must attain formal candidacy for the doctoral degree before the first day of instruction in the semester for which the first

Registration Cards

Your registration card is your official identification as a student at Berkeley. You should keep it with you at all times. After you have paid all applicable fees and submitted your Schedule Request Form, you will receive a Confirmed Class Schedule which will have your validated registration card attached to it. As a supplement to the registration card you are also expected to have a photo ID card, which will eventually replace the registration card. For more information, go to 120 Sproul Hall.

Change of Name and Address

If you are moving, go to 120 Sproul Hall to fill out a change of address form.

Probation and Dismissal—Graduate Students

Graduate students are subject to probation and dismissal for academic deficiencies at the discretion of the dean of the Graduate Division under the policies established by the Graduate Council of the Academic Senate. Probation may be initiated by the dean of the Graduate Division or by recommendation of the chair of graduate advisers in your major department, school, college, or graduate group. The most common reasons for probation are a low GPA, incomplete grades in 100-200 series courses, written work of substandard quality in courses central to your program of study, or failure to make adequate progress toward the degree. Dismissal for academic deficiencies is normally carried out by the dean on the recommendation of the chair of the graduate advisers, but the dean may also initiate dismissal after reviewing your record. You may appeal dismissal for academic reasons to the appropriate committee of the Graduate Council of the Academic Senate.

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Access to Records

You are entitled by law and University policy to examine and challenge most of the records that the University maintains on you. These records are confidential and in most circumstances may be released to third parties only with your prior consent. Such matters are detailed in the Berkeley Campus Policy Governing Disclosure of Information from Student Records, available in the Office of the Director of Student Activities and Services, 102 Sproul Hall.

Readmission After Cancellation

If you have cancelled your registration and want to be readmitted later, you must reapply for admission. See “Absences and Withdrawal” below.

Absences and Withdrawal

Undergraduate Students

You are responsible for short absences during the semester. Scholarship recipients who wish to withdraw officially from the University may be required to refund the scholarship money. If you must discontinue your studies for the remainder of the semester, you should obtain a Notice of Withdrawal from the Office of Admissions and Records and submit it, together with your registration card, for the first of several required endorsements at the earliest possible date. If the form is submitted before the first day of classes, you will be entitled to the same refund as would be made on cancellation of registration. The refund of fees is prorated thereafter (see Schedule of Refunds). The amount of refund is determined not by the date on which you discontinue your studies, but by the date on which the Notice of Withdrawal is first presented for endorsement. If you are eligible for further registration in the University, you will be entitled to a Statement of Honorable Withdrawal. You must not discontinue the work of a semester without formal notice: doing so may result in the assignment of F grades, academic dismissal, and loss of eligibility for readmission to a future semester.

If you have been dismissed for academic or disciplinary reasons, you are generally not eligible for readmission. If you have cancelled your registration, withdrawn, or been absent for a semester, you will be required to apply for readmission in any future semester you wish to attend. The Application for Readmission available from the Office of Admissions and Records must be accompanied by a nontransferable, nonrefundable readmission fee of $35. The Application for Readmission will not be considered until the fee has been paid. The final filing dates are June 15 for fall semester and October 1 for spring semester.
Graduate Students

If you want to withdraw from the University at the end of a semester or find it necessary to discontinue studies before the end of a semester, you must apply for formal withdrawal. Failure to obtain a formal release indicates that you have voluntarily withdrawn from the graduate program and terminated your intent to proceed to the degree for which you were admitted. Withdrawal petitions are available from the Petitions Desk, Graduate Division, 1 California Hall, and are filed with the same office. During the period of absence, you are exempt from all fees and are expected, in turn, to maintain no connections with the University. You may not use University facilities (except for uses accorded the general public) or place demands on faculty time. Withdrawal requires the endorsement of your department, school, or group and the dean of the Graduate Division.

Refunds

Armed Forces. If you enter the armed forces before the end of the sixth week of the semester, you may receive a full refund of the regular session registration fee if you received no credit for the courses you were taking. No refund will be made after that deadline.

New Undergraduate Students. If you withdraw from the University before the first day of instruction, your registration fees are refunded except for the $50 Statement of Intention to Register fee if you received no credit for the courses you were taking. No refund will be made after that deadline.

Nonregistered students. If you are not registered at the time you want to declare candidacy, you must come in person to 128 Sproul Hall to fill out the form “Candidate for Bachelor’s Degree for a Nonregistered Student” by the end of the fifth week of classes.

Degree check. The Office of Admissions and Records will check your records to ensure that you have completed the University requirements (American History and Institutions and Subject A) necessary for graduation and your college or school will check for the fulfillment of major, department, and college or school requirements.

Confirmation of Candidacy. Your Confirmed Class Schedule will indicate whether or not you have been advanced to candidacy. If you think there has been an error, go to 128 Sproul Hall.

Graduate Students. Before a graduate degree can be conferred, candidates must have advanced to candidacy and completed the master’s thesis or doctoral dissertation and any required comprehensive or oral examinations. For detailed procedures and requirements, see the section “Graduate Education,” beginning on page 39.

Certificate of Completion

A Certificate of Completion is official proof that you have been granted the degree for which you were working. You may request a certificate from 128 Sproul Hall and it will be sent to you from four to six weeks after the end of the semester.

Graduation from Berkeley

Undergraduate Students

Declaration of Candidacy. If you expect to complete work for your degree by the end of a semester, you must declare your candidacy at the beginning of the semester by filling in the appropriate bubble on the back of your Schedule Request Form. You have until the end of the fifth week of classes in which to declare.

All Continuing and Readmitted Students and New Graduate Students. There is a service charge of $10 for cancellation of registration or withdrawal before the first day of instruction. After the first day of instruction the schedule of refunds is applied to the total fees assessed.

Schedule of Refunds. The schedule of refunds refers to calendar days, beginning with the first day of instruction. Percentages listed (days 1-35) should be applied respectively to each tuition, educational fee, University registration fee, and other student fees. The effective date for determining a refund of fees is the date on which the Notice of Withdrawal is first presented for endorsement. No University services will be provided to you after that date. Students receiving federal financial aid (Pell Grant, SEOG, NDSL, or GSL) should be aware that a percentage of any refund from housing or fees will be used to repay those loans. For students on the Deferred Payment Plan, the amount of refund is based upon total fees assessed (not actually paid) at the time the withdrawal petition is filed; these students may still have a financial obligation to the University upon withdrawal. A written policy about refunds is available from the Financial Aid Office.

| Tuition, Educational Fee, University Registration Fee, and Other Student Fees |
|---------------------------------|---------|
| 1-14 days:                     | 80%     |
| 15-21 days:                    | 60%     |
| 22-28 days:                    | 40%     |
| 29-35 days:                    | 20%     |
| 36 and over:                   | 0%      |
Commencement
Commencement exercises to honor students who have won baccalaureate and graduate degrees and to give recognition and awards to students who are graduating with distinction are held each year in May. Students who have won their degrees in the previous fall semester or in Summer Session are welcome to participate. The ceremonies are held by individual schools or colleges or, in the College of Letters and Science, by individual department. There are about 60 ceremonies each year. The ceremonies consist of speakers and the presentation of degrees and awards and are followed by a reception, sometimes a dance, and for at least one department a picnic and volleyball game.

Students may rent caps and gowns through the ASUC and may make arrangements for photographs to be taken or video tapes made. See your department office for additional information.

Diplomas
Diplomas are not given out at Commencement but are available approximately four months afterward. You may pick up your diploma at 128 Sproul Hall or request that it be mailed to you for a $5 mailing fee.

Student Conduct and Appeals

Student Conduct
When you enroll in the University, you assume an obligation to conduct yourself in a manner compatible with the University’s function as an educational institution. Rules concerning student conduct, student organizations, use of University facilities, and related matters are set forth in both University policies and campus regulations, copies of which are available upon request at the Office of Student Activities and Services, 102 Sproul Hall. You should pay particular attention to the booklet Berkeley Campus Regulations Implementing University Policies (October 1985).

Cheating or Plagiarism
Achievement and proficiency in subject matter include your realization that neither is to be achieved by cheating. An instructor has the right to give you an F on a single assignment produced by cheating without determining whether you have a passing knowledge of the relevant factual material. That is an appropriate academic evaluation for a failure to understand or abide by the basic rules of academic study and inquiry. An instructor has the right to assign a final grade of F for the course if you plagiarized a paper for a portion of the course, even if you have successfully and, presumably, honestly passed the remaining portion of the course.

It must be understood that any student who knowingly aids in plagiarism or other cheating, e.g., allowing another student to copy a paper or examination question, is as guilty as the cheating student.

Sexual Harassment Policy
The Berkeley campus actively supports the official policy of the University of California on sexual harassment, which states: “The University of California is committed to creating and maintaining a community in which students, faculty, and administrative and academic staff can work together in an atmosphere free of all forms of harassment, exploitation, or intimidation, including sexual. Specifically, every member of the University community should be aware that the University is strongly opposed to sexual harassment and that such behavior is prohibited both by law and by University policy. It is the intention of the University to take whatever action may be needed to prevent, correct, and, if necessary, discipline behavior which violates this policy.”

The campus has a special complaint procedure designed to facilitate prompt and confidential resolution of sexual harassment complaints. If you believe that you have been a victim of sexual harassment, have questions about the definition of sexual harassment or about the special complaint procedure, or have questions about the interrelationship between the special complaint procedure and other campus procedures, you may address your inquiries to the Faculty Assistant for the Status of Women, 642-7609. Copies of the procedure are available in 200 California Hall.

Student Grievance Procedure
The Berkeley campus Student Grievance Procedure (Appendix II to the Berkeley Campus Regulations Implementing University Policies (October 1985)) gives you an opportunity to resolve complaints alleging discrimination based on race, color, national origin, sex, handicap, age, and sexual orientation. You may also use the procedure to resolve any complaints you may have alleging that any other rules or policies of the Berkeley campus were inappropriately applied and resulted in an injury to you. The procedure is not applicable to certain kinds of complaints for which other appropriate appeals procedures exist, such as a grade appeal based on the application of nonacademic criteria. (See “Appeal of Grades in Courses and Examinations” on page 61 for a description of the grade appeal process.) The procedure contains important time limitations and provisions about the interrelationship between this procedure and other campus complaint procedures. Inquiries about this procedure or its interrelationship with other campus complaint procedures may be directed to the Assistant Chancellor, Affirmative Action and Special Projects, 642-1991. Copies of the procedure are available in 102 Sproul Hall.
Fifteen members of the Berkeley faculty have won Nobel Prizes over the years, a testament to the campus tradition of scholarly and creative excellence. The tradition is not only of historical significance: 10 of the laureates serve on the faculty now.

Left to right, from top left: Gerard Debreu (Economics 1983), professor of Economics and Mathematics, developed a mathematical foundation for the supply-and-demand equilibrium theory;

Czeslaw Milosz (Literature 1980), professor emeritus, Slavic Languages and Literature, has written some of the finest poetry of the 20th century;

Charles Townes (Physics 1964), University professor, Physics, conceived the idea of the maser and laser;

Melvin Calvin (Chemistry 1961), University professor, Chemistry, first used the carbon-14 isotope as a tracer in biological studies and exposed the mechanism by which photosynthesis operates;

Donald Glaser (Physics, 1960), professor, Molecular Biology, developed a “bubble chamber” to track atomic particles;

Owen Chamberlain (Physics 1959) and Emilto Segrè (Physics 1959), professor and professor emeritus, Physics, respectively, discovered anti-protons;

Edwin McMillan (Chemistry 1951) and Glenn Seaborg (Chemistry 1951), professor emeritus, Physics, and University professor, Chemistry, respectively, co-discovered plutonium and nine transuranium elements;

John Northrop (Chemistry 1946), professor emeritus, Biophysics and Medical Physics, isolated the enzymes that catalyze chemical reactions in the body; and

Yuan T. Lee (Chemistry 1986), professor, developed the field of reaction dynamics using cross-molecular beam techniques.

Deceased Berkeley Nobel laureates are:

William Giauque (Chemistry 1949), who came closer to reaching absolute zero temperature (-459.688 degrees fahrenheit) than anyone previously, by means of a magnetic refrigeration system; Wendell Stanley (Chemistry 1946), who pioneered the isolation and crystallization of viruses; Ernest Orlando Lawrence (Physics 1939), who invented the cyclotron; and Luis Alvarez (Physics 1968), who developed a hydrogen “bubble chamber” for detecting nuclear particles.

School of Business Administration

Office: 350 Barrows Hall, 642-7989

Dean:
Raymond E. Miles, Ph.D.

Associate Deans:
John G. Myers, Ph.D. (Academic Affairs)
Robert A. Meyer, Ph.D. (Budget and Operations)

Directors:
David H. Pyle, Ph.D. (Ph.D. Program)
David H. Downes, Ph.D. (M.B.A. Programs)
Cristina G. Banks, Ph.D. (Undergraduate Program)

The Undergraduate School of Business Administration

The bachelor of science degree in business administration constitutes an important service to the public and the business and government communities and serves as a respected model for other schools in the West. The school’s program is less focused than graduate instruction. Its true distinctiveness resides in the integration of a well-rounded liberal arts education with a professional concentration in business administration. An excellent foundation is also provided for students preparing for graduate professional degrees in business, law, and public policy.

Students are admitted only at junior level in both fall and spring semesters. Before admission to the school, you should obtain an Announcement of the Undergraduate School of Business Administration, available in 310 Barrows Hall. The announcement contains complete information concerning academic qualifications for admission, with details about prerequisites and degree requirements. Because there are many more applicants than spaces available, completion of the prerequisites does not guarantee admission. Requests for advice on programs of study and general information should be addressed to the School of Business Administration, 310 Barrows Hall, University of California at Berkeley; Berkeley, CA 94720.

Lower Division. Students preparing for admission to the Undergraduate School of Business Administration may complete required lower division courses in any college in the University, or equivalent courses at other institutions. Counselors in the Undergraduate School of Business Administration will assist lower division students in selecting courses prerequisite to the upper division business administration curriculum. Detailed information on required preparation is available in the Announcement of the Undergraduate School of Business Administration.

Upper Division. Upper division courses to be taken at Berkeley are: 110—Microeconomic Analysis for Business Decisions; 111—Macroeconomic Analysis for Business Decisions; 120—Managerial Accounting; 130—Financial Management; 150—Organizational Behavior; 160—Marketing; 170—Social and Political Environment of Business.

Beyond these requirements, additional courses within a subject matter field must be taken. Advisers will assist you in the selection of these courses. A minimum of 37 units in upper division business courses is required.

The following subject matter fields are available:

Accounting, economic analysis and policy, finance, management science, marketing, organizational behavior and industrial relations, production management, real estate, and urban and land economics.
Graduate School of Business Administration

The Graduate School of Business Administration offers curricula leading to the Master of Business Administration degree and the Ph.D. degree.

The M.B.A. Programs. The graduate school offers two separate M.B.A. programs. The San Francisco M.B.A. evening program is designed for students who want to maintain their employment while undertaking their studies. The course of study may be completed in as few as three years by taking two or three courses per semester. The Berkeley day M.B.A. program is intended for full-time students and requires two years to complete.

The M.B.A. degree provides advanced and specialized training in a variety of fields of management, research, and decision making. It provides opportunities for placement in executive positions in both public and private institutions. Curricula are divided into required and elective courses. The required courses typically provide exposure to the full range of issues in business and public management. The elective courses offer you the opportunity to develop a program oriented toward your special educational interests. Class time is divided approximately equally between the two types. The program requires four semesters to complete.

The business school maintains a busy placement center visited annually by some 400 companies that seek to employ students for both permanent and summer jobs. An active alumni association provides students with opportunities for maintaining contact with peers and faculty through meetings and seminars.

Both programs include a set of required core courses covering basic topics such as accounting, finance, marketing, and organization behavior. If you have achieved competence in one or more of these areas before admission, you may be able to waive one or more basic courses, either by previous course work or by passing a special examination. In either case, you must substitute an elective course for the waived core course. After completion of the core courses, you will undertake a series of elective courses in advanced topics to finish your course of study. Fields of study include accounting, finance, economic analysis, international business, marketing, management science, organizational behavior and industrial relations, public policy, and real estate.

Where space is available, core and advanced courses of the Berkeley program are open to students from other fields of study on the campus who have satisfied prerequisite requirements. Since available classroom space is often limited, nonbusiness students may not find it possible to take a given course in a specific semester. Students should consult the graduate school office concerning space availability and faculty in their own fields for aid in planning to take business school courses.

Preparation for the M.B.A. Program. Admission to the M.B.A. program is open to students with an accredited bachelor’s degree from any field. No preference in admission is given to any previous field of study. However, applicants should possess strong skills in writing, oral communications, and mathematics. In the case of mathematics, you must have completed a course in differential calculus within the last five years. Otherwise, after admissions but before enrollment you should complete an appropriate college-level calculus course at a recognized institution. M.B.A. applications will be evaluated on the basis of scholastic achievement, intellectual skills, maturity, and demonstrated capacity for leadership.

Applications for the M.B.A. programs may be obtained by writing to M.B.A. Admissions Office, 350 Barrows Hall, University of California at Berkeley; Berkeley, CA 94720.

Prospective applicants to the Berkeley M.B.A. program are encouraged to visit the Graduate School of Business Administration. Throughout the school year, September through mid-May, the Berkeley M.B.A. Association hosts an M.B.A. Campus Visit Program on Friday afternoons from 2:00-3:00 p.m. in 129 Barrows Hall. The Visitation Program also sponsors a classroom escort service for prospective students. For more information on the M.B.A. Visitation Program, please call (415) 642-5610.

The Ph.D. Program of the Graduate School of Business Administration is an advanced and scholarly course of study in the functioning of business and its interaction with the environment. It combines an in-depth examination of one or more of the traditional fields of study in business administration with a broader, integrative investigation of basic and applied theory in the social sciences and in quantitative methods. Fields of specialization include accounting, business and public policy, finance, management science, marketing, and organizational behavior and industrial relations. Within management science it is possible to concentrate in operations management or in management information systems. The Ph.D. program offers two additional areas of concentration, both of which require a co-major: economic analysis and policy and international business. Economic analysis and policy students must co-major in either accounting or finance; students of international business may co-major in any of the six traditional fields offered.

The Ph.D. program includes periods of intensive work in formal courses as well as individually developed and executed reviews of special topics and programs of research. It provides the opportunity to work closely with an internationally known faculty both in the classroom and in individual scholarly investigation.

The purpose of the program is to train men and women for careers in the research, study, and teaching of business administration. It is designed to enable students not only to become critically familiar with the sophisticated technical and theoretical disciplines underlying the practice of business administration, but to develop the capacity to contribute to their extension. A distinguishing feature of Berkeley’s program is an emphasis on research. Since the end of World War II, the application to business of theory and methodology of the social sciences and quantitative methods from the applied sciences has resulted in an accelerated rate of knowledge acquisition. This change has significantly deepened the sophistication of research work and broadened the range of analytical concepts with which the student in business must be familiar. The intention of the Berkeley faculty is to train students who will take leadership roles in the future expansion and communication of this knowledge.

The teaching and research skills provided by the Ph.D. program have become virtually mandatory for positions in colleges and universities. These skills are also of increasing importance for a small but expanding number of jobs in business and government. These opportunities are likely to be found in consulting, research, and technical advisory firms, with some Ph.D.’s in business administration starting their own companies. While a few may take positions as adminis-
College of Chemistry
Office: 420 Latimer Hall, 642-0473
Dean:
C. Bradley Moore, P.h.D.
Associate Dean (Undergraduate Affairs):
Scott Lynn, Ph.D.
Assistant Deans:
Robert G. Bergman, Ph.D.
Herbert L. Strauss, Ph.D.

The College of Chemistry comprises two departments, the Department of Chemistry and the Department of Chemical Engineering. Both disciplines provide the opportunity for tackling a number of major world problems. Overcoming the energy shortage, recovering and utilizing dwindling mineral resources, developing new drugs and food supplies, and synthesizing new products biochemically all depend centrally upon chemistry and chemical engineering. Students entering these fields will spend their careers in the middle of the action on these and other highly important areas of research. Both departments in the College of Chemistry rank among the most prominent in their fields and both are renowned for their breadth of activity in a diverse range of subdisciplines and applications. At the same time, with only two departments the college is a relatively small and comfortable place in which to work. Faculty members have many demands on their time, but students are able to develop close and satisfying contacts with them while in the college.

The college offers programs leading to the B.S., M.S., and Ph.D. degrees in both chemistry and chemical engineering. The B.S. degree in chemistry is intended for students who are primarily interested in careers as professional chemists. The B.S. degree in chemical engineering is intended as preparation for a career in chemical engineering and related disciplines and permits a broad range of interdisciplinary options in such areas as energy, applied biology, and materials processing. The College of Letters and Science offers a chemistry major leading to an A.B. degree through a curriculum with a greater proportion of courses in the humanities and social sciences than is included in the B.S. chemistry program. It is intended for students interested in careers in teaching, medicine, or other sciences in which a basic understanding of chemical processes is necessary.

Advanced undergraduate and graduate students have opportunities to conduct research in synthetic and structural chemistry of organic and inorganic compounds, chemistry of natural products, theoretical chemistry, nuclear chemistry, physical chemistry, biophysical chemistry, solid-state and surface chemistry, catalysis, process design and control, polymers, food processing, and biochemical engineering.

Recommended high school preparation for chemistry or chemical engineering should include chemistry (1 year); physics (1 year); mathematics (4 years) including trigonometry, intermediate algebra, and analytic geometry. If you have a choice, the preferred foreign language is German.

For a more specific description of the programs for the various degrees, as well as options of specialization, see the Announcement of the College of Chemistry.

Organizational Units
Chemical Engineering
Department Office, 201 Gilman Hall, 642-2291
Chemistry
Department Office, 419 Latimer Hall, 642-5882
Graduate School of Education

Office: 1501 Tolman Hall, 642-3726
Acting Dean: William D. Rohwer, Jr., Ph.D.
Associate Deans: Charles S. Benson, Ph.D. 
Nadine M. Lambert, Ph.D.
Assistant Dean: Ronald K.H. Choy, Ph.D.

The Graduate School of Education is committed to programs of instruction, research, and service that will enhance the profession of education. The school prepares professionals who will apply their understanding of discipline-based theory and research to the complex and challenging responsibility of educating students. It also trains researchers and scholars who will direct their academic study to the improvement of educational practices and institutions.

The school offers four kinds of graduate programs: (1) credential programs for prospective elementary and secondary school teachers who are interested in acquiring a strong grounding in educational research on developmental psychology, writing, science, or mathematics and in applying this knowledge to problems of teaching and learning; (2) advanced credential programs for experienced school practitioners who are intent on developing specialized leadership capacity in areas such as administration; (3) advanced professional degree programs leading to the M.A., M.A.T., or Ed.D. degree; and (4) advanced academic degree programs leading to the M.A. or Ph.D. degree. In addition, the school provides undergraduate students with courses that contribute to their liberal arts education and preparation for citizen involvement with the public schools and universities.

The school’s programs are organized into five principal areas of study: Education in Mathematics, Science and Technology; Education in Language and Literacy; Educational Administration; Educational Psychology; and Social and Cultural Studies in Education.

In Education in Mathematics, Science, and Technology, there are two areas of concern: research that will advance both fundamental and applied understanding of cognition and instruction, and the development of advanced computational systems for learning and teaching. Students must have a strong background in mathematics, physical or life science, computer science, or engineering.

• Education in Language and Literacy emphasizes reading, writing, and first and second language acquisition in educational settings. The approach is interdisciplinary and includes the study of linguistics, psycholinguistics, sociolinguistics, and cognitive psychology. A central concern is the influence of social and cultural experiences on language and literacy development.

• Educational Administration focuses on the development of a broad understanding of the structure of educational systems; the quality, effectiveness, and equity of educational programs; and the nature of the changing social, political, fiscal, and legal contexts of education. School leadership and management, higher education leadership and management, political and policy analysis, financing and organizational design, and educational planning and evaluation are the major areas of study.

• Educational Psychology focuses on two areas: developmental phenomena, including cognitive development, social development, and individual differences; and quantitative methods, including measurement, psychometrics, research methods, and data analysis. Students must have one of these areas of focus as well as one selected area of application in education, such as school psychology.

• Social and Cultural Studies in Education focuses on the social and cultural contexts within which schools operate. The relationship of social, cultural, philosophical, and political events to curriculum and pedagogy in the public school are examined.

For details about the school’s programs and information concerning admissions requirements and procedures, consult the Announcement of the Graduate School of Education, available by writing or visiting the Graduate School of Education, Education Admissions Office, 1607 Tolman Hall, University of California at Berkeley; Berkeley, CA 94720, or by calling (415) 642-0841.

College of Engineering

Office of the Dean: 320 McLaughlin Hall; graduate information, call individual departments; undergraduate information, call 642-7594.

Deans:
Karl S. Pister, Ph.D.
George J. Maslach, B.S. (Emeritus)

Associate Deans:
George Leitmann, Ph.D., Dr.Ing. (hon.)
Edwin R. Lewis, Ph.D.
H. Frank Morrison, Ph.D.

Assistant Dean:
Arthur Gill, Ph.D.

The College of Engineering offers programs in a wide variety of engineering fields. These programs are based on the concept that the engineer must be well-grounded in the sciences, humanities, and social studies, with a full command of the principles and practices of the profession.

Four-year undergraduate curricula are offered in the following professional fields: civil engineering, electrical engineering, computer science, industrial engineering, mechanical engineering, mineral engineering, naval architecture, nuclear engineering (all accredited by the Accreditation Board for Engineering and Technology, Inc.). Programs are also offered in manufacturing engineering, materials science, operations research, and petroleum engineering. Each of the curricula is administered by a department within the college and each emphasizes a core program of science and engineering subjects related to the particular field. In addition, there is a curriculum in engineering science with programs in bioengineering, engineering geoscience, engineering mathematics and statistics, and engineering physics. Five double major programs leading to a B.S. degree in two fields are offered. These are nuclear engineering or materials science and engineering with mechanical engineering or electrical engineering and computer science, and materials science and engineering with nuclear engineering. In addition to these five programs, two double major programs in materials science and engineering/chemical engineering and nuclear engineering/chemical engineering are offered jointly by the College of Chemistry and the College of Engineering. The unit requirement for the bachelor’s degree is normally 120 semester units, within which the student is expected to satisfy graduation requirements. For valid reasons,
this minimum may be exceeded by 10 units. For unit extension beyond 125 units, prior approval of the dean is required for registration.

Entering freshmen should have completed the following subjects:

High School Subjects and Units:
United States History—1 (one year of United States history or one-half year of United States history and one-half year of civics or American government.)

English—4
Mathematics—4
Physics—1
Chemistry—1
Foreign language—2
Other college preparatory subjects—2
Total units—15

Graduate programs are offered leading to the Master of Science and Doctor of Philosophy degrees for study emphasizing engineering and applied sciences, and Master of Engineering and Doctor of Engineering degrees for advanced professional studies of design development. Fields of study include civil engineering, electrical engineering and computer sciences, industrial engineering and operations research, mechanical engineering, nuclear engineering, ceramic engineering and metallurgy, materials science and mineral engineering, engineering geoscience, fluid mechanics, applied mechanics, and naval architecture and offshore engineering. Interdisciplinary graduate programs are also available in the fields of bioengineering, ocean engineering, plasmas, hazardous waste management, applied science and technology, management and technology, robotics and manufacturing, and rock mechanics.

Concurrent degree programs that provide a broad, integrated curriculum between two disciplines are Architecture, M.Arch.—Civil Engineering (Structural), M.S.; City and Regional Planning, M.C.P.—Civil Engineering (Transportation), M.S.; Public Policy, M.P.P.—various engineering departments, M.S.

More information will be found throughout the engineering sections of this catalog and in the Announcement of the College of Engineering. The announcement is available from the department of interest or the College of Engineering, 308 McLaughlin Hall, University of California at Berkeley; Berkeley, CA 94720.

Organizational Units

Civil Engineering
Department Office, 760 Davis Hall, 642-3261
Chair: Keith C. Crandall, Ph.D.

Electrical Engineering and Computer Sciences
Department Office, 231 Cory Hall, 642-3214
Chair: Eugene Wong, Ph.D.

Computer Science Division
Division Office, 571 Evans Hall, 642-1024
Associate Chair: Richard J. Fateman, Ph.D.

Industrial Engineering and Operations Research
Department Office, 4135 Etcheverry Hall, 642-5484
Chair: Shmuel S. Oren, Ph.D.

Materials Science and Mineral Engineering
Department Office, 210 Hearst Mining Building, 642-3801
Chair: James W. Evans, Ph.D.

Mechanical Engineering
Department Office, 6189 Etcheverry Hall, 642-1338
Chair: Clayton D. Mote, Jr., Ph.D.

Naval Architecture and Offshore Engineering
Department Office, 202 Naval Architecture Building, 642-5464
Chair: (To be announced)

Nuclear Engineering
Department office, 4153 Etcheverry Hall, 642-5010
Chair: T. Kenneth Fowler, Ph.D.
mon base of knowledge for the several disciplines within the College of Environmental Design are taught at the undergraduate level as Environmental Design (ED) courses and are listed first in the course listings section of the catalog.

Undergraduate Programs

Undergraduates enroll in a four-year curriculum leading to the Bachelor of Arts degree with a major in architecture, landscape architecture, or an individual major. These curricula provide a broad educational base and preprofessional competency sufficient for entry-level employment in architecture, landscape architecture, and other environmental design fields. In addition, they serve as undergraduate preparation for graduate education both in the design fields and, with properly selected elective courses, in other fields such as business, law, and engineering. Graduates also work in related fields such as urban development, real estate, construction, etc.

Admission. High school preparation for the college should include four years of mathematics, one year of physics, and one year of biology or other natural science. Additional preparation could include freehand drawing or introductory drafting. Transfer students who have completed 56 semester units should have completed the prerequisite course work described in the Announcement of the College of Environmental Design. Enrollment in the college beyond 130 semester units is not usually permitted; consequently, transfer students who have credit for more than 86 semester units are not normally admitted to the undergraduate program. An undergraduate major in architecture or landscape architecture is not prerequisite for admission to graduate study in these fields.

Degree Requirements. The A.B. degree programs in the college require the completion of 120 units distributed according to regulations which appear in the Announcement of the College of Environmental Design. These requirements include completion of the following:

Major Requirements: Requirements for the major are specified by individual departments or programs and may not be fewer than 27 units.

ED Core Requirement: A minimum of six courses (20 units) as specified in the Announcement of the College of Environmental Design.

Breadth Requirement: A minimum of 12 courses (40 units) taken outside the College of Environmental Design from a list of acceptable courses published by the college, including study in the following areas: (1) reading and composition, (2) natural science, physical science, and mathematics, (3) social science, and (4) humanities and arts. A more detailed distribution of these subject requirements may be found in the Announcement of the College of Environmental Design. The senior residence requirement, scholarship requirement, and the general University requirements of Subject A, American History, and American Institutions also apply.

Minor Programs. The College of Environmental Design offers several minors. Minors consist of at least five upper division courses and are offered as an optional program to encourage coherence in course work taken outside the major and to give recognition to the work when it is completed. The following minors are currently being offered: social and cultural factors in environmental design, open to students not in the College of Environmental Design; history of the built environment; landscape architecture, open to students not in the College of Environmental Design; city and regional planning; community development; ecological design; architecture, open to landscape architecture majors only; architecture for engineers, open to civil engineering majors only; and landscape design, open to architecture majors only. For further information, contact the Department of Instruction in Environmental Design, 234 Wurster Hall.

Information on the courses and degree programs in Architecture, City and Regional Planning, Environmental Design, and Landscape Architecture can be found in those sections of this catalog, as well as in the Announcement of the College of Environmental Design.

Graduate Programs

Fully accredited professional master's degrees are offered in architecture, landscape architecture, and city and regional planning. Additionally, an M.A. degree in selected aspects of graphic design is offered for a limited number of students. The three professional departments offer the Ph.D. degree for students who have the capacity to engage in creative research and teaching. These programs have exceedingly limited enrollments and are not regarded as advanced degrees for professional practice.

Information on the courses and degree programs in architecture, city and regional planning, and landscape architecture can be found in those sections of this catalog, as well as in the Announcement of the College of Environmental Design. Inquiries regarding details of the various graduate programs may be directed to the appropriate department.

Organizational Units

Environmental Design
Department Office: 234 Wurster Hall, 642-0832
Chair: Raymond Lifchez, M.S.

Architecture
Department Office: 232 Wurster Hall, 642-4942
Chair: (To be announced)

City and Regional Planning
Department Office: 228 Wurster Hall, 642-3256
Chair: Edward Blakely, Ed.D.

Landscape Architecture
Department Office: 202 Wurster Hall, 642-4022
Chair: Randolph T. Hester, Jr., M.L.A.
Graduate School of Journalism

Office: 121 North Gate Hall, 642-3383
Dean: Tom Goldstein, J.D.
Associate Dean: David Littlejohn, Ph.D.

The goal of the Graduate School of Journalism is to produce professional journalists who move on to positions of leadership and influence in American journalism. The Master of Journalism (M.J.) program provides intensive training in journalism skills and a knowledge of the traditions and principles of the field. A professional project or thesis is required to complete the two-year program. The program is rooted in the idea that the best possible preparation for careers in journalism is a sound liberal arts education followed by training in journalism at the graduate level.

The school offers specialities in print and broadcast. Everyone must take a focused and demanding core course which stresses reporting and writing skills. This is because members of the faculty believe that the best way to train students for careers in journalism is to place them under the supervision and guidance of seasoned journalists in small classes, give them instruction in the skills and attitudes of the craft, and intensive practice in reporting, writing, and editing. Professors give exhaustive critiques of students’ work.

Beyond the core course, there are courses in specific areas, such as political, business, science, and cultural reporting. There are also courses stressing different techniques, such as investigative reporting and magazine reporting. The curriculum also includes courses in copy editing and photography and a sequence of courses in television and radio reporting.

Another group of courses is intended to increase understanding of the role of journalism in society. There are courses in the history of journalism, legal aspects of the media, journalistic ethics, and the literature of journalism.

Candidates for the M.J. degree are expected to complete their work for the degree in four semesters. They must complete 36 units in approved upper division and graduate courses, of which at least 24 must be in graduate courses in journalism, and must present an acceptable thesis. Students generally take about one-third of their courses in disciplines other than journalism.

Applicants for graduate study should hold a bachelor’s degree comparable to that given by the University of California. Requirements and procedures are outlined in the brochure Graduate Application, Fellowship, and Financial Aid, available at the Office of the Dean of the Graduate Division, and in the Announcement of the Graduate School of Journalism.

The Graduate School of Journalism offers several courses for undergraduates, ranging from small writing and reporting seminars to large lecture courses. Further information, application requirements, and copies of the Announcement of the Graduate School of Journalism are available from the Journalism Office, North Gate Hall.

School of Law

Office: 225 Boalt Hall, 642-2278
Administrative Officers:
Dean: Jesse H. Choper, LL.B.
Associate Dean: Jan Vetter, LL.B.
Assistant Deans: Leslie Oster, J.D.
Sue Ann L. Schiff, J.D.

Vice Chair, Jurisprudence and Social Policy:
Charles J. McClain, Jr., Ph.D., J.D.

The School of Law (Boalt Hall) has a three-year curriculum leading to the Juris Doctor (J.D.) degree. In addition to preparing its students to practice law, the school attempts to develop the study of law and legal institutions and to foster legal research. The school is a member of the Association of American Law Schools and is approved by the American Bar Association. Its graduates are qualified to become applicants for admission to practice in any state of the United States.

No single “pre-law” major is required or even recommended. However, these suggestions are made: students should learn to write by taking courses in which their work is vigorously edited; enroll in courses demanding analytical skills; obtain some breadth in humanities and social sciences that will help in understanding the social context within which legal problems arise; and acquire a general understanding of economic principles and the business world. However, prospective students should not be deterred from pursuing the study of law merely because their undergraduate education has not emphasized all these areas. Diversity of background enhances and enriches the legal experiences of all students.

Graduate Program in Jurisprudence and Social Policy. The School of Law offers a graduate program in Jurisprudence and Social Policy, leading to M.A. and Ph.D. degrees, that is unique in legal education.

The program is founded on two related convictions: (1) legal scholarship should have intimate connections with the social sciences; and (2) education in a law school should not be confined to the professional training of future lawyers.
The program is multidisciplinary, involving faculty from Law and a variety of humanities and social science disciplines, including economics, criminology, history, philosophy, political science, and sociology.

It is designed for students who are interested in careers in teaching, research, policy analysis, or public administration. Doctoral dissertations are currently being undertaken on such subjects as law and educational administration, the history and jurisprudence of natural resources, and modern European jurisprudence.

Study for a degree in Jurisprudence and Social Policy may be combined with study for a J.D. degree. Further information on admissions procedures and program requirements may be obtained from the Graduate Secretary, JSP Program.

The school also offers programs leading to the degree of Master of Laws (LL.M.) or the degree of Doctor of the Science of Law (Jus Scientiae Doctor, J.S.D.).

The school does not offer a part-time or evening program. Most work in the first year is prescribed; the second and third years' courses are elective.

**College of Letters and Science**

**Office of Undergraduate Advising:** 113 Campbell Hall, 642-1483

**Dean:**
Leonard V. Kuhi, Ph.D.

**Associate Dean:**
Mitchell Breitwieser, Ph.D.

**Assistant Deans:**
- James Kettner, Ph.D.
- Elaine H. Kim, Ph.D.
- Harry Morrison, Ph.D.
- Gabriell Moses, Ph.D.

**Divisional Deans:**
- Beth Burnside, Ph.D., Biological Sciences
- Geoffrey F. Chew, Ph.D., Physical Sciences
- Carol Christ, Ph.D., Humanities
- Kenneth T. Jowitt, Ph.D., Undergraduate Studies
- Robert C. Knapp, Ph.D., Undergraduate Services
- Gerald A. Mendelsohn, Ph.D., Social Sciences

The College of Letters and Science offers undergraduate students a variety of programs leading to the Bachelor of Arts degree in four academic years of full-time study. The first two years are a time of exploration, experimentation, and decision. In the last two years students confirm the decision and acquire and refine special knowledge, usually in their major departments. The college's departments are devoted to instruction and research in a variety of academic subjects. Each department represents a style of study and communication and refined development of a set of structured ideas. The subjects of the departments overlap and complement one another.

**Requirements for Admission in Advanced Standing**

Students applying for admission will not be considered if they have completed more than 80 semester (120 quarter) units. The dean of the college makes exceptions to this policy only in unusual circumstances. Applicants with advanced-placement credit may, however, exceed the 80-semester-unit limitation by the amount of their advanced-placement credit and be admissible if they meet all other admission criteria. Students who enter the college with advanced-placement credit may exceed the amount of this credit the maximum unit limitation requiring the selection of a major and the maximum unit limitation requiring graduation.

In computing the number of units which they have completed, students should be aware that the College of Letters and Science does not grant unit credit for courses completed in a two-year college after a total of 70 semester units has been completed in all institutions attended. Subject credit toward completion of college requirements is, however, granted for appropriate courses.

Transfer students with 56 or more semester units are required to have satisfied, before admission to the college, the reading and composition breadth requirement, the foreign language breadth requirement, and the quantitative reasoning breadth requirement of the college. Students who apply as intercampus transfers and who have completed all the Letters and Science breadth requirements, or the general education requirements, or the equivalent of either, at the University of California campus from which they transfer may, upon petition, be credited with having completed the breadth requirements of the college. Transfer students who apply from community colleges in California have the option of fulfilling lower division breadth requirements by completing the transfer core curriculum. This core curriculum specifies a series of subject areas and types of courses which, if completed before transfer, will satisfy the lower division breadth and general education requirements at any general campus of the University of California.

**Biological Sciences Majors.** Students planning to declare majors in a biological science must in addition have completed the minimum subject preparation in the major with a grade-point average of 2.00 (C average) or higher. The subject preparation listed below is minimal; transfer students who wish to declare a major in a biological science are urged to consult directly with the department or program in which they are interested to learn of additional requirements or of any restriction placed on entry to the major. With the exception of Plan III of the
major in molecular and cell biology (see departmental listing) and the major in physical education (see departmental listing), the subject preparation for majors in the biological sciences is as follows:

Students who have completed 56 to 70 semester units:

1. General chemistry with laboratory (equivalent to one year of Berkeley’s inorganic chemistry with laboratory).
2. General biology with laboratory or a course in botany plus a course in zoology (equivalent to Berkeley’s Biology 1A-1B or botany/zoology).
3. Introductory organic chemistry with laboratory (equivalent to Berkeley’s organic chemistry with laboratory).

Social Sciences and Natural Sciences Majors. Certain majors in the social sciences and natural sciences are overcrowded. Transfer students planning to declare a major classified under social science or natural science should consult directly with the department or program to learn of any restrictions placed on entry to the major.

Requirements for the Bachelor of Arts Degree

Students must complete a minimum of 120 semester units, distributed according to regulations which appear in the Announcement of the College of Letters and Science. A 15-unit class schedule per semester is considered to be a normal course load; a class list of fewer than 13 units requires the special permission of the dean. There are also scholarship, minimum-progress, residence, breadth, and major requirements; these are described in the announcement as well. Brief descriptions of the breadth, major, and minor requirements appear below. Major and minor programs are outlined under the department, field, or group headings in this publication. In addition, students must satisfy the University requirements in Subject A, American History, and American Institutions.

Breadth Requirements. There are four breadth requirements:

1. Reading and Composition. This requirement is to be completed in the freshman or sophomore year in order that students may develop skill in the communication of ideas and a sensibility for language which will facilitate and enrich further studies. Students must complete the requirement through course work according to the requirements of the semester system, whether the course work is undertaken at Berkeley or elsewhere.
2. Quantitative Reasoning. This requirement may be fulfilled by satisfactory performance in an examination or by successful completion of an acceptable college course. Information about acceptable examinations and acceptable courses is included in the announcement. This requirement, if satisfied by course work, must be completed without delay.
3. Foreign Language. This requirement assures that students who graduate from the college will have some knowledge of the language of a culture other than their own. Students who have not satisfied the language requirement at the time of admission must complete it without delay. The requirement may be satisfied by (A) completion of the third year of one foreign language in high school with a minimum grade of C-; (B) by completion of the second semester of a Berkeley course, or its equivalent elsewhere, in one foreign language with a minimum grade of C-, or (C) by demonstration of equivalent knowledge through examination, including the College Entrance Examination Board Achievement Test, the CEEB Advanced Placement Examination (if taken before admission to the college), or an acceptable foreign language placement examination offered by a foreign language department at Berkeley or on another campus of the University of California. The college will accept in completion of the requirement appropriate work in two foreign languages (with minimum grades of C-) only if that course work was completed before fall semester 1983 and if the course work was accepted by the college in satisfaction of the foreign language breadth requirement under the quarter system.
4. Six Courses (minimum total of 16 semester units) outside the Field of Students’ Major. Students must follow specific college guidelines in the satisfaction of the requirement, and its completion may be spread over the four years of college attendance. The fields of knowledge are defined as the humanities, the natural sciences, and the social sciences. See the Announcement of the College of Letters and Science for details.

Major Programs. All students must pursue and complete a major program, the object of which is to provide them with a limited experience in specialization. There are more than 60 departmental major programs ranging from the humanities (e.g., art, comparative literature, English, foreign languages, etc.) and the social sciences (e.g., anthropology, economics, geography, psychology, etc.), to the biological sciences (e.g., integrative biology, molecular and cell biology, physical education) and the physical sciences (e.g., geology, mathematics, statistics, etc.). In addition, there are group majors in Asian studies, development studies, Dutch studies, environmental sciences, ethnic studies, film, Latin American studies, legal studies, mass communications, Middle Eastern studies, political economy of industrial so-
cieties, religious studies, social welfare, and women’s studies. There are also field majors in the humanities, physical sciences, and social sciences. Moreover, students who have completed at least 60 semester units and at least one semester of enrollment at Berkeley, and who have attained a minimum 3.0 Berkeley and overall grade-point average may, with the permission of the dean and support and supervision of a college faculty member and a faculty member who acts as second reader of the individual major thesis, pursue an individual major designed to satisfy special academic goals. Students currently enrolled in individual majors have developed major programs ranging from urban planning policy to the history of physics. Thus the options available to students outside traditional disciplines are many and varied.

**Minor Programs**. Minor programs are intended as optional programs that will encourage coherence in the work that students undertake outside their major field(s) of study. The college has set the following minimum requirements for completion of a minor program:

1) **Course requirements**: a minimum of five upper-division courses, completed on a letter-graded basis, are required for the minor. At least three of the five upper-division courses must be completed at Berkeley.

2) **Grade-point average requirements**: Students must maintain a minimum overall grade-point average of 2.0 in upper-division courses required for the minor program. At present the college offers minor programs in the following departments and groups:

**Department of Afro-American Studies**
- Afro-American Studies Humanities Minor
- Afro-American Studies Social Science Minor

**Department of Art, History of**
- Minor in the History of Art

**Group in Asian Studies**
- Option I: Minor in Chinese Studies
- Option II: Minor in Japanese Studies
- Option III: Minor in Southeast Asian Studies

**Group in Celtic Studies**
- Minor in Celtic Studies

**Department of Classics**
- Minor in Greek
- Minor in Latin
- Minor in Classical Civilization

**Group in Demography**
- Minor in Demography

**Group in Dutch Studies**
- Minor in Dutch Studies

**Department of English**
- Minor in English: Creative Writing
- Minor in English: American Literature
- Minor in English: Literature in English

**Department of Ethnic Studies**
- Minor in Asian-American Studies
- Minor in Chicano Studies
- Minor in Ethnic Studies
- Minor in Native American Studies

**Department of French**
- Minor in French

**Department of Geography**
- Minor in Geography

**Department of German**
- Minor in German

**Department of Italian**
- Minor in Italian

**Department of Music**
- Minor in Music

**Department of Near Eastern Studies**
- Minor in Arabic, Option A
- Minor in Arabic, Option B
- Minor in Hebrew, Option A
- Minor in Hebrew, Option B
- Minor in Persian, Option A
- Minor in Persian, Option B
- Minor in Turkish, Option A
- Minor in Turkish, Option B

**Department of Philosophy**
- Minor in Philosophy

**Department of Physics**
- Minor in Physics

**Group in Religious Studies**
- Minor in Religious Studies

**Department of Rhetoric**
- Minor in Rhetoric

**Department of Scandinavian**
- Minor in Scandinavian

**Department of Slavic Languages and Literatures**
- Minor in Russian Language
- Minor in Russian Literature
- Minor in Slavic Language and Literature

**Department of South and Southeast Asian Studies**
- Minor in South Asian Civilization
- Minor in South Asian Archaeology

**Department of Spanish and Portuguese**
- Minor in Spanish Language and Literatures
- Minor in Luso-Brazilian Language and Literatures

**Group in Women’s Studies**
- Minor in Women’s Studies, Social Science Emphasis
- Minor in Women’s Studies, Humanities Emphasis

Students should consult the department or group in charge of the minor for additional requirements and specific information regarding the minor program in which they are interested. Admission to the minor and certification of completion of the minor are determined by the department or group in charge of the program. When a student completes a minor program, the department or group in charge will notify the Office of Admissions and Records, so that the completion may be noted on the student’s transcript.

**Division of Undergraduate Studies**

The Division of Undergraduate Studies encompasses Freshman and Sophomore Studies and Undergraduate Interdisciplinary Studies (formerly Division of Special Programs).

**Freshman and Sophomore Studies**. The office of the associate dean of Freshman and Sophomore Studies is located in 237 Campbell Hall (642-8363). Freshmen can contact this office for information about special seminars for lower division students. These seminars, designed to maximize professor-student interaction in the classroom, are offered by a variety of departments and address important intellectual questions and contemporary issues.
A new program, the Emeritus Seminar Program, is administered by this office. Courses in this program are entitled Letters and Science 22, are offered to freshmen and sophomores, and are taught by emeritus professors. Many of the courses are interdisciplinary in nature and cover subjects from anthropology to zoology, architecture to engineering. These 1-unit seminars are offered on a passed/not passed basis only and are limited to 15-20 students per section. Students should consult the office in 237 Campbell Hall for up-to-date information on Letters and Science 22 courses. Freshman and Sophomore Studies also administers tutorial programs at the Clark Kerr campus and the Stern and Bowles residence halls.

**Undergraduate Interdisciplinary Studies (formerly Special Programs).** Located in 301 Campbell Hall, Undergraduate Interdisciplinary Studies develops and administers innovative and interdisciplinary courses and programs in the College of Letters and Science that do not belong to a single department. Currently, it administers the field majors in the humanities and social sciences and the group majors in environmental sciences, film, genetics, mass communications, Middle Eastern studies, neurobiology, religious studies, and women's studies. In addition to these majors, it offers a special interdisciplinary course in Western civilization. For complete descriptions of the majors and major courses, please see the entries listed alphabetically by major. Minors are currently offered in Celtic studies, religious studies, and women's studies.

The Rhodes and Marshall Scholarship application process is administered through this office.

**Organizational Units**

Afro-American Studies
Ancient History and Mediterranean Archaeology
Anthropology
Art
Practice of Art
History of Art
Asian American Studies
Astronomy
Biostatistics
Buddhist Studies
Chemistry
Chicano Studies
Classics
Comparative Literature
Computer Science
Demography
Development Studies
Dramatic Art
Dance

**Colleges and Schools**

- Native American Studies
- Near Eastern Studies
- Oriental Languages
- Philosophy
- Physical Education
- Physical Science
- Physics
- Political Economy of Industrial Societies
- Political Science
- Population Studies
- Psychology
- Religious Studies
- Rhetoric
- Romance Philology
- Scandinavian
- Science and Mathematics Education
- Slavic Languages and Literatures
- Social Science
- Social Welfare
- Sociology
- South and Southeast Asian Studies
- Spanish and Portuguese
- Special Programs
- Statistics
- Subject A: English Composition and Courses for Non-native Speakers of English
- Women's Studies
School of Library and Information Studies

Dean: Robert C. Berring, M.L.S., J.D.
Associate Dean: Julia J. Cooke, M.L.S.

There is an increasing realization that economic and political well-being depends on the kind of educational and informational support that public libraries and other related agencies can provide. The School of Library and Information Studies trains people to keep track of information, to diagnose people's needs, to organize information to meet those needs, and to deploy available resources to bring people and information together. Libraries, the traditional repository of the human record, are the loci of these activities.

The school has two goals: (1) to improve the level of access by various sectors of society to the contents of the world's total supply of records, and (2) to increase knowledge and understanding of the character of the first goal and the conditions for its success. The first goal is practical and aims at improving the way things work. The second goal is theoretical and aims at understanding the way things do and might work. The theoretical goal is pursued both for its own sake and in support of the practical goal.

The school has four principal objectives in the pursuit of its goals: (1) to prepare individuals to design, organize, administer, and evaluate information services; (2) to improve the quality of professional performance by librarians and others engaged in information service; (3) to encourage and contribute to research in bibliography, librarianship, and information studies; and (4) to increase the ability of undergraduate students to understand the bibliographical access system and to inform them of the substantive concerns of librarianship and information studies.

The School of Library and Information Studies offers a basic curriculum at the graduate level, lasting one calendar year, leading to the Master of Library and Information Studies degree, which qualifies the holder for professional service in libraries and other information activities. It offers a post-master's program leading to the Certificate in Library and Information Studies. The school also offers a program leading to the Ph.D. degree for students interested in advanced research and teaching in librarianship and the information sciences, and a program leading to the professional doctorate, the D.L.I.S., for students interested in a design-oriented preparation for administrative positions in libraries or other information services. Admission to the degree programs is contingent upon admission to graduate standing. The school also offers undergraduate courses for nonmajors in librarianship. For further details about these programs, consult the Announcement of the School of Library and Information Studies.

College of Natural Resources

Dean: Wilford R. Gardner, Ph.D.
Associate Dean—Academic Affairs: Edward S. Sylvester, Ph.D.
Associate Dean—Research: William A. Allen, Ph.D.
Associate Dean—Student Affairs: Philip T. Spieth, Ph.D.

The College of Natural Resources, formed on July 1, 1974, combines in a single academic and professional college the complementary programs of teaching and research that were formerly offered at Berkeley in the College of Agricultural Sciences and the School of Forestry and Conservation. The college aims at responding to important concerns among students, faculty, and society in general. Prominent among these concerns is the belief that our renewable natural resources must be used in ways that are at once productive, conservation-conscious, and protective of environmental quality, while meeting the accelerating demand for essential food, fiber, timber, wood products, and recreational use of open space.

The College of Natural Resources offers a variety of academic programs which focus on renewable natural resources. These embrace most of the physical, biological, technical, and social processes that people use to produce and utilize the food, fiber, timber, wood products, and recreational use of open space.

Undergraduate Programs

The undergraduate programs of the college emphasize two aspects of natural resources: they seek out and develop an understanding of the complex interactions involved in resource systems that have major environmental, material, and recreational/aesthetic values; and they stress the relationship of people to their natural environment, balancing their needs and desires with those of environmental preservation.

The undergraduate majors fall in three distinct categories: programs in applied biology, professional and technical programs, and programs dealing with the social science of natural resources.
For students interested in applied biology, major programs are available in bioresource sciences, entomology, plant biology, nutrition and food science, plant pathology, and plant and soil biology. These programs develop a broad foundation in the biological sciences and prepare students for graduate and professional work in biology, medicine, dentistry, and veterinary medicine.

Professional programs in forestry (with options in forest, wildlife, and range management), nutrition and clinical dietetics, pest management, soil resource management, and forest products are available to students with interests in these specific professions.

For students whose interests in natural resources run in the direction of social and political science and public issues in the fields of population, renewable natural resources, resource economics, and environment, there are major programs in the political economy of natural resources and in conservation and resource studies. Both emphasize flexible, interdisciplinary approaches and can be used to prepare for work or further study in various areas of social science such as law, public policy, and environmental planning.

**Major Requirements.** Detailed course requirements for each major, along with college requirements for the B.S. degree, are listed in the Announcement of the College of Natural Resources, available from the Dean's Office, Student Affairs, 106 Giannini Hall, University of California at Berkeley; Berkeley, CA 94720.

**Minor Programs.** Conservation and Resource Studies: Contact the office in 112 Giannini Hall or call 642-6730.

Entomology: Contact the office in 218 Wellman Hall or call 642-6660.

Forestry: Contact the office in 129 Mulford Hall or call 642-6410.

Forest Products: Contact the office in 478 Richmond Field Station or call 231-9575.

Political Economy of Natural Resources: Contact the office in 203 Giannini Hall or call 642-3347.

You may also contact the Office of Student Affairs in 106 Giannini Hall, 642-0542, for information.

**Limited Status.** Qualifications for limited status include (1) a previous bachelor's degree or substantial previous college work, and (2) a specific well-defined academic goal for which additional undergraduate work is necessary. Students must also have a GPA of 3.0 or better. For further qualifications and information, contact the Student Affairs Office at 642-0542 in Room 106 Giannini Hall.

**Undeclared Status.** Freshmen may be admitted each year to the College of Natural Resources in undeclared status. Students so admitted must declare a major in natural resources after their first year. During the period in undeclared status, students are required to take a lower division preparatory program that will satisfy natural resources majors.

A typical course schedule for freshmen should include basic English (or Subject A) and math (calculus). Most of our majors have a biological emphasis in which chemistry is also required. Our social science majors require economics and/or political science.

During this year students are encouraged to contact advisers promptly for advice about potential majors and requirements.

Typical first semester schedule:

- English 1A or Subject A; Math 1A-16A or math prep class; Chem 1A or Chem 2A (biological emphasis); PENR 1 or Poli Sci 1 (social science emphasis); elective; Total 14-15 units.

**Undergraduate Advisers.** The undergraduate advisers for each major serve as the principal liaison officers between students and the college. They are available for consultation throughout the year. Advisers are prepared to discuss details of the requirements and planning of a program best suited to a student's individual needs. All students are encouraged to see their advisers as early as possible for advice in the planning of their academic programs.

The adviser should also be consulted concerning any special academic problems that may arise. In addition, the Office of Student Affairs may be consulted about any such difficulties or about questions relating to records and regulations. Call 642-0542 for office hours.

**Schedule Request Form.** Students in the College of Natural Resources are required to file their schedule request forms in the Office of Student Affairs, 106 Giannini Hall. An adviser's approval is required prior to filing the form. All add and drop forms must also be approved in the same manner.

The minimum course load for students is 13 units. Exceptions require either (1) an employment verification form on file, or (2) a part-time status form on file. For further information, contact the Office of Student Affairs at 642-0542.

**Graduate Programs**

Academic and professional graduate degree programs are available in agricultural and environmental chemistry, agricultural and resource economics, comparative biochemistry, entomology, forestry, genetics, nutrition, plant pathology, molecular and physiological plant biology, plant and soil biology, range management, soil science, wildland resource science, and wood science and technology. In addition, an ad hoc interdisciplinary doctoral program is offered.

Inquiries regarding details of the various graduate programs may be directed to the appropriate graduate adviser in the chosen field. Names of advisers for the various graduate departments in the college are given in the graduate course section of this catalog.

**Organizational Units**

Agricultural and Resource Economics
Department Office, 207 Giannini Hall, 642-3345
Chair: Alain de Janvry, Ph.D.

Bioresource Sciences
Major Adviser: Rudy Pipa, Ph.D.

Conservation and Resource Studies
Department Office, 112 Giannini Hall, 642-6730
Chair: Carolyn Merchant, Ph.D.
Entomological Sciences
Department Office, 218 Wellman Hall, 642-6600
Chair: David L. Wood, Ph.D.

Forestry and Resource Management
Department Office, 145 Mulford Hall, 642-3765
Chair: Joe R. McBride, Ph.D.

Forest Products
Department Office, 145 Mulford Hall, 642-3765; if no answer call 478 Richmond Field Station, 231-9456
Chair: Frank Beall, Ph.D.

Genetics
Department Office, 345 Mulford Hall, 642-5404
Chair: Patricia St. Lawrence, Ph.D.

Molecular Plant Biology
Division Office, 305 Hilgard Hall, 642-3684
Chair: Richard Malkin, Ph.D.

Nutritional Sciences
Department Office, 119 Morgan Hall, 642-6490
Chair: Norman Kretchmer, Ph.D.

Pest Management
Offices, 201 Wellman Hall, 642-6660, and 147 Hilgard Hall, 642-5121
Major Adviser: L.A. Falcon, Ph.D.

Plant Pathology
Department Office, 147 Hilgard Hall, 642-5121
Chair: Joseph G. Hancock, Ph.D.

Plant and Soil Biology
Department Office, 108 Hilgard Hall, 642-0341
Chair: Lawrence J. Waldron, Ph.D.

Interdepartmental Graduate Groups
Ad Hoc Interdisciplinary Doctoral Program
(administered by the dean of the Graduate Division)

Biophysics
101 Donner Laboratory, 642-0379

Comparative Biochemistry
2553 Life Sciences Building, 642-3313

Molecular and Physiological Plant Biology
313 Hilgard Hall, 642-3684

Nutrition
146 Morgan Hall, 642-2879

Range Management
145 Mulford Hall, 642-3765

Soil Science
108 Hilgard Hall, 642-0341

Wildland Resource Science
145 Mulford Hall, 642-3765

Wood Science and Technology
Building 478, Richmond Field Station, 231-9452

School of Optometry
Office: 350 Minor Hall, 642-3414

Dean: Jay M. Enoch, O.D., Ph.D.
Assistant Dean—Student Affairs: Darrell B. Carter, O.D., Ph.D.
Assistant Dean—Academic Affairs: Anthony J. Adams, O.D., Ph.D.

The School of Optometry provides professional training in the art and science of vision care. Drawing upon the principles of anatomy, optics, physiology, and psychology, the four-year professional program leads to the degree of Doctor of Optometry, which qualifies one to take the state board examinations.

Doctors of Optometry are health care professionals who specialize in the examination, diagnosis, and treatment of conditions or impairments of the vision system. Specifically educated, clinically trained, and state-licensed to examine the eyes and related structures to detect the presence of vision problems, eye diseases, and other anomalies, optometrists provide treatment by prescribing ophthalmic lenses, contact lenses, or other optical aids and provide therapy to preserve or restore maximum efficiency of vision. By thoroughly evaluating the internal and external structures of the eyes, Doctors of Optometry can detect eye diseases such as glaucoma or cataracts and systemic diseases such as diabetes, hypertension, and arteriosclerosis that require referral to other health care practitioners.

Doctors of Optometry are educated in the sciences of anatomy, zoology, chemistry, physics, mathematics, neurology, bacteriology, microbiology, disease processes and detection, pharmacology, behavioral science, social science, public health, and many other related fields. The school provides four years of comprehensive training in vision care. The first year is devoted to more advanced study of sciences which form the background of optometry, such as ocular anatomy, ocular pathology, physiology, neuranatomy, the psychology of vision, physiological optics, geometric optics, oph-
Optometry offers a wide variety of interesting, challenging, and rewarding careers in private practice, in hospitals and other health organizations, and in public service. The education acquired at the School of Optometry provides today's Doctors of Optometry with the knowledge and skill necessary to meet the challenges of providing vision care.

The school also offers a graduate program in physiological optics which leads to the M.S. degree and the Doctor of Philosophy degree. Offered in cooperation with other departments of the University, this program is designed to prepare students for a career in teaching and research in the science of vision. Research facilities available to graduate students in physiological optics are unequaled anywhere in the world, and a distinguished resident and visiting faculty is available to provide guidance in the most important aspects of the field.

A one-year optometric residency program is available for graduate optometrists who want to expand their skills in one or more clinical areas and/or seek training in specialty areas. The following areas of study are offered: binocular vision and/or pediatrics, family practice optometry, contact lenses, visual functions, low vision care, and ocular disease detection. Special combined or unique programs are possible.

For optometrists interested in reading disabilities, a Master of Science degree program is offered in the School of Education in cooperation with the School of Optometry. This post-O.D. program is designed for optometrists who want to specialize in the handling of children with reading problems, particularly those problems that are visually based. Additional information may be obtained by writing to the Admissions Office, School of Education, Tolman Hall, University of California at Berkeley; Berkeley, CA 94720.

Physiological Optics

An undergraduate program in physiological optics leads to the B.S. degree. The primary purpose of this program is to prepare students for the graduate program in physiological optics rather than the practice of optometry. The graduate program in physiological optics leads to the M.S. and Ph.D. degrees. The program is administered by the Group in Physiological Optics, representing faculty from the School of Optometry and other departments.

Students interested in this graduate program should become familiar with the regulations of the Graduate Division and should contact the adviser of the Group in Physiological Optics as early as possible. Admission to this program requires a bachelor's degree in a science field or a doctoral degree in medicine or optometry.

For further details about the requirements for the B.S., M.S., and Ph.D. degrees, please consult the adviser of the Group in Physiological Optics, School of Optometry.

School of Public Health

Office of the Dean (642-2523) and Admissions (642-6531): 19 Earl Warren Hall
Dean: Joyce C. Lashof, M.D.
Associate Deans: C. Jean Morton, M.S.W., M.P.H., Robert C. Spear, Ph.D.

The basic mission of the School of Public Health is to provide leadership in the fields of education, research, and service in all aspects of public health. Public health as a field is devoted to the promotion of health and the prevention of disease through identification of the factors affecting the health of population groups and the determination of how best to bring about change necessary to assure the maximum well-being of all people. Accomplishing this mission requires the joint efforts of professionals from many disciplines directing their attention toward understanding the biological, environmental, and social factors involved in the causation of diseases and the maintenance of health.

Health policy analysis and study of health care systems are also essential to accomplishing our mission. Identification of populations with special health needs and methods for addressing those needs are of concern. Health promotion, health protection, and disease prevention are the unifying themes for the curriculum, research, and service activities of the school.

Graduate curricula in the School of Public Health provide preparation for positions of leadership in health agencies and for research and teaching in the health sciences.

The professional degrees Master of Public Health (M.P.H.) and Doctor of Public Health (Dr.P.H.) are offered in the area of biomedical and environmental health sciences, including epidemiology and biostatistics, and in the area of social and administrative health sciences, including health policy and administration, maternal and child health, public health nutrition, applied behavioral sciences, and public health education. Particular attention also may be given to special areas of concern such as population, environmental pollution, disease control, genetic counseling, health and medical care delivery, and forensic science.

Programs of study leading to the following academic degrees are administered by groups of faculty from the School of Public Health and other departments:
Biostatistics, M.A., Ph.D.; Environmental Health Sciences, M.S., Ph.D.; Epidemiology, M.S., Ph.D.; Immunology, M.A., Ph.D.; Microbiology, M.A., Ph.D.; Nutrition, Ph.D.; Parasitology, M.S., Ph.D.

Students are encouraged, and in most programs are required, to begin studies in the fall semester because of the sequence in which courses are scheduled. Separate applications for admission must be submitted to the Graduate Division of the University and to the School of Public Health no later than February 10 for admission to the following fall semester. Applicants to the General Preventive Medicine Program must submit all application materials by December 15.

For further information, consult the Announcement of the School of Public Health, available from the school.

Organizational Units

Biomedical and Environmental Health Sciences
Department Office, 113 Haviland Hall, 642-4416
Chair: George F. Sensabaugh, D.Crim.

Social and Administrative Health Sciences
Department Office, 513 Earl Warren Hall, 642-9441
Chair: Thomas G. Rundall, Ph.D.

Graduate School of Public Policy
Office: 2607 Hearst Avenue, 642-4670
Dean: Eugene Smolensky, Ph.D.
Associate Dean: Phyllis Strong Green, Ph.D.

For many decades now, the problems American society faces have steadily grown in number, variety, and complexity. Most of these problems come for resolution, sooner or later, to the doorstep of government. In response, public officials are increasingly involved with devising solutions to social problems and improving governmental services. They wrestle with such difficult questions as political conflict, policy choice, the implementation of policy, bureaucratic behavior, program effectiveness, and the equity and efficiency with which public resources are distributed. Heightened concern with this broad policy terrain is also evident within the private sector, which is developing greater capability in the analysis of public policy. As a consequence of these trends, the need for well-trained analysts and managers in the policy field remains strong.

The Graduate School of Public Policy prepares students to join the ranks of policy analysts in both the public and private sectors. The strong first-year core curriculum is enhanced by the diversity offered in the second year. The school’s program provides students with the benefits of and access to the resources of the entire Berkeley campus. Second-year students can take their elective courses from the full array of campus offerings.

Undergraduate Courses

The undergraduate courses in Public Policy deal with the substance of American public policy, how it is made, how its effects can be gauged, and what the purposes of policy should be. The courses consider both the policy process and particular policy issues. By examining different policy problems in their political and social contexts, students should gain a greater sensitivity to the forces which shape and carry out public policies and to the impact of social, political, economic, and legal power.

Courses are designed for students in diverse disciplines and professional schools. There are no prerequisites for enrollment in the courses unless specifically noted otherwise in the course descriptions. The training provided by the courses is useful to those interested in combining the substantive perspectives of the social sciences with the immediacy of contemporary problems; to those considering professional study; and to the informed and politically aware citizen.

Graduate Courses

Through an examination of a wide variety of contemporary American domestic policy areas, graduate courses enable students to conduct systematic work in the design and assessment of public policies. Among the skills emphasized are those facilitating the application of political, organizational, economic, quantitative, and legal analysis to the full range of the policy process—from policy initiation through policy adoption, implementation, and evaluation. By developing these skills, students from the professional schools and academic disciplines should find their strengthened analytical capabilities of direct use when applied to their own field of concentration.

In addition to the management courses available from the school, a number of public and nonprofit management courses have been developed on the campus; see the listings under Public and Nonprofit Management in the “Courses and Curricula” section of this catalog.

Master’s Degree in Public Policy

The professional degree, the Master of Public Policy, is designed to provide students with the knowledge, analytical skills, and sensitivities needed to conduct public policy studies. The primary focus is on American domestic policy issues. Students from diverse disciplinary backgrounds are accepted into this program. Those completing the master’s program are qualified to take responsible positions with government and
policy research organizations and to work in the private sector on matters related to public policy. Some graduates work primarily as policy analysts while others pursue administrative and political careers which involve the initiation and utilization of policy studies. The two-year master's degree program consists of a required first-year core curriculum, a summer internship, and a second year devoted to elective courses and a policy study of the student's choice. The first-year core curriculum includes courses in political and organizational analysis, economic analysis, quantitative techniques, legal analysis, and a workshop where students perform policy studies on selected issues.

Ph.D. in Public Policy

The Ph.D. program prepares students for careers in advanced policy research in academic institutions, research institutes, and government agencies. The Ph.D. program is oriented toward the generation of new knowledge, theories, and methodologies in public policy analysis. The program is small and admission is highly selective.

Further Information

Brochures and information on admissions procedures and student financial assistance are available from the Graduate School of Public Policy, University of California at Berkeley, 2607 Hearst Avenue, Berkeley, CA 94720.

School of Social Welfare
Office: 120 Haviland Hall, 642-4341
Dean: Harry Specht, Ph.D.
Graduate Program

The School of Social Welfare is a graduate professional school dedicated to training men and women for careers in service to people in need. The complexities and vicissitudes of modern society create enormous problems. These include economic dependency, physical and mental illness, child abuse and neglect, aging, marital disruption, homelessness, and substance abuse. The focus of the field of social welfare and the profession of social work is on helping people (many of whom are disadvantaged and from minority backgrounds) who experience these problems. The field is also focused on the organizational structures, programs and policies, and the institutions that have evolved to attend to these social problems. In short, the School of Social Welfare is for people who care about their fellow men and women and the communities in which they live. Graduates of the school can be found in both public and private social agencies; working with individuals, families, groups, organizations, and communities; and contributing, in a variety of ways, to the formulation of new programs and policies that address emerging social problems.

The school offers the following programs:

1. A program of studies leading to the Ph.D. in Social Welfare, which prepares students for careers in teaching, research, policy development and analysis, and administration in the field of social welfare and the profession of social work. It is open to applicants who hold a master's degree in social work or social welfare or comparable preparation in a closely related field and who show evidence of intellectual and other qualifications essential to successful doctoral study. Also offered is a combined program of master's-doctoral studies which begins in the first graduate year, leads to both Master of Social Welfare and Ph.D. in Social Welfare degrees, and prepares for the same careers. Applicants must show evidence of ability to complete doctoral study successfully and must have undergraduate preparation as outlined below.

2. A two-year program of studies for the Master of Social Welfare degree in preparation for the professional practice of social work. Classroom and field courses are designed to teach professionals to use tested knowledge and skill and research methods and techniques in their practice. Applicants must have completed the group major in social welfare in the College of Letters and Science, or an equivalent major, or undergraduate study in other social and behavioral sciences judged by the faculty as adequate preparation for graduate study in the school. There are also several special programs: the Latino Intercambio project, the M.S.W./M.P.H. dual degree program, the social welfare/law concurrent degree program, the pupil personnel services credential, the M.S.W. program for American Indians, and the program in public and nonprofit management.

Applications for admission to any of these programs should be submitted as early as possible beginning in September and no later than February 10 for admission in the following academic year. Admission to the school is contingent on admission to graduate standing; for details see the booklet Admission to Graduate Study.

For further information, consult the Announcement of the School of Social Welfare, available from the School Office, 120 Haviland Hall.

Undergraduate Group Major, Letters and Science

The Department of Social Welfare administers an undergraduate group major in social welfare in the College of Letters and Science leading to the degree of Bachelor of Arts. For major requirements, see the Social Welfare section of the catalog.
Introduction to Courses and Curricula

Key to Symbols

The following symbols are used in the depart-mental faculty rosters and course listings in the "Courses and Curricula" section that follows:

- On leave, fall, spring
- On leave, fall
- On leave, spring
- Recalled to active service
- Recipient of Distinguished Teaching Award
- * Not offered 1989-90

"Above the Line" and "Below the Line"
The faculty roster of many departments is divided by a short line that separates full members of a department from members affiliated with the department by a "courtesy appointment." Faculty members whose names appear above the line are full members of the department. Faculty members whose names appear below the line are affiliated with the department but are not members of it.

Organization of "Courses and Curricula" Section

In the following section of the catalog, departments are listed alphabetically regardless of the college or school to which they belong. Interdepartmental groups, special studies, special projects, and other nondepartmental units are also listed alphabetically wherever possible. Interdepartmental courses are reproduced together under that heading as well as in each sponsoring department. If you are unable to locate the department or program in which you are interested, consult the Index.

The colleges and schools are introduced in the "Colleges and Schools" section, beginning on page 69. The introductions discuss the scope and educational goals of each college and school and list the departments and organizational units within each.

Course Listings

You should carefully note prerequisites for courses, although they are sometimes waived at the discretion of the instructor.

Courses with double numbers (for example, English 1A-1B) are two-semester sequences that usually begin in the fall semester. Except as noted, each course in a sequence is normally prerequisite to the one following, and you may normally receive credit for completing the first half of a sequence. Course numbers preceded by the letter H are special honors courses that may be subject to restrictions imposed by the department.

The number in parentheses following the course title indicates the credit value; the abbreviation in parentheses indicates the semester in which the course is offered: (F) fall, (SP) spring. Summer Session courses are listed separately in the Summer Session Catalog except for a few courses that are part of a department's degree requirements.

Course numbers are assigned as follows:

1-99
Lower division courses, including courses designated by a letter. Open to freshmen and sophomores; not acceptable for upper division credit.

100-196
Upper division courses. You must ordinarily have completed at least one lower division course in the given subject or two years of college work.

98, 99, 197, 198, 199
Special Studies courses. (See limitations listed below.) Effective fall 1983, you may use no more than 16 semester units of courses numbered 99, 197, 198, and 199 to meet requirements for the A.B. degree. Exceptions to this rule may be granted by the Committee on Courses of Instruction.

98, 99, 197, 198
Field study (upper division). 197 courses are restricted to passed/not passed grading. To take them you must have completed 60 units of undergraduate study and be in good academic standing (2.00 grade-point average or better). Exceptions to these rules may be granted by the Committee on Courses of Instruction.

98
Supervised independent study by lower division students. Each section of a 98 course must receive approval by the chair of the department, based upon a written proposal by the instructor who is to supervise the course. Only a grade of passed/not passed is to be assigned. The dean of your college or school, on advice of the instructor, may authorize exceptions to the grading limitation.

99
Supervised independent study by superior, lower division students. You must have a 3.3 GPA and prior consent of the instructor who is to supervise the study, and you must submit a written proposal to the chair of the department for approval. Only a grade of passed/not passed is to be assigned. The dean of your college or school, on advice of the instructor, may authorize exceptions to the grading limitation.

198
Supervised group study (upper division). Each section of a 198 course must receive approval by the chair of the department, based upon a written proposal by the instructor who is to supervise the course. A copy of the approved proposal must be submitted to the Committee on Courses of Instruction.

9, 9, 197, 198, 199
These courses allow you to pursue study of special topics, in groups or individually, under the direction of a faculty member. You may aggregate no more than 4 units of credit for independent studies or group studies in a single term.
construction. To enroll in 198 courses, you must have completed at least 60 units of undergraduate study and be in good academic standing (2.00 grade-point average or better). Only a grade of **passed/not passed** will be assigned. The Committee on Courses of Instruction may, on the advice of the instructor and department concerned, authorize exceptions to the above limitations.

199

Supervised independent study (upper division). You must have prior approval of your major adviser, the instructor who is to supervise the study, and the chair of the department. Approval must be based on a written proposal that you submit to the chair. The instructor must indicate consent in writing. To enroll in 199 courses, you must have completed at least 60 units of undergraduate study and must be in good academic standing (2.00 grade-point average or better). Only a grade of **passed/not passed** will be assigned. The dean of your college or school, on the advice of the instructor, may authorize exceptions to the above limitations.

200-299

Graduate courses. Adequate preparation, subject to the instructor’s approval, is normally 12 upper division units of work basic to the subject matter of the course.

300-399

Professional courses for teachers or prospective teachers.

400-499

Professional courses which, like teaching courses, are acceptable toward academic degrees only within the limitations prescribed by the various colleges or schools or the Graduate Division.

601

Special study for graduate students in preparation for the master’s examination.

602

Special study for graduate students in preparation for the doctoral qualifying examination.

Experimental Courses

The University offers a number of experimental courses. Information about these courses is contained under (1) the Personalized System of Instruction, discussed in the Appendix; (2) some of the Interdepartmental Studies courses, listed in the Interdepartmental Studies section of this catalog as well as in each sponsoring department; and (3) all courses numbered 91, 191, and 291 in departmental course listings throughout this catalog.

Use of Animals in the Instructional Program

Certain courses offered at the University of California at Berkeley require the use of animals, living or preserved, vertebrate and/or invertebrate, and/or their preserved and/or extracted parts, in the course of instruction. Such animal use is determined judiciously by the instructors of the courses to be necessary and appropriate to the intellectual and technical education of students. All use of animals in teaching and research is approved by the campus Animal Care and Use Committee. It is the responsibility of students to ascertain course requirements before enrollment, and the responsibility of instructors to provide that information clearly and unequivocally. Should the students find enrollment in such courses not appropriate to their interests or beliefs, they should see their advisers to recommend alternative courses, or, if appropriate, alternative majors.
The Reorganization of Biological Sciences at Berkeley

The science of biology has undergone a revolution in the past 20 years that has transformed the ways in which we view and understand living things. Fueled by such technological advances as recombinant DNA, monoclonal antibodies, and electronic imaging, the disciplines of molecular biology, cell biology, developmental biology, genetics, physiology, and evolutionary biology have become unified by common experimental procedures and theoretical principles. This revolutionary progress in modern biology has created opportunities ranging from the prevention of disease through the production of food energy, to a better understanding of environmental and evolutionary processes.

In the early 1980s, Berkeley recognized that the nation was on the verge of a revolution in modern biology and biotechnology that the campus's aged facilities were incapable of accommodating. Accordingly, a massive building program has been undertaken, which includes construction of two new biology buildings and extensive renovation of three others. This building program will modernize the research laboratories of faculty and provide new state-of-the-art teaching laboratories.

Concomitant with this major improvement in the physical facilities for research and teaching in the biological sciences at Berkeley, a radical reorganization of the life sciences departments has been undertaken, which includes the fusion and realignment of the faculty and teaching programs of more than 10 predecessor departments into three new departments: Molecular and Cell Biology (MCB), Integrative Biology (IB), and Plant Biology (PB). This reorganization has provided the opportunity to revise the Berkeley undergraduate curricula to bring them in line with the advances in modern biology and thus to better prepare students for careers in all aspects of the biological and health sciences. The unification of faculty drawn from many different traditionally organized departments into fewer intellectually cohesive disciplines is more congruent with modern biology, and it is already serving as a model for other institutions that are beginning to follow Berkeley's lead.

The teaching and research activities of the new Department of Molecular and Cell Biology concern the molecular structures and processes of cellular life and their roles in the function, reproduction, and development of living organisms. This agenda covers a broad range of specialized disciplines such as biochemistry, biophysics, molecular biology, developmental biology, genetics, cell physiology, cell anatomy, immunology, and neurobiology. The types of living organisms from which the MCB faculty draws its working materials are as diverse as its disciplinary specializations, ranging from viruses, bacteria, fungi, and protozoa through plants, roundworms, annelids, arthropods, and mollusks, to fish, amphibia, and mammals.

The Department of Plant Biology emphasizes the study of plants at the cellular and molecular levels. Modern concepts of plant biochemistry, development, genetics, molecular biology, and physiology are integrated in undergraduate and graduate programs offering students a broad perspective of modern plant biology. Students trained in this discipline will not only have opportunities in agriculturally related areas but in those related to the emerging field of biotechnology.

The mission of the Department of Integrative Biology is to facilitate teaching and research that focuses on the integration and diversity of structure and function within living systems. Departmental emphasis is on the integration across all levels of organization from molecules to the biosphere, and diversity across taxa, ranging from viruses to plants and animals. Techniques adapted from many fields of science are used to examine questions within and across the sub-disciplines of biology, including but not limited to physiology, morphology, behavior, ecology, paleontology, genetics, and evolution.

Undergraduate Programs

Beginning fall semester 1989, undergraduate students in the College of Letters and Science will no longer be accepted into the former undergraduate majors in biochemistry, biological sciences, biophysics, biophysics: medical physics option, botany, genetics, microbiology and immunology, molecular biology, neurobiology, paleontology, physiology-anatomy, and zoology. Continuing Letters and Science students who have declared one of these majors may continue in the program, provided they complete all requirements for the degree and graduate before fall semester 1993. Undergraduates in the College of Natural Resources will no longer be accepted into the former undergraduate majors in genetics or molecular plant biology, but students who have declared one of these majors may continue in the program. They are, however, strongly encouraged to discuss alternative majors with staff in the college office, 106 Giannini Hall.

Effective fall semester 1989, the following majors are available to students interested in the biological sciences. In many instances the new majors incorporate all or part of the former majors listed above. Current programs include:

College of Letters and Science
- Integrative Biology (tracks in morphology, physiology, development; behavioral biology; systematic biology, paleobiology, genetics, and evolution; ecology; integrative human biology; general integrative biology)
- Molecular and Cell Biology (emphases in biochemistry and molecular biology; genetics; immunology; microbiology; cell physiology; cell and developmental biology; neurobiology; biophysics)
- Environmental Sciences (emphasis in biological sciences)
- Physical Education

**College of Natural Resources**
- Bioresource Science (emphasis in general biology or preveterinary medicine)
- Entomology
- Nutritional Sciences
- Plant and Soil Biology
- Plant Biology (includes emphases in genetics and botany at the plant level)

For academic advice and information about the programs, students should consult this catalog and faculty and staff in the relevant departments.

**Graduate Programs**

For fall semester 1989, new students have been admitted into the existing graduate program in the biological sciences. Graduate programs for the new biological sciences departments are currently under review, and it is anticipated that the new graduate programs will receive final approval during fall semester 1989. All new and continuing graduate students will be notified when these programs are approved. At that time, students will have the option of continuing in the program to which they were admitted or requesting transfer to a related new program.

**Where to Go for Help**

**Advising**

Where known, the names and locations of departmental advisers are listed in the relevant sections of this catalog. Since not all advising assignments were known at press time, students in the College of Letters and Science may seek general information from the Office of Undergraduate Advising, 113 Campbell Hall, 642-1483. Students in the College of Natural Resources should consult staff in the Office of Student Affairs, 106 Giannini Hall, 642-0542.

**Former Courses**

Most courses in the former departments have been renamed, renumbered, and placed in one of the three new departments. For these courses, refer to the listings under the former department names to learn their new names, numbers, and titles.

**New Courses**

New course descriptions are listed under the title of the departments to which the courses belong. Also provided under the three new departments are lists of new courses, followed by their former names, numbers, and titles.

**Warning**

Although great care has been taken in this catalog to present the reorganization of the biological sciences as accurately and coherently as possible, there may be unintended errors. If something is unclear, please consult an adviser in the relevant department or college office.